THE INFLUENCE AND LEGACY OF ALEXANDER VON HUMBOLDT IN THE AMERICAS

VIAJEROS

COLECCIÓN SEXTANTE

13

CENTRO PENINSULAR EN HUMANIDADES
Y CIENCIAS SOCIALES

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THE INFLUENCE AND LEGACY OF ALEXANDER VON HUMBOLDT IN THE AMERICAS

UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO
Mérida, 2022

Nombres: Valencia Suárez, María Fernanda, editor. | Depetris, Carolina, editor.

Título: The influence and legacy of Alexander von Humboldt in the Americas / María Fernanda Valencia Suaréz, Carolina Depetris, editors.

Descripción: Primera edición. | Mérida : Universidad Nacional Autónoma de México, Centro Peninsular en Humanidades y Ciencias Sociales, 2022. | Serie: Colección Sextante. Serie viajeros ; v. 13.

Identificadores: LIBRUNAM 2131947 | ISBN 9786073059145.

Temas: Humboldt, Alexander von, 1769-1859 -- Influencia -- América. | Humboldt, Alexander von, 1769-1859 -- Viajes -- América. | Científicos -- Alemania. | Naturalistas -- Alemania. | América --Descripción y viajes -- Siglo XIX.

Clasificación: LCC Q143.H9.I54 2022 | DDC 921—dc23

Primera edición: 2022
Fecha de término de edición: 25 de marzo de 2022

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Imagen de portada: "Fossil Tree Root", Smithsonian National Museum of Natural History, https://n9.cl/fyr0g

Este libro es resultado de los proyectos Conacyt DADC-2018, "IX Congreso internacional e interdisciplinario Alexander von Humboldt y los viajeros por Yucatán", del Programa de Apoyos para Actividades Científicas, Tecnológicas y de Innovación y Ciencia Básica 253921, "Saber y discurso en la literatura de viajes por América (siglos XVII-XIX)".

ISBN 978-607-30-5914-5

Impreso y hecho en México

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Introduction

María Fernanda Valencia Suárez

The connection between Alexander von Humboldt —Prussian geographer, explorer and naturalist— and the American continent is quite strong. Although, he spent less than five years on American soil, from 1799 to 1804, his expedition through the continent left an indelible mark on his life and work, as well as on American history and on the understanding of the continent's past, its nature and its potential.

The following pages are the result of a dynamic and interesting dialogue fostered by the IX International and Interdisciplinary Conference Alexander von Humboldt that was organized by the Universidad Nacional Autónoma de México (UNAM) and took place in Merida, Yucatan, Mexico. The conference gathered more than 150 scholars from all over the world and from different disciplines. Under the title "Alexander von Humboldt and Travelers Through Yucatan", the conference gave the participants and the audience an opportunity to pause and reflect on the significance of Humboldt's voyage, from diverse points of view. It offered the chance for a debate about Humboldt as a scientific figure and as a member of the academic community of his time, about the "Humboltean Method," and about some of his work and ideas.

Although Humboldt never visited Yucatan, the title of the Conference was an invitation to consider his influence on subsequent visitors and scientific expeditions to Yucatan and to the rest of America, and on the views they generated about these lands, in terms of natural phenomena, politics, history, economy, population, resources, and so

on. The dialogue was so rewarding that, as organizers, we decided to ask for participants to develop their ideas and arguments further. The answer to our proposition was superb and gratifying. The year between the conference and the preparation of this book coincided with the 250 anniversary of Humboldt's birth, and we are glad that we can contribute to his celebration with this collection of stimulating essays that shows both a multidisciplinary and international perspective about Humboldt's impact and legacies in America —both in social and natural sciences— from Europe and the Americas. It is important to mention that this book is written in English. Some contributions had to be translated because, just as Humboldt intended for his own work, we wanted to reach as wide an audience as possible and thus, encourage an even ampler conversation to encourage an even ampler conversation.

Humboldt's expedition, and particularly the widely-circulated publication of his observations and experiences, have an enormous significance for the history of how Europeans' visions shaped the conception of Spanish America. As an exponent of scientific romanticism as he was, driven by extraordinary energy, and with the means and time to travel, was able to experience the region firsthand and to reject some mistaken and misleading ideas. Humboldt's views were quite different from those that had prevailed during the majority of the eighteenth century in Europe as part of the theory of American degeneracy. These ideas, supported mainly by Cornelius de Pauw, Guillaume-Thomas Raynal, George Louis Leclerc Comte de Buffon and William Robertson, argued that all things in America degenerated, making nature weaker, animals smaller and men less virile and clever. In contrast, Humboldt described nature as exuberant, abundant and majestic, animals as vigorous and well-adapted, and people as capable, hard-working, thoughtful, and beautiful. He claimed that in America he felt stronger, happier, and healthier than ever.[1] In addition, he helped to dissipate some of the myths that surrounded the explorations of the Americas, such as the myth of El Dorado, the myth of the primordial deluge, and the myth of the Amazon women.[2] In sum, Humboldt criticized and discredited all those scholars and intellectuals who had ventured an opinion without ever setting foot in the region and

[1] Minguet (ed.), *Alejandro de Humboldt. Cartas americanas*, 108-109.

[2] Livi-Bacci, "A note on Alexander Von Humboldt", 539.

at the same time, all those travelers who had been blinded by preconceived and incorrect ideas.[3]

Ottmar Ette has argued that Humboldt experienced a very different non-European territory, which was not enough explored in comparison to the known land: "It was an entire world that was still to be discovered by science."[4] His journey and his new way of looking at the American continent caused Humboldt to be considered in books, journals, and newspapers —both in his time and in ours— as "the second Columbus," the scientific discoverer of these lands.[5] Humboldt set sail to the New World on a ship named "Pizarro," as the Spanish conqueror known for his expeditions that led to the Spanish conquest of Peru, however he traveled not to conquer, but to explore. It was a quest of discovery, a pursuit of knowledge.

Humboldt, and his friend the botanist, Aimé Bonpland, who joined him in his trip, spent in total, three years and two months in Venezuela, Colombia, Ecuador and Peru, one year in Mexico, about four months in Cuba, and another four months sailing from one place to another. They visited the two oldest, wealthiest and most populous viceroyalties, Mexico and Peru. They faced diverse climates, from the humid and hot Caribbean, to the wilderness of the Orinoco and Amazon Valleys, the sandy desert of the Peruvian coast, up to the high, temperate, the fertile valleys of the Andes, the central valley of Mexico, and the snowy and cold peaks of mountains and volcanoes. They navigated rivers and endured tropical diseases and bugs. They saw the diversity within the society in Spanish America, in both its urban and rural sectors, as they met with viceroys, archbishops, mine and plantation owners, merchants, scholars, intellectuals, artisans, laborers, indian servants, negro slaves, and even wild indians in the hinterland.

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[3] Ette, *Alexander von Humboldt y la globalización: el saber en movimiento* (See section "Una revolución lograda: el salto epistemológico o la globalización como historia del movimiento", 42).

[4] Ette, *Alexander von Humboldt y la globalización: el saber en movimiento* (See section "El mundo tropical es mi elemento: el encanto, el desplazamiento y la construcción hemisférica de un Nuevo Mundo", 4-9).

[5] Kutzinski and Ette, "All the bumps in the Road: Alexander Von Humboldt's Mexican tableau", xxiii; Withaker, "Alexander von Humboldt and Spanish America", 317; and Walls, *The passage to Cosmos*, 13.

Humboldt's curiosity was inextinguishable. He was an excellent observer and a resolute field researcher, interested in flora, fauna, climate, geology, history, astronomy, geography, and also on the societies, governments, and policies of the places he visited. He and Bonpland collected specimens of plants, insects, and rocks; gathered information of ethnic, anthropological, and archeological interest; and collated statistics, numbers, notes, charts, drawings and maps too. Humboldt researched his discoveries with precision and respect for the places he had explored and always kept his pen ready to record everything he saw. Thus, Humboldt's "discovery of America" brought awareness, scientific interest and knowledge, and a more enlightened image of the continent in Europe. This new view appreciated diversity and conceived "New World" as a part of a "global order".[6] He also contributed to inspiring Americans to search for their own identity, their specific cultural roots, their geographic and spatial boundaries, their economic potential. Indeed, he helped to bring about a redefinition of their place in relation to the world.

Humboldt's work had a huge impact on science. He shared his research freely and supported other scientists generously. His works were widely read and served as a model. He inspired many scholars to follow his steps and influenced a range of scientific figures, including Charles Darwin. Few scientists were not captured by the global sweep of his methods or his international network of correspondents. It is not a surprise that Alexander von Humboldt was, in the early nineteenth century, "one of the most famous people in the world".[7] He was, as Jaime Labastida has claimed, a "universal citizen".[8] Translated into many languages, his works and life became a point of reference for many people. Borrowing Andrea Wulf's words, "One of Humboldt's greatest achievements had been to make science accessible and popular. Everybody learned from him: farmers and craftsmen, schoolboys and teachers, artists and musicians, scientists and politicians".[9]

This book considers Humboldt's impact and legacy on America and on the understanding and study of this region from a critical lens in

[6] Chaves, "Concepciones sobre la naturaleza de América: algunos recorridos"; Corbera-Millán, "Ciencia, naturaleza y paisaje en Alexander von Humboldt".

[7] Erickson, *et al.*, *Alexander von Humboldt. From the Americas to the Cosmos*, xvi.

[8] Labastida, *Humboldt, ciudadano universal.*

[9] Wulf, *The invention of nature*, 335.

the seven chapters that conform it. Each author, from his or her field of expertise and topic of interest, takes an anecdote, a person, or an issue to offer insights that contribute to discuss the bequest and impact of Humboldt's travels, work, and life. The chapters are organized following a thematic order, and the first three dwell on a topic related to Humboldt's visit to America. They are organized in roughly chronologically beginning with a first chapter about his visit to Ecuador and a second about his visit to Washington. The third chapter cuts across periods to make its argument, mentioning Humboldt's visit to New Spain and focusing on his work afterwards in Europe as well as on various scholars to whom Humboldt served as a role model. Chapters 4 to 7 provide readers with clear and very well documented assessments of the grade of influence and impact that Humboldt exerted on explorers and scientific men of his age once he returned to Europe. Each chapter focuses on the experience of a naturalist that followed Humboldt's scientific methods —or what we call here "Humboldtean Science"— and who ventured far from home into America, stimulated or aided by Humboldt in one way or another.

The first chapter, "June 22, 1802: Humboldt on the day before the Chimborazo ascent and his volcanic theory of the 'terrain miné'", by Reinhard Andress, centers on his tireless and genuine scientific curiosity. It also touches on his way of inquiring, observing, studying and synthesizing information, connecting data according to the knowledge he possessed which conformed to the age he belonged. The text is based on accounts from Humboldt's diary about his attempt to reach the top of Chimborazo, focusing on this and the day before, grasping the incidents, beliefs and feelings that prompted the explorer to climb and reach the summit of the highest mountain of what today is Ecuador. The events of the day of the climbing have received much attention in historiography and literature. However Andress' text provides interesting insights on Humboldt's decision-making and on his manner of researching and developing his ideas and theories (in this case the theory of "terrain miné").[10] It confronts the information available —at least what he had studied before— with the one he observed first hand and with all the extra information he could gather by interviewing local people.

[10] He claimed that the geography and the topography of the earth was created by volcanic activity.

The chapter brings to light the fact that Humboldt and Bonpland were relatively flexible and spontaneous about their itinerary as they improvised when situations and opportunities demanded it, especially if something interesting crossed their path. Moreover, it shows Humboldt's vision that everything in nature was interconnected and likewise how he valued the information about culture, history, and people, used it as a source and reference. He was by no means indifferent to social reality, and issued strong criticisms related to social problems. This approach to people, things, phenomena, events and situations is what inspired generations of scientists after him.

In chapter 2, "Humboldt as Intelligence Agent? Circulating Scientific Knowledge, and Strategic Secrets, in Washington", Sandra Rebok assesses the impact of an action taken by Humboldt which has been widely discussed and harshly criticized: his decision to lend President Thomas Jefferson the material he collected in New Spain, particularly geographical material in the form of maps. This topic is specially relevant —in a book like this one published in Mexico— since Humboldt has been called a spy and a traitor for providing the United States with information that proved strategic to that country in the Mexico-US war of 1846 and for betraying Spanish trust. I would like to remark that Humboldt managed to obtain permission from the Spanish Crown to visit and study its American dominions in a time when Spain still aimed to keep its colonies out of reach and sight from foreigners.[11] He was the first foreign visitor authorized to consult documents and to be assisted in his studies and observations. In Mexico City, he was afforded unprecedented access to the archives and libraries where he was able to study objects, codices, documents and maps.[12]

Rebok presents a very far-reaching analysis of the situation and the information that was shared by Humboldt, the way it was collated, received, interpreted, and used in Washington. Also, she analyses the context and the consequences of the dissemination of this particular information along with the intentions behind Humboldt's actions and the interests and ambitions of Jefferson. Rebok advances her argument from two important standpoints: 1) "Humboldt was not Jefferson's only

[11] Valencia-Suárez, *Visitantes furtivos en Mérida*, chapter 1.

[12] Ortega y Medina, "Otra vez Humboldt, ese controvertido personaje", 442.

provider of geographic or geopolitical knowledge on these areas", 2) Humboldtean science was about sharing knowledge, but not about the possible uses of that information.

Back in Europe, Humboldt established his residence in Paris, where he spent most of his time working on his narrative of the five-year tour to the equinoctial regions of the earth. He was a prolific writer and an excellent promoter of his work. He edited and published, at his own expense, the thirty volumes of his travels and discoveries. In 1827, he returned to Berlin to teach at the University and organized international scientific conferences where he served at the Prussian court. Humboldt was famous, and he kept widening his network of colleagues and informants all around the world.[13] His books were very popular, and his influence expanded so much that Goethe called him "our conqueror of the world".[14]

In chapter 3, "Curating forgotten collections. Lorenzo Boturini's Museo Histórico, the role of Alexander von Humboldt and other collectors", Viola Köning shows that although Humboldt was not a historian or archeologist, his influence on the recognition, preservation, and writing of pre-Hispanic history was substantial. His approach to Mesoamerican history was novel for his time, due to he saw the Aztecs and the Incas as part of a continuous history that had started before the arrival of Columbus and which was important to know and record. Even though, Humboldt devoted many hours to the study of the indigenous past while he was in America, his thirst for knowledge about the pre-Hispanic cultures was not satisfied. Back in Europe he continued searching for material, and it was him who rescued the Borgia, Vindobonesis and Dresden codices. Undoubtedly, Humboldt whetted the appetites in Europe for information about the pre-conquest American past, and he became an important part of the reconstruction and revalorization of indigenous sources.

Viola König's text shows how Humboldt developed an important role in the recovery of long-lost documents while setting the example for other scholars, collectors and travelers to do the same. In "Curating forgotten collections. Lorenzo Boturini's 'Museo Histórico', the role of Alexander von

[13] Ette, *Alexander von Humboldt y la globalización: el saber en movimiento* (See section "La ciencia abierta y el foro de culturas", 20).

[14] Echenberg, *Humboldt's Mexico*, xlvi.

Humboldt and other collectors", the author claims that Humboldt was essential to the reconstruction and gathering of the pieces that once were part of the Boturini collection. This idea came about not only because he collected some of the dispersed material by himself, but also because he led the way for others, particularly Waldeck, Aubin, Nebel and Udhe, who contributed by transporting pieces of the aforementioned collection to Europe. Humboldt not only highlighted the relevance of the material but also portrayed the situation of the documents in Mexico as terrible; underestimated, badly preserved and in the hands of people willing to sell them. Indeed, the authorities from New Spain had stopped Boturini from extracting the documents but were not able to keep them together and within the borders. Hence, Humboldt wrote about Mexico as a rich source of manuscripts, artifacts, and ruins that awaited to be discovered, studied, and properly safeguarded.

The text by Vera König convincingly reconstructs the history of the Boturini collection up to the current day, focusing on the documents taken to Europe by Humboldt and by other men that followed his footsteps. This chapter is illustrated with wonderful images that make patent the beauty and relevance of the documents belonging to the collection and held in Berlin and Paris. It makes us wonder what would have happened if Humboldt had not displayed any interest in Boturini collection and the codices. Would other travelers and collectors have esteemed them highly? Would the Mexican government have implemented policies to stop their exportation and to preserve them? Would we know their whereabouts today?

In chapter 4, "Imagining Mexico through Thomas Coulter's residence, 1825-1834: Botany, mining, and diplomacy", Cliona Murphy studies the visit of the Irish Thomas Coulter, a doctor, botanist, miner, and diplomat, who came to México twenty years after Humboldt, since 1825 to 1834. The text reflects, using the words of the author, "the transnational world of scientific adventure and optimism, the European fascination with the 'exotic' in the Americas", in which this kind of trips took place. Murphy places Coulter within the sphere of influence of Humboldt, using constructive criticism. Coulter followed and read Humboldt, but also questioned and corrected him when necessary. There are many connections and parallels between Humboldt and Coulter, not only in their

way of observing, measuring and collecting, but also in their own experiences in Mexico. The manner Coulter secured a pass from President Vicente Guerrero to travel to California, can be compared to the guarantees obtained by Alexander von Humboldt from the monarch in Spain to visit Spanish America. Both, Guerrero and the Spanish monarchy, were interested in facilitating further knowledge and understanding of the territory they were ruling.

The fourth chapter, "Friedrich Wislizenus: A Humboldtean explorer in Northern Mexico (1846-1847)", written by Thomas Janota and Robert Bye, discusses the case of Friedrich Wislizenus, a member of the "generation of German explorers" who were stimulated by Humboldt to visit the West of America. Wislizneus explored the Northern parts of Mexico using Humboldt's method, and Humboldt also used them to complement his own work. Indeed, Wislizenus authored the first scientifically produced map of the North of Mexico to complement Humboldt's earlier maps of New Spain. Like other European scientists at the time, Wislizenus established relations and networks with local scientists and promoted institutions and bodies dedicated to science, in his case the "Boundary Surveys" conducted by the United States of America government.

As traveling and exploring the unknown world was important for naturalists of the nineteenth century, it was also essential to summon the name of Humboldt, which insinuated that the explorer or scientist was operating within what many thought the most reliable and measurement-centered science of the day.[15] According to Graham Burnet, "the mantle of Humboldt, as much as Humboldtean instrumentalism, proved a powerful way to enhance the value of a traverse survey",[16] or of the work of a scientist, but knowing Humboldt in person was still better.

For chapter 6, "The voyages of Hermann Burmeister and the indirect influence of Alexander von Humboldt in the development of Argentina's natural sciences", Pedro J. Depetris shows an example of a nineteenth century scientist, the German Hermann Burmeister, whose friendship with Humboldt proved key to his career. Depetris considers that Burmeister —although immersed in what has been called Humboldtean

[15] Burnett, *Masters of all they surveyed*, 15.

[16] *Ibid*., 99.

science— had many influences and different tutors from Alexander von Humboldt, and thanks to his own successful work he could meet and exchange letters with Humboldt who turned to be a very helpful acquaintance. Humboldt was the main source for European knowledge about silver mining, however in the case of Burmeister he served more as a facilitator than an intellectual guide, using twice his political and royal influences to help Burmeister to obtain the permission and money for his trips to South America. Once in America, he interacted with the local scientific and political elite —the details are carefully and clearly narrated by the author— becoming a pillar in the development of Argentina's natural sciences. It is clear that Humboldt was not only an intellectual influence but also acted as a central nod in the scientific and political networks of the time. He was undoubtedly very well connected.

Finally, in Chapter 7, "Byron in Yucatan: War and Ruins", Adrian Poole shows that the famous "discoverer" of the Mayan ruins, the US-born John Lloyd Stephens, was not only influenced by Humboldt whom he read but also by his favorite poet, the English Lord Byron and his view about ancient temples and ruins. Both, Humboldt and Lord Byron influenced Stephens. Thereby, Poole shows the intertwined inspirations and encouragements that existed among travelers, thinkers, and writers in the XIX century. Poole proposes that although neither Humboldt nor Byron ever visited Yucatan, they were indirectly present in Stephen's expeditions through Yucatan and in the discovery and treatment of the Maya ruins. Although the text is not centered on Humboldt as the rest of the chapters are, it establishes a dialogue with the rest of the book by showing the influence of Byron on Stephens and mentioning the relationship between Stephens and Humboldt.

Poole also shows that although Humboldt tended to be interested in all sorts of topics, he was not enthusiastic at all times. The text mentions that when Stephens and Humboldt met in Potsdam in 1847, after the former had come back from Yucatan, the latter did not want to talk about the Maya ruins because he was only interested in the war between Mexico and United States. Ironically, Stephens had thought during his visit to Central America and Yucatan that governments and people "were distracted" and did not see the importance of the ruins, and when he finally met Humboldt he realized that he was also distracted from archaeology and ruins by the war.

Although "relatively few of his admirers encountered him in person", Wislizneus, Burmaister, and Stephens were fortunate to have met Humboldt. Many others got to know him through his work, as his books "found pride of place in the libraries of traveling naturalists and artists".[17] For instance, it is well known that Charles Darwin's collection on board the Beagle in 1832 included Humboldt's *Relation historique* of his five-year expedition on America.

Unquestionably, the Prussian traveler and scientist is entitled to recognition, and his influence and legacy deserve to be assessed and pinpointed adequately. He left a deep mark on the history of science and knowledge and on our understanding and construction of the world. His work and influence are so vast that they still give us plenty to study, argue about, and discuss today. In accordance with Ralph Waldo Emerson, "Humboldt was one of those wonders of the world […] who appear from time to time, as if to show us the possibilities of the human mind, the force and the range of the faculties a universal man, not only possessed of great particular talents, but they were symmetrical, his parts were well put together".[18] We hope this book moves the reader to think of what Humboldt left in us, in our way of viewing the world and understanding ourselves and the Other. It is meant to aid in acknowledging his failures as well as our own, and in inspiring the achievement of what he struggled for: a universal culture of learning, a vision of America as a valuable part of the globe with a magnificent past and future, and of the Earth as a wonderful place, a Cosmos, where everything is connected and everything needs to be healthy and functioning to work as a whole. In this sense, we hope that looking back to Humboldt and his legacy —and our small contribution to that— might help us to explore the world of Science and Humanities, together with our colleagues and students, keeping a sustained intellectual discussion on ethical aspects of our thoughts, arguments, and discoveries.

[17] Greppi, "On the Spot", 41

[18] Emerson, "An abstract…", 457.

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June 22, 1802: Humboldt on the Day Before the Chimborazo Ascent and his Volcanic Theory of the "Terrain Miné"

Reinhard Andress

As we know, Humboldt failed in his attempt to reach the 6 310-meter summit of the Chimborazo on June 23, 1802. In bad weather, the group of climbers who, aside from Aimé Bonpland (1773-1858), included the son of his Quito host, Carlos Montúfar y Larrea (1780-1826), and one of their servants, progressed as far as an impassable crevasse. In Humboldt's diary we can read: "It became so foggy that we didn't see the summit. The trail of gigantic rocks continued on. We had a glimmer of hope that we could reach the peak. But a large crevasse put an end to our efforts. It had at least almost 90 *toises* [approx. 175 meters] depth and maybe 10 *toises* [approx. 20 meters] width. Those were our Pillars of Hercules".[1] It is entirely possible that these "Pillars" saved Humboldt's and his companions' lives. For today's mountain climbing standards, they were very poorly equipped and would have hardly been up to any further mountaineering challenges. According to Humboldt's barometric measurements, they had achieved a respectable altitude of 5 881 meters; they were about 200 *toises* (roughly 390 meters) short of the summit. It is a claim that

[1] Humboldt, *Reise auf dem Río Magdalena*, *Teil I*, 220. All translations into English are mine. French original: "Il faisait si nébouleux que nous ne vîmes pas la cime. La traînée de pierres continuait toujours. Il nous vint une lueur d'espérance de parvenir à la cime. Mais une grande cre-vasse mit fin à nos tentatives. Elle avait au moins près de 90 t[oises] de profondeur et peut-être 10 t[oises] de large. C'étaient là nos Colonnes d'Hercule."

has regularly been questioned by researchers since Humboldt's barometer may very well no longer have been functioning properly at that point during the long and arduous trip. It is likely the group of climbers got stuck around the 5 350 meter mark.[2] Nonetheless, although there is evidence the Incas moved at such heights, any European had ever achieved that altitude.[3] The Englishman Edward Whymper (1840-1911) became the first to actually ascend to the top of the Chimborazo on January 4, 1880.

In an essay published in 1853, entitled "Ueber einen Versuch den Gipfel des Chimborazo zu ersteigen" (About an Attempt to Reach the Summit of the Chimborazo), Humboldt wrote that "in the popular mind" such mountaineering feats garner particular attention because "what appears unachievable has a mysterious attraction; people want to discover everything, that at least the attempt is made to conquer what cannot be conquered".[4] He goes on to state that his many scientific achievements "were seldom able to distract attention from the snow-covered summit".[5] In that sense, the Chimborazo became "the tiresome object of all questions directed to me since my return to Europe."[6] Humboldt had already known it would turn out that way when he was on the Chimborazo: "We anticipated that in Europe we would often be asked about 'a small piece of the Chimborazo'",[7] which is why he gathered some stones to take along.

Although Humboldt reached the summits of many other mountains, the Teide on Teneriffa or the Pichincha in Ecuador, to mention just two, he remained inseparably connected with the failed attempt to climb the Chimborazo. Because of the record altitude, the mountain became the symbol of the American trip, perhaps even the most central event in his life that contributed to his international fame. That would seem to be substanti-

[2] *Cf. ibid.*, 344, ft. n. 157.

[3] *Cf.* Biermann, *"Der Traum meines ganzen Lebens"*, 272.

[4] Humboldt, "Ueber einen Versuch", 154. The original German quote reads: "Im allgemeinen Volkssinne… was unerreichbar scheint, hat eine geheimnißvolle Ziehkraft; man will, dass alles erspähet, daß wenigstens versucht werde, was nicht errungen werden kann."

[5] *Ibid.*, original German: "[…] waren selten fähig, die Aufmerksamkeit von dem schneebedeckten Gipfel abzulenken".

[6] *Ibid.*, original German: "[…] der ermüdende Gegenstand aller Fragen […] welche seit meiner Rückkunft nach Europa an mich gerichtet wurden".

[7] *Ibid.*, 165-166. Original German: "Wir sahen voraus, dass man uns in Europa oft um 'ein kleines Stück vom Chimborazo' ansprechen würde".

ated by the fact that Humboldt repeatedly had himself portrayed in front of the Chimborazo, for example, in 1810 by Friedrich Georg Weitsch, in 1812 by Karl von Steuben, and in 1859, the year of his death, by Julius Schrader (see figures 1, 2 and 3).

Humboldt also regularly used the Chimborazo as an image in his science, perhaps most notably in the "Tableau physique des Andes et Pays voisins", published in his *Essais sur la géographie des plantes* (1807) (figure 4). There, a cross-section of the Chimborazo and the Cotopaxi serve to make the vertical distribution of the vegetative and climatic zones visible that Humboldt had explored and measured, in the process connecting image and the written word in an imaginative way.

In view of the centrality that June 23, 1802 and the Chimborazo hold in Humboldt's life, one might ask what actually transpired on the day before the climb and whether it stands related to the climb itself. Do the events on June 22 and Humboldt's diary comments on that day shed a different light on the climb? In fact, as I will show, Humboldt's experiences on the day before the ascent focused his scientific interest in the Chimborazo, above all regarding his volcanic theory of the "terrain miné".[8]

Humboldt's travels on June 22 led first to Licán near Riobamba where he explores the origins of the northern Incan empire, hears of legends and meets the village's Indian chief. The trip then continues on to Santiago de Calpi directly at the foot of the Chimborazo. At present, a stone plaque attached to the cathedral facade reminds us of Humboldt's visit among other "Personajes ilustres" (figure 5). The occasion became a festive one; song and dance had been organized as Humboldt describes in his diary, including the tent-like space decorated for the event. Humboldt has some nice things to say about the colorful woolen cloth full of patterns that covered the walls and ceiling of the tent. Then, that leads to some comments on the industriousness of the Indios not only in Calpi but

[8] It is not surprising that Humboldt's attempt to scale the Chimborazo has attracted much research interest. To mention just some examples, *cf.* Mazzolini, "Bildnisse mit Berg"; Lubrich and Ette, "Versuch über Humboldt"; Schaumann, "Who Measures the World?"; Andress, "Alexander von Humboldt und Carlos Montúfar" and "Alexander von Humboldts Chimborazo-Aufstieg"; Nehrlich and Strobl, "Geologie, Zahnfleischbluten und Revolutionen"; and Pimental, *Testigos del mundo*. However, to my knowledge, no other scholar has taken the angle I am pursuing here.

generally in the province: "Regarding industry, the province of Quito is the Switzerland or the Holland of America. There are no do-nothings except for the whites".[9] If the "Indios" were only treated better, the weaving industry would blossom: "But alas, they are slaves, without liberty, without property and without tools!"[10] Both in Licán and Calpi, Humboldt's attention is first directed to the historical, mythological, artistic and social circumstances of the Indios, for whom he expresses great sympathy.

Regarding the Chimborazo climb, the further diary entry for June 22 now becomes relevant:

> In the morning we had been told of a small hill very near Calpi which nobody had talked about before and which, according to Indian legend, had "erupted" and had had volcanic explosions. We sought out the hill after eating. It is the Yanaurcu (black mountain), a quarter mile northeast of the village and southwest of the Chimborazo.[11]

A few "Indios" first lead Humboldt (and probably Bonpland and Montúfar) across a plain that is covered with porous volcanic stone. At the foot of the former volcano, they see the remnants of an artificially constructed cave: "A strong current of air emanates from there, and at a distance of two toises, you already hear a constant, subterranean and very loud roaring sound. This sound indicates either a hefty wind in the mountain or a large quantity of boiling water […] or a considerable river that forms a waterfall".[12] Since Calpi suffered from lack of water, a priest

[9] Humboldt, *Reise auf dem Río Magdalena*, *Teil I*, 217. French Original: "Quant à l'industrie la prov[ince] de Quito es la Suisse ou la Hollande Amérique. Il y'y a de fainéants que les blancs".

[10] *Ibid*., original French: "Mais hélas! ils sont de esclaves, sans liberté, sans propriété et sans instruments!"

[11] *Ibid*., original French: "On nous avait compté le matin d'une petite colline tout près de Calpi de laquelle personne n'a parlé et que selon la tradition indienne a reventado, a fait de fortes explosions volcaniques. Nous la visitâmes l'apres dîné. C'est Yanaurcu (montagne noire) à ¼ de lieue au nordest du village et au sudest du Chimborazo".

[12] *Ibid*., original French: "Il en sort un vent assez fort et déjà à deux toises de distance on y découvre un bruit souterrain continuel et très fort. Ce bruit indique ou un vent affreux dans l'intérieur ou une masse d'eau qui est en ébullition (comme à Sotará) ou une rivière considérable qui se précipite".

had tried to reach the subterranean river by digging a cave to it, an unsuccessful attempt due to the hard stone. In Humboldt's diary comments follow regarding the apparent disjuncture between the large amount of snow on the Chimborazo and the small amount of water in the rivers at and around the Chimborazo. Humboldt conjectures as follows:

> The water of the Chimborazo probably falls into subterranean caves, has formed such caves itself, and the roaring sound of the Yanaurcu indicates that the rifts are close to the earth's surface. Where does this water flow to? Doesn't it maybe dissolve into hydrogen when it gets into contact with acidic bases, and are the tremors felt in Pelileo, Ambato, Guano, Latacunga the result of this dissolving process.[13]

After these more immediate thoughts regarding his observations, Humboldt takes a larger view. To him, the whole region appears to be "un terrain miné".[14] The subterranean roaring sound is an example of the enormous cavernous spaces he suspects are below the mountains. Humboldt comes to the following conclusion:

> I believe that in principle the whole province from the Pichincha, from the Cotopaxi to the Tungurahua, Carihuairazo and the Sangay is nothing but one volcano, a collection of cavernous spaces in which an acidic material is fermenting. All of the highlands of the province can be seen as one mountain; what we call the Pichincha or Cotopaxi are only a couple of summits that crown this enormous range. This hugh volcano has several orifices, sometimes directing its material toward the Tungurahua, sometimes to the Cotopaxi. In one location, the Sangay, it is continually inflamed. At others it gets inflamed but finds no exit; tremors are the result that shake the whole range of the huge volcano.[15]

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[13] *Ibid*., original French: "Ces eaux de Chimborazo tombent donc vraisemblablement dans des cavernes souterraines, elles-mêmes en auront formé e le bruit de Yanaurcu indique que les creux est assez près de la croûte extérieure de la terre. Où court cette eau? No se décompose-t-elle pas souterrainement en gas hydrogène venant en contact avec des bases acidifiables, et l'effet de ces décompositions sont les secousses que l'on sent à Pelileo, Ambato, Guano, Latacunga …".

[14] *Ibid*.

[15] *Ibid*., 218. Original French: "Je crois qu'au fond toute la province depuis Pichincha, Cotopaxi à Tungurahua, Carihuairazo et le Sangay n'est qu'un seul volcan, un

Regarding this theory, Humboldt proceeds to provide a series of examples of how an eruption at one location had an effect on others. He then returns to the Chimborazo, which the local population sees as "very quiet"[16] because it doesn't seem to move during earthquakes and appears to have no crater. However, Humboldt doesn't buy that. He asks a series of rhetorical questions:

> The Chimborazo, so close to the Carihuairazo as an active volcano, is not supposed to have any fermenting material inside of it? The amount of water that leaks into it is not dissolving? In San Juan, so close to the southern slope of the Chimborazo, one often hears subterranean noise, and not even six nights ago, one heard here (in Calpi) […] a terrible roaring sound, followed by an earthquake […]. Perhaps the mass of the Chimborazo withstands the eruption, and perhaps the explosion continues underground? Perhaps the explosions heard under Riobamba belong to the colossus one sees as so quiet?[17]

In this part, Humboldt returns to the reality of the moment, that is to say, to their excursion to the Yanaurcu (see figure 6) which Humboldt identifies as a partially collapsed volcano:

> When we climbed to the top of it, we saw that, together with the Naguangachi situated to the north, it forms a single, semi-circular mountain because the part across from the plains of Tapia […] appears to have collapsed. In the

assemblage de concavités dans lequel fermente la matière acidifiable. Toute la partie élevée de la prov[ince] peut être regardée comme une seule montagne; ce que nous nommons Pichincha, Cotopaxi ne sont que plusieurs cimes qui couronnent cet immense dos. Ce grand volcan a plusieurs bouches, tantôt il dirige ses matières vers Tungurahua, tantôt vers Cotopaxi. Dans une partie, Sangay, il est constamment embrasé. Dans d'autres il s'embrase et ne trouve pas d'ouverture; alors il forme de secousses que ébranlent tout le dos de cet immense volcan".

[16] *Ibid*., original French: "très pacifique".

[17] *Ibid*, original French: "Chimborazo, situé si près du Carihuairazo, qui a été volcan enflammé, n'aurait-il pas de matière fermentante en son sein? Cette quantité d'eau qui s'y infiltrait, ne s'y décomposerait-elle pas? A S[an] Juan, situé tout près de la pente méridionale de Chimborazo, on entend très souvent des bruits souterrains et il n'y a pass ix nuits qu'on en entendit ici (à Calpi) […] un bruit formidable et suivi d'aucun tremblement de terre […]. Peut-être la masse du Chimborazo résiste-t-elle à l'éruption et la même, fait-elle des progrès par-dessous? Peut-être celle qui joua au-dessous de Riobamba appartient-elle à ce colosse qu'on croit si pacifique?"

> middle there is a canonical depression almost 20 toises [approx. 39 meters] deep, and in the middle of this depression rises a circular small hill that is lower than the surrounding mountain edges. You could be led to believe that it's the filled-in crater of the volcano, which Indian legend also confirms.[18]

Humboldt expands on the legend, and after making some observations concerning the nature of the rocks, he ends his diary entry for June 22.

Although Humboldt didn't necessarily write in his diary every day, instead often in intervals, it is clear that he nonetheless wrote the cited comments on June 22 since at one point he indicates: "in Calpi where I myself am writing".[19] To that extent it is also clear that Humboldt was thinking intensively about the volcanic activity of the region and that those thoughts accompanied him during the Chimborazo climb. One can conjecture as well that during the climb of the most dominant mountain in the region, Humboldt was also out to strengthen his theory of the "terrain miné". Was the Chimborazo a volcano?

In this sense he repeatedly notices the volcanic rocks of porphyry and pitchstone while ascending. At one point he remarks: "We had hardly gone a few steps when we came upon cell-like, porous rocks (of which some had burnt marks […])".[20] Later, during the climb along a ridge, we read the following passage marked with Spanish words: "The 'cuchilla' [ridge] we followed was covered by the same trail of large rocks like those from the 'reventación' [eruption] of the Pinantura or the Yanaurcu, or the Antisana. This similarity to undeniably volcanic and burnt material, which we encountered at every step, left no room for doubt that we were ascending on erupted stone".[21] The impassible crevasse mentioned at the

[18] *Ibid*., original French: "En y montant nous avons vu qu'il forme avec le Naguangachi, que est situé plus au nord, une seule montagne semicirculaire, car la partie opposée au llano de Tapia […] paraît écroulée. Il y a au centre un enfoncement conique de près de 20 t[oises] de profondeur, et au milieu de cet enfoncement s'élève un monticule exactement circulaire, mais plus bas que les bords. On devrait croire que ceci est le cratère comblé de volcan, aussi les Indiens l'affirment par tradition".

[19] *Ibid*., original French: "(à Calpi) où j'écris même".

[20] *Ibid*., 219. Original French: "A peine avancions-nous quelques pas que nous trouvâmes des roches celluleuses poreuses (dont les unes annoncent êtres brûlées […])".

[21] *Ibid*., 220. Original French: "La cuchilla que nous suivîmes était couverte des ce traînées de pierres telles que la reventación de Pinantura, de Yanaurcu… à Antisana. Cette ressemblance avec des effets d'éruptions incontestables et les matières brûlées que

outset puts an end to the immediate further scientific and volcanic observations of the Chimborazo. If they had reached the summit, it would have been a matter of further ascertaining the volcanic nature of the Chimborazo, as Humboldt states:

> However, it would be interesting to get to the summit in order to see whether it has a crater. Viewing the summit through a telescope, the thought loses probability. The summit is an even segment; you don't recognize any rocks there that rise as massive walls and surround the crater like you see them on the Cotopaxi and even, although less clearly, on the summit of the Tungurahua. But one shouldn't take the analogy too far. The summit of the volcano Rucupichincha, seen from Alto de Puengasi or Chillo, certainly doesn't indicate anything that looks like a crater.[22]

Referring once more to the impassable crevasse where the group of climbers got hung up, we read the following in Humboldt's diary:

> We were thus more than 150 toises [approx. 292 meters] short of the summit. We found porous, burnt mass four to five feet in length. There is no doubt that it comes from the summit since the series of rocks continues up in one piece. Thus there was a crater close to the summit that closed again […], the series of large stones extends under the snow cover all the way to the summit, and that's where the crater exists. These are all conjectures, but one cannot deny that the series of burnt stones we discovered at an altitude of 3036 toises [approx. 5917 meters] and saw another 40 toises [approx. 78 meters] further up make the summit a little suspicious.[23]

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nous trouvâmes à chaque pas ne nous laissent pas de doute que nous montions sur une reventación même."

[22] *Ibid*., 221. Original French: "Cependant il serait curieux d'être à la cime pour voir s'il y a une bouche. En examinant la cime avec le télescope l'idée perd de sa probabilité. La cime es un segment uni; on n'y reconnaît pas de ces rochers qui s'élèvent en murailles massives et qui bordent le cratère comme on découvre à Cotopaxi et même, quoique moins clair, à la cime de Tungurahua. Mais il ne faut pas trop compter sur l'analogie. La cime de Rucupichincha, vue de l'alto de Puengasí ou de Chillo, n'indique certainement rien qui fait soupçonner une bouche".

[23] *Ibid*. Original French: "El ne manquait donc plus que 150 t[oises] jusqu'à la cime. Nous trouvâmes des masses poreuses brûlée de 4-5 pieds de long, il n'y a donc pas de doute qu'elles viennent de la même, tel que leur suite dans une traînée continue. Il y a donc eu une bouche très près de la cime, que s'est refermée […], la traînée continue

While formulating his conjectures carefully, Humboldt is indicating here that the Chimborazo must once have been active. The attempted ascent may have failed, scientifically it was also not absolutely conclusive, but Humboldt did find enough signs regarding the former volcanic activity of the Chimborazo to further support his theory of the "terrain miné". As we now know, the Chimborazo is an inactive stratovolcano that was presumably last erupted around 550 B.C.[24]

Humboldt's thoughts on the "terrain miné" lead us right into the middle of one of the most important geological debates of the 18th and 19th centuries, a debate he was very familiar with, since his studies during the years 1791-1792 under the direction of the geologist Abraham Gottlob Werner (1749-1817) in the Bergakademie in Freiberg. Werner had propagated the theory of Neptunism (also called Diluvianism), which deduced the formation of the earth from sedimentation. Volcanos were seen only incidentally as burning coal seams. Plutonism, on the other hand (also called Volcanism), rests on the idea of the earth's formation by magma penetrating the earth's surface from below. Humboldt agreed first with his teacher and the Neptunists, but ended up siding with the Plutonists. In the process, the volcanos of the Andes had a strong influence on his opinions, many of which he had experienced in the "Avenida de los Volcanes" of South America, thus named by him. His development toward Plutonism can be seen very clearly in his comments on the day before the Chimborazo attempt. The scientific truth ultimately lies somewhere between Neptunism and Plutonism, for the earth's crust underlies continual change in which both endogenous and exogenous factors perform a role.[25]

Humboldt's theory that in principle there is one origin for the volcanic activity of the region he visited, is certainly not erroneous and was also propagated by the naturalist and volcanologist Moritz Alphons Stübel (1835-1904) at the end of the 19th century. Together with his volcanolo-

couverte de neige jusqu'à la cime même et c'est là qu'il u a un grand cratère. Tout cela ne sont que des probabilités, mais on n'ose nier que la traînée de roches brûlées que nous avons découvert à 3036 t[oises] de haut et que nous avons vu 40 t[oises] plus haut, rendent la cime un peu suspect".

[24] *Cf.* "Global Volcanism Program".

[25] Regarding Neptunismus und Plutonismus, *cf.* Riedel *et al.*, *Der Neptunistenstreit* and Simper, *Vulkanismus verstehen und erleben*.

gist colleague Wilhelm Reiß (1838-1908), he traveled in South American from 1868 to 1876 and made similar conjectures.[26] As we know today, the volcanic activity of the region results from a subduction of the Nazca tectonic plate moving east under the South American plate moving west. Through subduction, water and carbon dioxide are pushed downward, which leads to a process of liquifying rock material and setting it free as magma in order to rise to the surface and form volcanos. Humboldt's theory certainly does not stand in contradiction to subduction, although flowing magma is more complicated than he could have known back in his time.[27]

Humboldt's attempt to scale the Chimborazo has a number of spectacular aspects to it, especially in the context of his times. Nonetheless, it shouldn't be forgotten that such aspects were more a side effect of the event for Humboldt. A look at June 22, 1802 on the day before the Chimborazo climb, reveals how much the volcanic activity of the region gave wings to his scientific imagination and led to his theory of the "terrain miné". The Chimborazo climb that followed should also be seen in that light and how it served to confirm his theory.

[26] *Cf.* Stübel, *Die Vulkanberge von Ecuador*, 25ff.

[27] *Cf.* "Magma".

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Humboldt as Intelligence Agent? Circulating Scientific Knowledge, and Strategic Secrets, in Washington

Sandra Rebok

The active circulation of knowledge that Alexander von Humboldt practiced on a global scale, one of the main characteristics of *Humboldtean Science*, has frequently led both to questions about his right to make the information in his possession accessible to others, and to critical comments regarding the impact this knowledge had in other contexts than the initially intended. Such criticism applies to many different situations in his life. One debate, however, that has particularly raised attention, is the manuscript material that Humboldt found in the Spanish colonial archives in New Spain during his stay in 1803 and made available to the United States government in the spring of 1804, just after the Louisiana Purchase, when Jefferson was in need of reliable expertise. Still nowadays, this has an influence on the way the Prussian explorer is seen in Ibero-America, specifically in Mexico, though several insightful studies that have treated the debate from different angles.[1] As a recent inquiry into the perception of Humboldt has revealed, even today the idea of Humboldt as a "spy", who passed Jefferson important strategic information, persists within different parts of the population.[2] Including

[1] A detailed study of this controversy can be found in Labastida, "Humboldt, México y los Estados Unidos", 131-147. Also see Schwarz, "Shelter for a Reasonable Freedom", 169-182.

[2] This inquiry has been undertaken in the frame of the research project "Tras las huellas de Humboldt: Relaciones Culturales con América Latina", carried out in 2019

even more erroneous misconceptions about Humboldt "selling secret information" to the United States, or Jefferson being able to purchase the Louisiana Territory after receiving this material, still have been mentioned. Some people in Mexico actually claimed that the information passed to their northern neighbor had proved useful in the context of the American-Mexican War in 1846-1848, when Mexico lost a large part of its territory. All these accusations of course, are historically absolutely wrong and can easily be refuted, however, they have considerably affected the way Humboldt has been perceived from various sides.

This justifies our taking a closer look at the larger debate, and at the kind of circulation of information that the Prussian explorer promoted during his life, offering a different perspective with regard to his position and the importance of the information he had at his disposal. The commemoration of Humboldt's 250th anniversary, in 2019, should be seen as a good occasion to shed light upon this particular aspect of *Humboldtean Science*, in order to refresh the discussion about some of the repeated accusations raised against him. The key questions we need to focus on in this context are: What information exactly did Humboldt pass to the United States? How useful was it for the young democracy? And even more importantly, what was Humboldt's own justification for freely passing on his knowledge, both in this particular case, and in other similar situations?

Circulating any kind of information in a context of rival nations, is a delicate endeavor, even more so if it is geographical, statistical or cartographic information, that can clearly be used by one side in favor of its own political or strategic interests. The purchase of the Louisiana Territory, signed in July 1803, when the United States acquired a region with an extent of 2 140 000 square kilometers from France for the modest amount of fifty million francs, without having precise geographical information about this territory, was definitely such a situation (figure 9). Therefore, the fact that during his visit in Washington Humboldt generously complied with Jefferson's request for specific data and provided material

for the German Institut für Auslandsbeziehungen, in the frame of their research program "Culture and Foreign Policy". The results of this project have been published in Spanish and German: Rebok, *Wahrnehmung Humboldts in Lateinamerika*, 2019; and also Rebok, *Percepción de Humboldt en Iberoamérica*, 2019.

regarding the disputed territory, raised much discussion. While some people argue that the Prussian traveler can be seen as an agent for the Spanish empire, or at least as an instrument for their colonial administration in America, in this context, in fact, others see him as a traitor to Spain, who favored the interests of the young United States. Obviously the two accusations are not compatible: Humboldt was neither a spy for a young American nation nor an agent for the colonial interests of Spain.

However, the questions behind these allegations —concerning the legitimacy of the free circulation of knowledge and the final use of it— are indeed perfectly reasonable. Was Humboldt conscious of the impact that the information he provided could have in other aspects than purely scientific concerns? What were his motives for passing material on the Louisiana territory from the Spanish archives to Jefferson's administration? Jefferson was known for his expansionist views, and it was obvious what the Louisiana Purchase meant in this context. Humboldt must have been well aware of the conflicting interests with Spain, and that under these circumstances all his scientific knowledge was also political knowledge. Should we then understand Humboldt's generosity regarding the Spanish material as taking sides in this conflict? Was it disloyalty against the country that had made his expedition possible, or was he just out for his own mission of "science and exploration", using any opportunity offered to him?

Jefferson in need of intelligence on the Louisiana Territory

A closer look at these particular historical circumstances helps us to understand why the Prussian's visit to the United States came at a perfect time for Jefferson: Territorial doubts regarding the Louisiana Purchase were the most critical foreign policy problem the President was facing in 1804; hence the knowledge Humboldt had gathered in Spanish archives on both sides of the Atlantic promised to be of great value him. Jefferson's concern, of course, was to maximize the extent of his purchase and therefore he requested any data that would justify his territorial claims. Thus, only a few days after his first meeting with Humboldt, he requested precise information on the frontier region between New Spain

and the United States. He needed to be certain, Jefferson said, whether the western border of this territory was the Sabine River, as the Spanish claimed, or the Rio Grande, which he called the North River. In addition, he also wished to be informed by his guest about the composition of the population and the potential existence of any mines in this area.[3]

During their meetings Humboldt thus generously complied with Jefferson's requests and the President seemed to be content with the information he had obtained from his European guest. Jefferson mentioned in a letter to Caspar Wistar "I have omitted to state above the extreme satisfaction I have received from Baron Humboldt's communications [...] the treasures of information which he possesses are inestimable and fill us with impatience for their appearance in print".[4] Jefferson's enthusiastic comment invites us to take a closer look at the kind of knowledge that his guest was able to provide. What were these "treasures of information" he referred to? Besides the personal conversation they had on the different topics the President was interested in, Humboldt provided him with an extract of his early work on New Spain called *Tablas geográfico-políticas*, translated into French, and added a two-page summary specifically on the border region of the Louisiana territory. In addition to that, he lent the U.S. government a copy of his important map of New Spain and the American Southwest, his *Carte Générale Du Royaume de la Nouvelle Espagne*, which was based on cartographic material that he had been allowed to access in the colonial archive in Mexico (see figures 10 and 11).

Extract of the *Tablas geográfico-políticas del Reyno de Nueva España*

Shortly before his departure from Mexico City to Veracruz, Humboldt drafted his report *Tablas geográfico-políticas* at the demand of the viceroy José de Iturrigaray, in return for the generous support he had received during his stay in the city of Mexico. This text, his only work written in

[3] Thomas Jefferson to Humboldt, June 9, 1804. In Schwarz, *Alexander von Humboldt und die Vereinigten Staaten von Amerika*, 92-93.

[4] Jefferson to Caspar Wistar, June 7, 1804. In *Thomas Jefferson Papers*, 548.

Spanish,[5] was the nucleus for his later extended regional description on New Spain. It contains a considerable amount of descriptive material as well as precise numerical data, often in a tabulated form, concerning the physical expansion of the viceroyalty and its political, economic and administrative structure, as well as on the different components of its population. For each of the different *provincias* and *intendencias* of the viceroyalty, Humboldt offers detailed information with regard to the ethnic groups of residents, the number of villages, parishes, missions, *haciendas*, animals and the type of agricultural produce developed.[6] Occasionally, he enriches this material with data regarding the United States for comparative purposes. Not surprisingly, he dedicates considerable space to the description of the most important economic revenue of New Spain —the mining conditions— presenting specific data such as the annual extraction of certain mines in different years. Several manuscript copies were made of this text, and in 1807 some extracts of it, then were published.[7] However, Humboldt never published his *Tablas géografico-políticas*, nor would he prepare an updated version of it, given that with the publication of his *Political Essay on New Spain* during the years 1808-1811, much of the precise data offered this text soon became obsolete.

Interestingly, what the less known is the fact that the French translation of this report that he prepared for the American President was not exactly the same text he had previously presented to Iturrigaray. A thorough comparison of both documents reveals that it was rather a summarized version of certain points that he considered to be of interest to Jefferson,[8] by modifying the order of the information provided and omitting or adding data exclusively for this purpose. Among these differences, for instance, is a reference Humboldt made to the possibility of

[5] "Tablas geográfico-políticas del Reino de Nueva-España", 635-657. Also see Leitner, "Humboldt's Works on Mexico"; letter Humboldt to José de Iturrigaray, January 3, 1804. Edition by Charles Minguet, *Cartas Americanas*, 125-126.

[6] From importance with regard to the American West are "Intendencia de Sonora", the "Provincia del Nuevo Mexico", the "Provincia de la Antigua California" and the "Provincia de la Nueva California".

[7] There were published extracts of the *Tablas geográfico-políticas* from May 1 to 31, 1807, in the Mexican journal *Diario de Mexico.*

[8] See translated text published in Schwarz, *Humboldt und die Vereinigten Staaten*, 485-495.

an interoceanic canal, which is not in the original Spanish version of the text. Apparently he wished to direct Jefferson's attention to this point.[9] Another modification to be found there is a comment on slavery in New Spain with statistical data, pointing to the low number of slaves: only 7 000, compared to Peru where there were up to 40 000. In the original version of the text he used different data, focusing on the number of black people and not specifically slaves. Since Humboldt, as a fierce opponent of slavery, did not openly discuss these pressing questions with Jefferson, the slaveholder, it is revealing that he added this comment expressly in the version of the text aimed at the United States.

Summary concerning the Louisiana territory

The document written in French with the short title "Luisiana (sic)" is an answer to the specific question that Jefferson had posed to his visitor, regarding its size, its population and climate, along with information concerning agriculture, commerce and its possible geological exploitation. Humboldt provides his information not as an elaborated text, but rather in the form of raw material, with some additional explanations or personal reflections.[10] Of particular interest in this context is his comment about the political value that he attributed to the Louisiana territory before its acquisition by the United States: he felt it to be "almost zero", given that it was the most deserted part of a very sparsely populated *intendencia*. Also, the coast is described in a negative light, lacking any known port, with only a few little islands inhabited by independent Indians. As for the mineralogical situation of the territory, he affirmed that no mines had ever been exploited. He thus concludes his report with a less optimistic view regarding its future under Spanish dominion: he did

[9] *Extrait des Tables estatistiques del Reyno de Nueva Espana presentadas al Excelencia Senor Virrey Don Josef Yturrigaray en Enero 1804 par Frederic Alexander Humboldt*, in Schwarz, *Humboldt und die Vereinigten Staaten,* 486 (see from this text foot note 15, p. 494).

[10] Document published in Schwarz, *Humboldt und die Vereinigten Staaten*, 484-485; and *The Papers of Thomas Jefferson*, vol. 43, 555-557 (which includes an English translation of the original French text). I would like to thank William B. Bland and Martha J. King at the Jefferson Papers Project for facilitating me access to this document before print.

not see much motivation for settlers in New Spain to move to this area, nor it was a favored place for the Indians, who preferred to live further north. In other words, Humboldt described it as ideally suited for settlement by the United States, and this, coming from an independent expert, was indeed a very valuable assessment for Jefferson. This text answered the President's most pressing concerns regarding the newly acquired territory. More important though was its intrinsic message, pointing to the potential value the vast territory that Jefferson had just purchased for the future of his nation could acquire under a wise administration.

Carte Générale du Royaume de la Nouvelle Espagne

While Humboldt's report *Tablas geográfico-políticas* can be seen as a proof of his willingness to produce useful knowledge for the colonial administration in America, the preparation of his famous map is an example for his collaboration with the scientific institutions in the New World. It was Fausto de Elhúyar, the General Director of Mining in New Spain, who had asked the Prussian mining expert to elaborate a map to indicate the locations of the different mines in New Spain. Humboldt thus combined his own measurements, taken in those regions of the viceroyalty that he himself had visited, with geographical data from several previous Spanish explorers and presented the result under the title *Carte Générale du Royaume de la Nouvelle Espagne*. Due to the access he had to first-hand cartographic material in Spanish archives in both hemispheres, the map was unusually well documented for its time. It marks an important step towards the application of modern cartographic methods to the mapping of North America, and had a considerable influence on the development of American cartography in the first half of the nineteenth century. Before his departure from Washington in 1804, he generously lent his own copy of that map to the Secretary of State's office, under the condition that the information could be used but the map should not be made public, since he intended to publish it himself shortly after his return to Europe. Hence, before leaving the country, he claimed this important document back.

The outstanding value of the map lay in the fact that it represented a

synthesis of most of the important cartographic material that had been produced concerning North America. The challenge, however, was that he was well aware of the deficiencies and the lack of precision in some of these sources. He could, therefore, not use them without questioning their reliability, comparing and re-calculating the measurements himself. He took the data primarily from eighteenth century Spanish mili tary surveyors, such as Pedro de Rivera y Villalón, Nicolas de Lafora, Manuel Agustín Mascaró and Miguel Costanzó. Among these, he regarded Costanzó as a particularly valuable source of information, given that for thirty years he had been collecting all types of geographical knowledge of this vast kingdom, and had been able to rectify the geography of Sonora.[11] Later on, in his *Political Essay on New Spain*, where he offers an extended description of each of the maps published in his *Atlas of New Spain* (1808-1811), Humboldt provides much detail of how he compiled this map, including lists of all his primary sources. This is significant additional information that is rarely found for most maps published in the eighteenth and early nineteenth centuries. Humboldt was aware of its value and seemed to be satisfied with the result. He states in his *Essay on New Spain*:

> I flatter myself that, notwithstanding great imperfections, my general map of New Spain has two essential advantages over all those which have hitherto appeared [...] It exhibits the situation of three hundred and twelve mines, and the new division of the country into intendancies.[12]

Value of Humboldt's expertise for Jefferson's administration

Besides the specific information that Jefferson's administration needed in spring of 1804, much of the enormous amount of knowledge the Prussian explorer would elaborate and publish after his return to Europe, was of great value for the strategic concerns of the United States government. Whereas the material Humboldt was able to supply during his

[11] "Geographical Introduction", lxxiv. For more information on Costanzó see Moncada, *El Ingeniero Miguel Constanzó*, 1994.

[12] Humboldt, *Political Essay on New Spain*, vol. 1, lxiv.

visit, was adapted to the specific requests of the government concerning the disputed claim for the Louisiana territory —information provided in a raw form exclusively to the Spanish authorities in Mexico and to his contacts in Philadelphia and Washington—, his later publications were directed to any interested reader. After decades from his expedition, his publications still tended always to be up-to-date, enriched with additional material that had been forwarded to him by his numerous American correspondents. In particular, the information concerning New Spain, elaborated in the course of the following years, would prove to be very useful to the United States as they were reaching out to the Pacific, and scientific reconnaissance of the area became a national task.

Just after finishing his five-year exploration of America, with his specific knowledge on the Spanish territories in North America, Humboldt would have been of inestimable value for the preparation of the first government exploratory campaign into the West, the Lewis and Clark expedition (figure 12). Yet, the timing proved to be unfortunate: on 14 May 1804, Meriwether Lewis, accompanied by a group of thirty-three men, set off for St. Charles, Missouri, where they met with William Clark. One week later the entire group, now forty men, set out from St. Charles to travel along the Missouri River in the direction of the Pacific. This was just one day after Humboldt's arrival in the United States on May 20.

However, this was just the beginning of a series of United States government organized explorations of the American West. Between 1804 and 1807 alone, there were four other main ventures into the Louisiana territory commissioned by President Jefferson: while Lewis and Clark were destined to travel through the northern regions, Zebulon Pike explored the Rocky Mountains and the southwestern areas; Thomas Freeman and Peter Custis traveled along the Red River; and William Dunbar and George Hunter to the Washita River and the hot springs in what is now Arkansas and Louisiana (figure 13). All these early Jefferson-era expeditions would provide important knowledge about the new frontier region and a better understanding of the extent of Spanish control in those areas.[13]

[13] Regarding those early United States promoted expeditions, see Ronda, *Thomas Jefferson and the changing West*; Ronda, *Beyond Lewis & Clark*; and Harris and Buckley, *Zebulon Pike, Thomas Jefferson*.

Given Jefferson's occupation preparing these scientific ventures at the moment of Humboldt's arrival to the country, one might wonder whether the geographical and statistical material he facilitated proved to be of great value for the President's broader goals regarding the expanding nation. What impact did it then have on the course of the events in the United States after 1804? Was it possible to convert it into actionable intelligence for taking practical decisions? If so, how did this new information dovetail with the knowledge the United States government would gain from other sources?

Verification of intelligence provided by Humboldt

At the moment, when Jefferson was in need of accurate data from a reliable and independent source —both for the dispute on the uncertain boundaries with New Spain and the preparation of the first American expeditions into the Louisiana territory— there were not many people the President could fully trust. How delicate this situation was for Jefferson is revealed by his appointment of his private secretary Meriwether Lewis to the position of leader of the first expedition, in spite of the fact that he was not the most obvious candidate for this enterprise, and needed to be trained before starting the expedition. At a moment when the President was losing confidence in several Army officers, he preferred to rely on his personal secretary. As a matter of fact, this was a problem for Jefferson, who needed to receive unbiased intelligence regarding the Spanish territory, preferably from a source that was not connected to any of his other informants. Precisely at this moment, Humboldt comes into play: The Prussian was considered the most trustworthy authority on geographical information about the Spanish possessions. His profound knowledge on the Spanish possessions was based on a wide range of original manuscripts and cartographic material taken from Spanish archives on either side of the Atlantic. Given that it was not biased by any personal or strategic interest, and that he had no agenda of his own about the political use of the material provided, thus he seemed the perfect source of information.

Nevertheless, due to his instinctive political caution, Jefferson would still not just use the knowledge provided by his Prussian guest without questioning and evaluating it. This was a politically very delicate matter, ann too much it would depend on the accuracy of this material, so he had to check its reliability carefully before using it. Jefferson's concerns regarding accuracy in this sense does not refer to the quality of Humboldt's work, nor to his intentions, but to the original sources on which the Prussian had based his reports. Jefferson's cabinet needed to compare it with the material provided by their other sources. Hence, shortly after Humboldt's departure, the object of a cabinet meeting held on July 3, 1801, as Jefferson put it to Gallatin in his note of that day, was "to take an ultimate view of our instructions to our negotiators in Spain, and chiefly to decide whether any later views and particularly those from Baron Humboldt should occasion alterations of opinion".[14]

Jefferson's main source of information on Texas and northern New Spain, at that moment, was James Wilkinson, a rather dubious character who was associated with several scandals and controversies and, unsurprisingly, after his death, it was discovered that he was a paid agent by the Spanish Crown (figure 14).[15] Though in 1804, these circumstances were not yet known to the President, Wilkinson was already regarded as rather untrustworthy. The fortunate circumstance of the Prussian's arrival thus made it possible for Jefferson to compare Wilkinson's reports with the material handed over by Humboldt.

Luckily for Jefferson, the data facilitated by Humboldt seemed to confirm the veracity of Wilkinson's report on the position of the Red River. He must have been relieved to reach this conclusion: once the value of the general's information on the West was confirmed by the famous explorer, knowing that the Red River offered a clear route towards the Pacific, the planned expedition to explore the river to its source, then could be initiated.

[14] Jefferson to Albert Gallatin, July 3, 1804, *The Papers of James Madison Digital Edition*, 2010. Original source: *Secretary of State Series*, vol. 7 (April 2 to August 31, 1804).

[15] Regarding James Wilkinson, please see Foley, "James Wilkinson", 185-219; Linklater, *An artist in treason*; and Narrett, "Geopolitics and Intrigue", 101-146.

Jefferson's other sources of information

However, Jefferson also had other connections for the intelligence information he needed. Shortly after receiving it from Humboldt, an interesting chart was prepared for the President, plotting the findings of various travelers who had described particular towns and missions in Spanish Texas and in the neighboring Louisiana territory.[16] Obviously Humboldt is one of the people in the chart; other informants were the explorer John Sibley, the French naval officer and cartographer Pierre Marie François Pagès, and the horse-trader and freebooter Philip Nolan. This document reveals the deep concern of the government for a more precise understanding of the boundaries of the territory acquired. While seeking to maximize their territorial claims, the United States needed to be well prepared for any border disputes with Spain. In separate columns the chart lists information with regard to different locations such as San Pedro de Texas, San Antonio, Nacogdoches, Laredo and the Province of Rio Grande, in order to facilitate easy comparison between the sources.

In Humboldt's column there is a blank space regarding several of the places listed, which means that Jefferson seems to have received more information on these areas from the other three sources. In some cases, he was able to compare the data facilitated by the Prussian with the material he had obtained from the other explorers. Occasionally erroneous data in his column, is rectified with remarks, for instance indicating that below Texas were the villages of Revilla, Mier, Camargo, and Reinosa, correctly identified as being located on the Rio Grande's western side. According to Humboldt, it was noted that the location of Laredo, on the Rio Grande's east bank, was not in Texas, but belonged to the province of Nuevo Santander. The document has Jefferson's endorsement on the back, but it appears to have been prepared by a Treasury Department clerk and then passed to Albert Gallatin, who enclosed it in a letter sent to the President in November 1805. He told Jefferson "I find amongst my papers a view of the Spanish ports in Texas taken from Pages, Sibley, Nolen, & Humboldt [...] Perhaps you may find something in it to add to

[16] Louisiana and Texas Description (chart) [1804], Jefferson Papers, LC. http:// hdl.loc.gov/loc.mss/mtj.mtjbib014179

your notes".[17] This tells us that the document was not drafted until 1805: it must have been prepared after the explorer's report.[18]

The important conclusion from this chart, however, is that Humboldt was not Jefferson's only provider of geographic or geopolitical knowledge on these areas. Over the years the American statesman would use various channels to obtain the data he needed, among them, travelers, private merchants, business leaders, and military engineers. Important providers of intelligence were also the American envoys in Spain, such as William Carmichael, who had obtained the map of South America for him, and William Short.[19] Also Charles Pinckney, minister to Spain from June 1801 until October 1804, during the time of the Louisiana purchase, kept him informed about the situation on the Iberian Peninsula and in the Spanish interests in America.[20] Given his fame, the Prussian was just the most prominent of his sources and was therefore under the spotlight, while some of the others operated rather in the shade. In addition, the document also gives proof that Jefferson did not simply use information from his visitor without checking it against other data. Being too distrustful to rely on one source only, he always tended to triangulate his sources and information. In this sense Humboldt served two purposes: he provided unknown firsthand information while he also confirmed intelligence that the United States government already had.

In any case, we should realize that the information passed to the American President in 1804 was much less precise than what Humboldt would publish only a few years after his return in his *Essay on New Spain* (1808-1811) (figure 15). From that moment on, all the information was freely accessible, to all governments as well as to private economic interests. Thereupon, neither the strategic pursuits of the United States in

[17] To Jefferson from Albert Gallatin, November 21, 1805. The Founding Era Collection, Founders Early Access. http://rotunda.upress.virginia.edu/founders/default.xqy?keys=FOEA-print-04-01-02-2676.

[18] Information generously provided by Martha J. King and William B. Whitley, Associate Editors at the Thomas Jefferson Paper, Princeton University Library. Here he refers to explorer John Sibley, the French naval officer and cartographer Pierre Marie François Pagès, and the horse-trader and freebooter Philip Nolan.

[19] Coe, *The mission of William Carmichael to Spain*.

[20] See for instance a long letter: Charles Pinckney to Thomas Jefferson from May 24, 1802, *The Papers of Thomas Jefferson*, vol. 37 (2010): 494-502.

the context of the Texas Revolution in 1835-1836 nor the United States invasion of Mexico in 1846-1848, could be based on any of the data he had provided to Jefferson in 1804. Most of it would have been long out of date by that time.

Science without borders

Humboldt's concept of science beyond the borders of nations is not difficult for us to understand from the perspective of today. But how was it seen in his own time? Had he discussed with the Spanish authorities the future use of the knowledge produced during his expedition? We might be inclined to think that the Spanish authorities would have been aware of the fact that this was not a kind of *Grand Tour* for Humboldt, the typical form of travel for aristocratic or wealthy young men at the time. This voyage was clearly designed as an extensive and ambitious expedition to further scientific knowledge. It was thus to be expected that the information extracted from the Spanish archives would be used by him in the context of his project. Spanish officials might still have judged the possible gains from Humboldt as being greater than the potential loss of control over the information. It was not just generosity towards the Prussian explorer that made them open the doors of their colonial possessions, but rather a mutually beneficial agreement: Their major expectation was to gain solid expertise from Humboldt regarding the mining situation in the Spanish colonies. While his explicit task was to report back to the main scientific institutions in Madrid and enrich their collections with new material, it was also hoped that he would inform the world about the important contribution of Spain to the progress of knowledge.

Humboldt for his part fulfilled this expectation. In various ways the Spanish Crown received what it had hoped for: the famous scholar repeatedly praised the achievements of Spanish science, highlighted the efforts made by the government to promote scientific progress, and stressed the importance of the numerous scientific endeavors that were undertaken. He also gave great credit to the work carried out by the first chroniclers over the centuries, whose contribution had been disparaged by other nations, reflecting the generally negative attitude towards Spain

in the context of the *Leyenda Negra*. This was undoubtedly perceived very positively in Spain. The benefit to Spain of Humboldt's work can also be seen in the form of specific reports requested by the colonial administration: The Viceroy of New Spain had commissioned him to compile the existing archive material on New Spain into his *Tablas geográfico-políticas*, while the director of the *Real Seminario de Minería* had asked him to produce his *Carte Générale* indicating the locations of the mines in New Spain. Other than the explicit requirement from the Spanish Crown to send the botanical and mineralogical collection, gathered in America to the Royal Botanical Gardens and the Museum of Natural Sciences in Madrid, these were the most important products of his expedition prepared explicitly to comply with the expectations of the authorities. The description of traditional halite mining he prepared during his visit to Zipaquira, Colombia, in August 1801, at the request of the Viceroy of New Granada Pedro Mendinueta y Múzquiz, also falls into this category.[21]

However, Iturrigaray's response when Humboldt handed over his text *Tablas geográfico-políticas* in January 1804, was rather reserved: he acknowledged the Prussian's profound knowledge and expressed his gratitude for this study, which he considered useful for the government of New Spain. That was all. He did not indicate that he had any intention to make the information public or accessible to others.[22] However, this was clearly not what Humboldt had in mind. His idea was not to have his work stored away in the archives of the Spanish colonial administration, for such a purpose he would not have prepared the document. Rather than conceiving the idea of knowledge as limited to the possession of one nation for the sake of its own strategic interests, Humboldt believed that everyone was entitled to have access to what he considered to be "world knowledge". Although he was aware that Spain would prefer to handle this differently, so that it was not the sole criterion that would have an impact on his actions. For him, the progress of science and the application of knowledge for the betterment of humanity was a much more significant goal. Humboldt can therefore be considered neither as

[21] Humboldt, *Memoria razonada de las salinas de Zipaquirá*.

[22] José de Iturrigaray to Humboldt, January 1, 1804, in Moheit, *Humboldt. Briefe aus Amerika*; Elias Trabulse, "El destino de un manuscrito", 14.

an instrument of Spanish policy nor as an agent for American interests, although both nations aimed to make use of him. Nor was it naivety from his side to assume that the knowledge produced by him would not also be used in other contexts than intended by him, nor was it an egotistic striving for power (or carelessness) that made him freely circulate the results of his work, it was a different understanding of science.

It is also important to notice that apart from the short text on Louisiana, Humboldt passed nothing to Jefferson that he had not previously provided to the Spanish administration. Humboldt had complied carefully and thoroughly with the requests that were tied to his travel authorization, however, he would not allow the Crown to control the circulation of the knowledge he had produced. He had undertaken his expedition for the advancement of science and his firm conviction was that knowledge needed to be in constant movement through the exchange and comparison of data. And he was free to do so. This is one of the main differences between Humboldt and the work of the Spanish explorers in the New World: whereas the latter were obliged to put the results of their work entirely at the disposal of the Crown for its exclusive use, the Prussian explorer spared no effort or cost to create and disseminate knowledge that was open to everyone.

Humboldt dedicated his entire personal wealth, the inheritance from his parents, to the exploration voyage and the publication of its results. Moreover, he used his networks to actively further their translation into several languages, which he tended to promote and control himself. In this sense Humboldt anticipated what today we understand as *open science*: This was to what devoted his time, his fortune and his health —not to keep the information to himself or to store it in archives. In many ways the generous circulation of knowledge Humboldt practiced, beyond all forms of border, was rather unusual for his time, given that few people were in the position to do so. Today we should be able to understand that it was an integral component of *Humboldtean Science*, a way of connecting knowledge and connecting scholarships, but not a form of taking political sides. His approach thus needs to be re-assessed accordingly from this perspective.

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Curating Forgotten Collections. Lorenzo Boturini's Museo Histórico: The Role of Alexander von Humboldt and Other Collectors

Viola König

> Caminé en varias Provincias en demanda de unos indios, que tenían fama de saber las cosas de la Gentilidad, pues los halló desnudos de toda verdad histórica, y llenos de errores, por lo que con el aspecto de Viejos engañan á los Historiadores Europeos, que demasiadamente credulos se fian en sus canas.
>
> Lorenzo Boturini de Benaducci (1702-1751).[1]

Among the earliest objects and documents from Mesoamerica sent to Europe, were a few pre-Columbian codices, which survived the Spanish burnings of native books during and after the conquest. With the exception of the Columbian Codex, housed today at the Biblioteca Nacional de Antropología e Historia in Mexico City. Today the prehispanic codices are all distributed over Europe, for example the famous Dresden and Vienna codices. The Borgia Codex, housed today in the Vatican's Apostolic Library, was rediscovered in 1805 by Alexander von Humboldt (1769-1859) among the effects of Cardinal Stefano Borgia. Humboldt did understand the value of what he had found, because he had just come back from Mexico in 1804, bringing with him 16 fragments of early colonial manuscripts in the pre-Columbian style. His acquisition was the result of an early network of local collectors and antiquarians in the late colony

[1] Boturini, *Idea de una Nueva Historia General de la América Septentrional*, 116; Thiemer-Sachse, "El 'Museo histórico indiano' de Lorenzo Boturini Benaduci, 5.

of New Spain, such as Antonio de Leon y Gama (1736-1802) and Father José Antonio Pichardo (1748-1812). However, Humboldt did not arrive unprepared to Mexico. Before he started his journey to South America, he had met the Spanish historian Juan Bautista Muñoz (1745-1799) in Madrid, who probably referred to Lorenzo Boturini Benaducci's work *Idea de una Nueva Historia General de la América Septentrional*, published in 1746. He might actually have asked Humboldt to look for the remnants of a collection of some 160 original manuscripts and several hundred copied documents that Lorenzo Boturini (1702-1753) had amassed for his *Museo Histórico Indiano* after 1738.[2] Sadly, Boturini was arrested in the Mexican capital in 1743, and his collection was confiscated by Viceroy Pedro Cebrián y Agustín. To make matters worse, Boturini was expulsed from Mexico and sent to Spain after eight months in prison.[3] Boturini was an Italian historian and antiquary who had spent eight years traveling through New Spain assembling a vast collection of paintings, maps, manuscripts and native codices, mainly in Central Mexico, which originally had belonged and been used by the descendants of the Aztec rulers.

> Through the good graces of the Jesuits of the Colegio de San Pedro y de San Pablo in Mexico City, Boturini had access to and eventually both copied and in part acquired the rich trove of indigenous documents left to the college by Carlos de Sigüenza y Góngora (1645-1700) at his death. Sigüenza y Góngora served as the executor of the estate of his friend and protégé, don Juan de Alva y Cortés Ixtlilxochitl (died 1684), cacique of San Juan Teotihuacan […] son of historian don Fernando de Alva Ixtlilxochitl […] Sigüenza y Góngora received from don Juan the manuscript collection that he had inherited from his father, don Fernando. Through his mother, doña Ana Cortés, don Fernando was a great-great-great grandson of Nezahualpilli.[4]

As mentioned by himself, Boturini got his manuscripts elsewhere, which explains why Humboldt acquired a tribute list from Tlapa, Guerrero:[5]

[2] Glass, "The Boturini Collection", 473-486.

[3] Brito *et al.*, *Códice Humboldt Fragmento 1 (Ms. amer. 2) y Códice Azoyú 2 (Reverso)*, 19.

[4] Douglas, *In the Palace of Nezahualcoyotl*, 17-18.

[5] Today known under the name of "Códice Humboldt Fragmento 1 Ms. amer. 2" at the Staatsbibliothek Berlin, and "Códice Azoyú 2 Reverso" at the Biblioteca Nacional

> I had to travel great distances, guessing and asking: and with marked constancy, I never abandoned these undertakings; despite two years having passed without being able to obtain at least one map, nor see any manuscript, until, with the favor of heaven, the road opened to me and not only did I achieve what is expressed in said catalogue, but I knew that I could still wait for more material.[6]

During his eight months in prison, Boturini managed to write down a catalogue of his *Museo Histórico Indiano*, which was to become later a most important source in the tracing and recovering of the collection. However, it remains a secret, what kind of resources Boturini had in his hands in order to lay down all the precise details included in his catalogue.[7]

Humboldt, who had searched for the Boturini Collection in Mexico City, was shocked when he saw the physical remnants in a "diminished and in poor condition, in a basement of the viceregal palace".[8] In his *Vues des Cordilleres, et monumens des peuples indigènes de L'Amérique* published six years after his return to Berlin, Germany, Humboldt remarks:

> The majority of the Boturini manuscripts, those that were confiscated in New Spain, had been torn apart, robbed, and dispersed by persons who ignored the importance of these objects: what actually exists in the viceregal palace barely consists of three *legajos* (bundles of documents), each one 70 cm square by 50 in height. They are located in one of the most humid rooms of the ground floor from.[9]

However, in his personal diary he uses more radical words to describe the situation, ending up recommending the remaining manuscripts to be sent to Madrid for public showing, or even to London for sale at a good

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de Antropología e Historia México D.F. Faksimile, published by Brito, Baltazar, Gerardo Gutiérrez and Viola König, *Códice Humboldt Fragmento 1 (Ms. amer. 2) y Códice Azoyú 2 (Reverso)*.

[6] Boturini, *Idea de una nueva historia*.

[7] Glass, "The Boturini Collection", 473-486. Thiemer-Sachse, 12, 13.

[8] Brito *et al*., *Códice Humboldt Fragmento 1 (Ms. amer. 2) y Códice Azoyú 2 (Reverso*), 29.

[9] Humboldt, *Ansichten der Kordilleren und Monumente (Vues des cordillères*), 108. Thiemer-Sachse, footnote 16 provides full text as recorded in Humboldt's diary.

price.[10] As "a measure of the negligence and low esteem that Colonial authorities held for indigenous works", Boturini collection was passed over to several owners.[11] On its way it got split, integrated into other collections, but some manuscripts were also copied and the copies distributed even outside Mexico.

Among the Mexican institutions and individuals holding parts of the Boturini Collection were the Escribanía de Gobierno (1743-1745), the University (1771), the Secretaría de Cámara del Virreinato (1787), Fray Manuel de Vega (1790), the Secretaría de Cámara (1795), the Secretaría de Estado y Relaciones (1821), the Museo Nacional (1826) /Archivo General (1823).[12] However, when Humboldt arrived to Mexico in 1803, a large part of Boturini collection had already been "secured", meaning tolerated, acquired semi legally by private individuals, namely Mariano Fernández de Echeverría y Veytia, whose legacy ended up in the possession of the Mexican astronomer Antonio de León y Gama (1735-1802), and after his death was passed to the reverend Padre José Pichardo (1748-1812) of the Church of San Felipe Neri. The terms of acquisition by Humboldt are not entirely clear, because one hand Humboldt makes us believe that he purchased the manuscripts on an auction from León y Gama's heirs,[13] and on the other he says:

> The richest and most beautiful collection [of hieroglyphic paintings] of the capital is, currently, that of Don José Antonio Pichardo, member of the San Felipe Neri Congregation […] Father Pichardo has sacrificed his small fortune to reunite many Aztec paintings or to make copies of those that he could not acquire; in addition, his friend Gama, author of many treatises on Astronomy, has bequeathed to him all that he possessed of the most precious hieroglyphic manuscripts.[14]

[10] Humboldt, *Reise auf dem Río Magdalena*, 330-331; Thiemer-Sachse, 21.

[11] Brito *et al. Códice Humboldt Fragmento 1 (Ms. amer. 2) y Códice Azoyú 2 (Reverso)*, footnote 21.

[12] Glass, "The Boturini Collection", 475.

[13] Humboldt, *Ansichten der Kordilleren und Monumente der eingeborenen Völker Amerikas*, 79-81, Tafel XII.

[14] *Ibid*., 108, see diskussion in König, Die Deutsch-Mexikanische Co-Edition einer Faksimile Ausgabe, 9-10.

Even though it seems much more likely that Humboldt received the manuscripts directly from Pichardo himself, but not on an auction, this cannot be proved.[15]

The Boturini-Humboldt Collection at the Staatsbibliothek Berlin, Germany

Humboldt, who of course wanted to avoid to meet the same fate as Boturini, returned to Germany via United States of America, bringing along his portion of sixteen fragments from the Boturini Collection, which he later committed to States Library of Berlin.[16] Compared to the total scope of the Boturini's manuscripts, the fragments acquired by Humboldt show a certain uniformity: Three-fourths are tax or tribute lists and or combined cadastral maps, three show a cartographic-historical context and one is a religious colonial document.

We do not know if Humboldt's collection documents his special interest in tax and land documents, or if it reflects what was available during his stay. The Humboldt Collection includes only one more extensive codex, i.e. the *Códice Humboldt Fragmento 1 (Ms. amer. 2)*. All the others pieces show literally fragments.

After Humboldt: The German-French connection of collectors in Mexico

In the following years, the group of collectors or "Artists, Brokers, Smugglers" was expanded by individuals of mainly European provenance such as Jean Frederick Maximilian Waldeck (1766-1875), Joseph Marius Alexis Aubin (1802-1891), Carlos Nebel (1805-1855) and Carl Adolf Uhde (1792-1856).[17] They stand at the beginning of an international collaboration of collectors and scholars, who visited collections in institutions such as convents, antique stores and private hands, and they

[15] Brito *et al.*, *Códice Humboldt Fragmento 1 (Ms. amer. 2) y Códice Azoyú 2 (Reverso)*, 30-31.

[16] Thiemer-Sachse, 9.

[17] Miruna, *From Idols to Antiquity: Forging the National Museum of Mexico.*

assembled their own collections being "part of a small but influential cosmopolitan elite, frequently integrated into the upper circles of Mexican society".[18] Uhde collected in Mexico while working as a businessman from 1823 to 1835. Waldeck travelled in Mexico from 1825 to 1837, Carlos Nebel from 1829 to 1834, and Joseph Marius Alexis Aubin from 1830-1840. They were all back in Europe in the 1840s.

> Of special relevance […] was the next major development in the saga of the Boturini Collection, the acquisition of many of the native tradition pictorials in it by Joseph, Marius, Alexis Aubin during his residence in Mexico between 1830 and 1840 […] By the time, Aubin departed from Mexico, in 1840, he had obtained a sizable number of the Boturini collection documents, including many of the León y Gama and Picardo copies.[19]

Aubin and Waldeck shared a well-known temporary ownership of the remains of the Ex-Boturini Collection. All these manuscripts ended up under the name of Aubin-Goupil in the Bibliothèque Nationale de France of Paris where it is housed today.[20]

In his article cited above, Nicholson mentions that Aubin had been buying from Waldeck, such as the Tonamatl Aubin (42) and another document, the Mapa Tlotzin, which had been stolen from the Bibliothèque in 1867, but been returned 17 years later after its publication, in 1894.[21]

But where did these early collectors of the 1820 to 1830 find the manuscripts in Mexico?

The contemporary German author Carl Wilhelm Koppe mentions Uhde as an expert collector of "Indian original antiques", but that Waldeck had collected "old Indian hieroglyphic manuscripts". The former owner of these documents, Koppe tells us that he was an old "bigoted" priest, who had confiscated them on his missionary journeys. A housemate was able to get hold of the manuscripts selling them to Waldeck,[22]

[18] Edison, "Colonial Prospecting in Independent Mexico".

[19] Nicholson, "The native tradition pictorials in the Aubin-Goupil Collection", 37-38.

[20] Glass, "The Boturini Collection", 473-486.

[21] Nicholson, "The native tradition pictorials in the Aubin-Goupil Collection", 39-49.

[22] Koppe, *Mexicanische Zustände aus den Jahren 1830 bis 1832*, Band 1, 380-382,

who had the reputation as an exaggerating fantasy story teller, however, be that as it may, indeed there were friars in the game.[23]

Alfredo Chavero mentioned repeatedly that Aubin acquired his manuscripts from the Franciscans at the Convento of San Franciso in Mexico City, where the Padre Fray Manuel Vega was in charge of remnants of the Boturini Collection.[24] Chavero blames the *padres* for giving away the manuscripts, and that it was forbidden by law to take such documents out of the country, and he confirms Waldeck to have used that same source. Georges Baudot reports on Vega's role:

> Así nacía la colección que tomaría el nombre de *Memorias de Nueva Espaíia,* y en la cual las copias de los papeles de Boturini sólo vendrían a ser parte del primer volumen […] Esta delicada empresa fue encargada por el virrey, conde de Revillagigedo, al padre Francisco García Figueroa, quien, a su vez la confió a un fraile franciscano, el padre Manuel Vega; éste, a lo largo de dos años de duro laborar, „recolectó, extractó y dispuso en treinta y dos tomos.[25]

The Boturini-Uhde Collection at the Ethnologisches Museum, Berlin, Germany

Here, the Carl Adolf-Uhde Collection housed today at the Ethnologisches Museum Berlin comes into play, which includes five pictorial manuscripts fitting perfectly into the Boturini Collection (see figures 16-20). These are:

- Flurkarte des Chiquatzin (IV Ca 3010).
- Bilderhandschrift Genealogie von Tezcoco (IV Ca 3011).
- Dokument der Familie Mundanegre (IV Ca 3012).
- Berlin Tlotzin-Fragment (IV Ca 50045, probably IV Ca 3013).
- Genealogy des Tlazcantzin (IV Ca 3014).

But where did these manuscripts come from? How did they get their names? They are listed in the catalogue of the Uhde Collection pub-

[23] Diener, "El diario del artista viajero Jean-Frédéric, Waldeck, 1825-1837", 107.

[24] Chavero, 1112, footnote 1.

[25] Baudot, "Las antigüedades mexicanas del padre Díaz de la Vega, O.F.M.", 224-225.

lished in Paris 1957, one year after Uhde's death, and were sold with his complete arqueological collection to then Königliches Museum für Völkerkunde Berlin in 1861.[26] The catalogue provides a short note on the provenance of the documents in French: "Le musé Uhde contient enfin encore un certain nombre de tableaux espagnols, provenant soit de quelques cloîtres, soit de galeries privée dans la ville de Mexico".[27] This conforms somehow to the provenance given for documents collected by Uhde's friends Aubin and Waldeck discussed above.

German scholars from Berlin, such as Humboldt, Seler, Lehmann, Preuss, Menghin and Kutscher, had always been strong in the field of Mexican manuscript studies, with a special focus on the Boturini-Paris manuscripts.[28] Two of them, Walther Lehmann (1906) and Gerd Kutscher published on the manuscripts of The Uhde Collection. Lehmann talks about five, yet nameless manuscripts: "Enfin 5 dessins enluminés sur papier, paraissant très anciens et représentant la généalogie et les migrations du peuple des Aztèque, avec des figures de plantes et d'animant et quelques explications succintes en langue espagnole".[29]

Lehmann provides interpretation of one of them, the "Genealogie des Tlatzcantzin", a name given only later by Kutscher (figure 16). Lehmann had found this name written on the manuscript, and compared its iconography to that of the Lienzo de Tlaxcala. He even refers to the Codex Boturini. More than that, Lehmann begins this same article with the interpretation of Ms. Americana No. 10 at the Berlin Staatsbibliothek, which he correctly identifies as being part of the Boturini Collection.[30] Thus, Lehmann came close. Sixty years later, Gerd Kutscher published four of the Uhde manuscripts, because one

[26] Muller, Squier, Thomsen, *Catalogue des objets formant le Musée Aztéco-Mexicain de Feu M. Charles Uhde.*

[27] "The Uhde museum also includes a certain number of Spanish paintings coming from convents or private galleries at the city of Mexico", in Gaida, The Berlin Tzotzin Fragment, 106.

[28] Nicholson, "The native tradition pictorials in the Aubin-Goupil Collection", 40, 44-45.

[29] Muller, Squier, Thomsen, *Catalogue des objets*, 60.

[30] Lehmann, "Einige Fragmente mexikanischer Bilderhandschriften", 337-339; Kutscher, "Die Genealogie des Tlatzcantzin", 319-337, and 21.

of them was missing at this time in the museum.[31] As a result of his interpretations, he attributed new titles under which they are inventoried today. John Glass summed up:

> The five Mexican pictorial manuscripts of the Carl-Uhde collection, sold in Paris about 1857 (Catalogue 1857, 60) were acquired by the museum and catalogued as nos. IVC 3010-3014 (Kutscher 1963b, 337).[32] Only one can now be identified with certainty and at least one is not represented in the list below. We have made no investigation into the holdings of this collection.[33]

But since then, Glass knew that the Berlin manuscripts came from Central Mexico and the Tlaxcala area. However, unlike his allocation of the Humboldt Fragments discussed above, he never linked the Uhde manuscripts to the Boturini Collection. Only 30 years later, Eduardo de J. Douglas, not having a clue about the shared source, reunited the known Boturini documents and Uhde's 'Genealogical Tree of the Royal Line of Tetzcoco' (Stammbaum des königlichen Geschlechtes von Tetzcoco) in both text and vision (figure 17).

> Like Nezahualcoyotl's manuscript of circa 1430, the Codex Xolotl as well as the Quinatzin Map and the Tlohtzin Map drew on and adapted earlier historical traditions and artistic models, just as they responded to new conditions and influences. Without their sources in hand, it is difficult to gauge the extent to which the manuscripts transformed and updated them, excepting the absence of ostensible religious content. Formal changes are evident, however, when we compare the Codex Xolotl (Plate 6) or the Tlohtzin Map (Plates 21 and 22) to a later work such as the Genealogical Tree of the Royal Line of Tetzcoco of circa 1750 (Fig. C.1).[34]

Is there more evidence to prove that the Uhde manuscripts belong to the Boturini Collection? In order to find out, we have to go back to Mexico and the above-mentioned collectors' group of men who had been close friends and competitors at the same time. A clue to the special

[31] Lehmann, 1961 to 1964; Gaida, The Berlin Tzotzin Fragment, 1999, 107.

[32] The collection was not sold at Paris, but the original catalogue was printed there.

[33] Glass, "A Survey of Native Middle American Pictorial Manuscripts", 59.

[34] Douglas, *In the Palace of Nezahualcoyotl*, 235 footnote 5.

relationship between Uhde and Waldeck can be found in the Edward E. Ayer (1841-1927) collection of manuscripts housed today in the Newberry library of Chicago. There is a special category "Waldeckiana, Diaries, notebooks, correspondence of adventurer and Mayan ethnographer, Count Jean Frédéric de Waldeck (1766-1875)" including "Indian pictorial documents from Waldeck's personal collection".[35] The correspondence and even drawings with Uhde show a most intensive relationship. Lopez Luján and Gaida found out:

> Existen noticias de que Uhde vivió en México entre 1823 y 1835, es decir, justo en los primeros y muy inestables años de vida de ese país. Se asentó en la capital de la joven república, donde formó parte del círculo de aficionados a las antigüedades integrado por el suizo Lukas Vischer, el austríaco Jean-Frédéric Waldeck y los germanos Maximilian Franck, Carl Nebel y Johann Moritz Rugendas. Todos ellos tenían al alemán como lengua materna, compartían el gusto por viajes y, con excepción de Uhde, poseían aptitudes pictóricas […] Existen numerosas evidencias de que acostumbraban venderse piezas arqueológicas entre sí y hacerse préstamos para dibujarlas. En el caso específico de Uhde, Waldeck registra en sus diarios que cenó en la residencia del comerciante alemán casi todas las noches de febrero, marzo y parte de abril de 1829. El austríaco aprovechó esas ocasiones para delinear algunas de las antigüedades de Uhde y se enteró de que éste contrataba peones para excavar con el expreso fin de hacerse de este tipo de objetos.[36]

We see here not just a very close relationship between Uhde and Waldeck, but also how they shared, exchanged, bought and copied their antiques in the 1820s. Further research with the "Waldeckiana" section is needed in order to find out more about the details on the Uhde's acquisition of his five pictorial manuscripts. However, there are even some more cues.

The rediscovery of the "Berlin Tlotzin Fragment"

The final clue comes with the rediscovery of the missing Uhde manuscript in 1997. Maria Gaida, the curator of the Mesoamerican collections

[35] Newberry Library Chicago. Spanish-American Colonial Manuscripts.

[36] López Luján and Gaida, "Dos esculturas prehispánicas del Centro de México", 82-87.

at the Ethnologisches Museum was able to identify the six parts of the retrieved document "to be a late copy of one part of the early colonial Aztec "Mapa Tlotzin", kept in the Bibliothèque Nationale in Paris. For that reason, we speak of the "Berliner Tlotzin-Fragment".[37]

To the great surprise of the involved Berlin research team, the Berlin Fragment had turned out to be identical with the 3rd part of the "Mapa Tlotzin" of the Bibliothèque Nationale at Paris catalogued as 373[38] (figure 18). However, unless the central Mexican Mapa at Paris, which dates from the sixteenth century, the Berlin Fragment is missing the glosses in the Aztec language. Thus, Gaida wondered about the relationship between the Paris Mapa and the Berlin Tlotzin manuscripts.

Also, it remains a secret, why Lehmann, who knew the Boturini manuscripts housed at Mexico, Paris, and Berlin so well, did not establish a connection between these two documents.[39]

Shared and divided. The remnants of the Boturini Collection in the Waldeck-Uhde Collections

As mentioned earlier, we know that Aubin had bought the Tlotzin Map from Waldeck before 1840, and that, as a result of their close relationship, Waldeck and Uhde were sharing and copying their collections. This makes us believe that the Berlin Tlotzin Fragment has been part of their transactions probably before they left Mexico in 1835 and 1837 respectively, and most probably around 1829. Waldeck might have been the one to deal with the friars at San Francisco —or elsewhere— for the acquisition of the documents.

In respect of their contents, style and iconography, the manuscripts of the Boturini Collection are diverse and heterogeneous. Beyond doubt, the artist Waldeck and the art connoisseur Aubin focused on their manuscript's variety and quality, a distinguish mark of the Paris collection. The German merchant Uhde was more interested in three-dimensional antiques. His five manuscripts, maybe copies, focus on Native genealo-

[37] Gaida, "Zur Provenienz des Berliner Tlotzin-Fragments" (IV Ca 50045).

[38] Amoxcalli. La Casa de los Libros. http://amoxcalli.org.mx/codice.php?id=373.

[39] Lehmann, "Die Historia de los Reynos de Colliuacan y de Mexico", 752-755.

gies and family trees. The Berlin "Dokument der Familie Mundanegre" (figure 18) and the "Berlin Genealogy des Tlazcantzin" (figure 19) can be compared to the "Mexicain 73: Confirmation des élections de Calpan"[40] and the Palace of the "Mapa Quintazin", both at Paris.[41]

Summary

Alexander von Humboldt was the first European collector to bring parts of the Boturini collection —originals and/or copies— to Europe. It was more or less known that these 16 fragments —some after making detours— were stored in the Staatsbibliothek of Berlin. Two decades after Humboldt had left Mexico, collectors from Europe followed in Humboldt's footsteps collecting more manuscripts of the Boturini Collection. As a result, one-fifth of the original 500 documents can be located in European and US institutions today.[42] The Bibliothèque Nationale de France of Paris is holding the best selection in terms of quantity and quality, going back to the Paris based collectors Joseph Marius Alexis Aubin and Jean Frederick Maximilian Waldeck. As a result of the author's current research, the five pictorial manuscripts forming part of the Uhde Collection at the Ethnologisches Museum Berlin, could be identified as deriving from the Boturini Collection as well, bringing the total number of manuscripts to be found at Berlin from that source to 21.

[40] Amoxcalli. La Casa de los Libros. https://amoxcalli.hypotheses.org/2087.

[41] *Ibid*.

[42] See a very complete list of the original documents and their location in Wiki-Filología, a web page from the Instituto de Investigaciones Filológicas of the UNAM.

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Imagining Mexico through Thomas Coulter's Residence, 1825-1834: Botany, Mining, and Diplomacy

Cliona Murphy

Thomas Coulter went to Mexico in the mid-1820s and worked in British run silver mines as a medical doctor and as a manager. Like many others, he was influenced by the travels and writings of Alexander von Humboldt who visited the country twenty years earlier, and published his experiences in *Political Essay on the Kingdom of New Spain* (1811).[1] Both men had an education in engineering and a voracious appetite for botany, astronomy, geology and adventure. Though Coulter has never achieved the acclaim of Humboldt, he has entered the historical record, mainly because of his botanical accomplishments. In different parts of Mexico, including Alta California, he collected, described, and classified various plants, succulents and cacti. He sent thousands of specimens to herbariums and botanical gardens in Europe. Some still bear his name.[2] His Mexican *sojourn* reflects the transnational world of scientific adventure and optimism, the European fascination with the "exotic" in the Americas, the challenges faced by newly independent Mexico with regards to reviving the collapsed mining enterprises, and the peculiar dimension of the Irish within the British-Mexican relationship.

Born in 1793 in Dundalk in an Ireland which officially became part of the United Kingdom with the Act of Union (1801), Coulter was a

[1] Humboldt, *Political Essay on the Kingdom of New Spain* (1811); Echenberg, *Humboldt's Mexico.*

[2] For a list see Coville, "The Botanical Explorations", 527-530

Presbyterian, whose ancestors probably received land under the English Cromwellian settlements in the 1600s.[3] His upbringing was comfortable, despite being orphaned young.[4] Unlike the Catholic majority, he had the education and means to attend Trinity College in Dublin. Initially, he studied botany, engineering, and chemistry, and eventually he focused on medicine.[5] As a young man, he interacted with the intellectuals, scientists, and travelers from Europe. Among them was the botanist Agustin-Pyramus de Candolle in Geneva, who he studied with for a time.[6] He also met Alexander von Humboldt in Paris in 1823, and may have met him on other occasions also. Coulter was recruited in 1824 to be a physician for Mexican and Cornish miners[7] in Real del Monte, Hidalgo. However, while there, his abiding interest was in botany and plant collecting.[8] He also worked in mines in Veta Grande, Zacatecas, and in Hermosillo, Sonora. After some periods at different mines between 1825-1829 as a doctor and as a manager, frustration with the mining world, the lure of the natural world, and his connections with the very new milieu of British Mexican diplomacy facilitated him leaving mining and pursuing botanical and other interests further north. Arriving to Monterey, Alta California (still a Mexican province) by boat, in November 1831,[9] he visited Spanish missions along the California coastline, which were about to be secularized by the Mexican government.[10] After taking part in a short-lived revolution,[11] Coulter explored

[3] Nelson and Probert, *A Man who can speak of Plants*, 2.

[4] *Ibid*., 11-13.

[5] Nelson, "Trinity's Miner-Botanist", 9. See also Coville who provides details on Coulter's BA, MA, and MB, also on his membership of the Royal Irish Academy, his publications, and his scholarship before he left for Mexico. Coville, "The Botanical Explorations", 521.

[6] Coville, "The Botanical Explorations", 520.

[7] For information on the Cornish miners, see Todd, *The Search for Silver*.

[8] It was not unusual for doctors at this time to work outside medicine (or to study Botany). One particular example is Humboldt's friend and assistant Aimé Bonpland. Appleby, *Shores of Knowledge*, 215-225.

[9] Coville, "The Botanical Explorations", 522.

[10] Green, *The Mexican Republic*, 23-24, 77; Lightner, *San Diego County Native Plants*, 9-12.

[11] According to Lightner, he "enlisted in the *compañía extranjera* at Monterey opposing Echeandia's forces". *San Diego County Native Plants*, 12.

and mapped California, and traveled as far as Arizona.[12] He took down detailed lists of vocabularies of seven Californian Indian tribes. These were among the first, if not the first, to appear printed in 1841.[13] He sent plants back to Kew Gardens in London, the *Jardin des Plantes* in Paris, to the Candolle in Geneva, and to Dublin.[14] In November 1834, Coulter returned to England, after a short time in central Mexico. After a year, he took up a position at Trinity College in Dublin, in the herbarium, thus turning full circle, coming back to where he was educated.[15] He died at the age of fifty in December 1843.

We know about Coulter's time in Mexico from the affectionate letters he sent to his sister Jane, his brother in law David in London,[16] and others, especially botanists, in Europe. He also wrote to de Candolle in Geneva[17] and sent him over 58 specimens of cactus he had collected.[18] In a diary and a field notebook, he recorded his impressions of the land, the plants, the local people, the old Spanish, the English mining management, his health, his social interactions, his efforts to learn Spanish, the weather, his trips to Mexico City to buy mules, and much more.[19] There are also a number of letters between him and Charles O'Gorman. The latter served as the first British diplomatic officer when diplomatic relations were re-established between Britain and independent Mexico.[20] Coulter's time in Alta California is recorded in his article "Notes on Upper California", which was published by the Royal Geographic Society in

[12] He made one of the earliest maps of California. Nelson, *A Man who can speak of Plants*, 10. CSB, "Thomas Coulter's 1835 Map".

[13] Grant, "The vocabularies of Scouler, Tolmie and Coulter", 20-44. Also see Nelson, *A Man who can speak of Plants*, 110.

[14] See Coville, "The Botanical Explorations", on plants Coulter sent to Geneva and Dublin.

[15] TCD, "Trinity College Herbarium". Desmond, *Dictionary of British and Irish Botanists*, 171

[16] Thomas Coulter papers, Trinity College in Dublin, Ireland (hereafter TC papers), 10812/1/3, 10812/1/4, 10812/1/6.

[17] TC papers, 10812/12. See also Coville, "The Botanical Explorations", 522.

[18] Nelson, "Dr. Thomas Coulter's cacti from Zimapán, Hidalgo, Mexico", 48-64.

[19] The originals are in the Smithsonian Institute in Washington D.C. USA. Copies are in the Thomas Coulter papers, in the Manuscript Room in Trinity College Dublin, Ireland. TC papers, 10812/2.

[20] Nastir and Monell, *British Activities*, 209-212.

London in 1835 and was based on a lecture he gave to the society.[21] This article is cited in numerous histories, memoirs, and reminiscences of Mexican Alta California, as well as in a study which examines how California in the Mexican period appeared to the English public.[22]

Coulter has attracted the attention of botanists, linguists, historians of mining, historians of early California, and cartographers since his death in 1843.[23] While some of these authors quoted each other, many are ignorant of various aspects of Coulter's multi-fragmented life. Thus, they deliver different glimpses into his various ventures. For example, some botanists who have looked at his time in California, like Frederick Coville in 1895, and Alice Coates in 1970 seem unaware of, or not interested in, his work on Indian vocabularies, his connections with Mexican mining, or his interactions with British diplomats.

The most thorough and devoted work on Coulter is by E. Charles Nelson and Alan Probert, *A Man who speaks of Plants* (1990). The title is inspired by the English botanist David Douglas.[24] He was in Alta California in 1831, and on hearing of Coulter's impending visit wrote,

> since I began this letter, Dr. Coulter, from the Central States of the Republic of Mexico, has arrived here [Monterey], with the intention of taking all he can find to De Candolle at Geneva […] and I do assure you, from my heart, it is a terrible pleasure to me thus to meet a really good man, and one with whom I can talk of plants.[25]

[21] Coulter, "Notes on Upper California", 59-70.

[22] Burchell, "The Loss of a Reputation".

[23] Among them are Robinson, "Sketch of Coulter" (1844), Gray, *Letters of Asa Gray* (1894), Coville "The Botanical Explorations" (1895), Mc Vaugh, "The Travels of Thomas Coulter" (1943), Coates, *The Quest for Plants* (1970), and Beidleman, *California's frontier Naturalists* (2006). See footnote 5 in Coville for other botanists who wrote about Coulter between 1856 and 1888. Also see Scouler, "Observations on the indigenous tribes" (1841), Grant, "The Vocabularies of Scouler, Tolmie and Coulter: A Reappraisal" (1992). The same, see correspondence between Nelson and Grant in Nelson papers in Trinity (10812/8/1-4). This writer also corresponded with Grant in 2015 and 2019. He had no new information since his 1992 paper.

[24] Coville, "The Botanical Explorations", 522.

[25] Hooker, "A Brief Memoir", 151.

Both Nelson, a botanist based in Dublin, Ireland, and Probert, an engineer based in California who had worked in mining in Mexico, dedicated many years to researching Coulter and trying to find a publisher. Probert died in 1985, and Nelson continued their work and published the biography under both their names in 1994. Probert was familiar with the archives in North America and Nelson with sources in Ireland and Europe. Their research papers and the correspondence between Nelson and Probert's widow, Lillie, are available in the Manuscripts Room in Trinity College in Dublin.[26] Nelson and Probert understood Coulter, the botanist and engineer, way better than this author, and their work is a detailed chronological narrative. It is specifically focused on chronicling Coulter's life and travels, and, more than any other work, it has provided the best record on Coulter, and because of thet unfortunately they could not find a publisher, so Nelson had it privately published, with only five hundred copies printed.

What to make of Coulter and how to place him beyond the account given by Probert and Nelson, and the occasional articles and references to him which have appeared since his death, but often have nothing to do with each other? Clearly, he is a somewhat significant botanist and plants have been named after him. However, according to some botanists, he never realized his full potential, nor did he get the full recognition he was due.[27] As a doctor, while kind, he does not seem to have been a particularly noted or dedicated one. While he seemed competent and had expertise in engineering, he didn't stand out too much. He was an amateur astronomer,[28] an admired mapper of land and of mines, a traveler and adventurer. He was also a man interested in languages, knowing French, Latin, and, most likely, Irish, before going to Mexico where he learnt Spanish[29] and also studied native Indian languages.[30]

Here, Coulter is looked to provide insight into a number of different spheres, revealing links and insights Nelson and Probert did not get because they did not know the wider historical literature, and their book

[26] TC papers, 10812/12.

[27] *San Diego County Native Plants*, 15-16.

[28] He noted on October 15 that he saw a comet, TC papers, 10812/2.

[29] He wrote to his sister on May 28, 1826 that there is more to Spanish "than commercial importance", and that he was reading *Don Quixote*. papers, 10812/1/4.

[30] Grant, "The vocabularies of Scouler, Tolmie, and Coulter", 20-44.

was published before recent scholarly work on the transatlantic world and on the British in Mexico. A brief examination of these areas allows us to augment Nelson and Probert's ground-breaking work. The book still does not have the full recognition it deserves, and much of related recent scholarship is unaware of the biography.

Coulter lived in the Atlantic World of the early 1800s, where there was a vibrant community of travelers, writers, botanists, business people, novelists, and politicians who influenced and read each other.[31] They saw the Atlantic World as a supra-national space, unlike Europe which was moving into its most nationalistic century.[32] This was a world exemplified by Alexander von Humboldt and reflected by other adventurers on a smaller scale. They travelled to the Americas and reported on mining, plants, astronomy, weather, geography, geology, and science. Whether this mixed collection of individuals may have enabled imperialism, the informal imperialism is another discussion.[33]

Thomas Coulter became part of that world when he decided to go to Mexico in 1824. He had read Humboldt and met with him the year before he arrived. This encounter must have been one of the contributory factors for his travel.[34] Indeed, Humboldt had not only written about mining in Mexico. He visited and wrote about the mines at Real del Monte, and also about the surrounding landscape and communities.[35] However, when Coulter went to Mexico, twenty years after Humboldt did, it was a Mexico which had experienced the turmoil and consequences of the long struggle to be independent. While influenced by Humboldt, Coulter was not uncritical. On his trip through the Mexican gulf, he wondered if the stream identified by Humboldt was correct, "Captain Crosbie asserts positively that there is no steady current between Cape Catouch in Yucatán and C. Antonio in Cuba. This is [sic] true, is fatal to Hum-

[31] Bailyn, "The Idea of Atlantic History", 19-44

[32] Appleby, *Shores of Knowledge.*

[33] See Schiebinger, *Plants and Empire: Colonial BioProspecting in the Atlantic World*; Miller and Reill, *Visions of Empire, Voyages, Botany, and Representations of Nature*; and Aguirre, *Informal Empire: Mexico and Central America in Victorian Culture.*

[34] Nelson believes Coulter sought Humboldt's advice about travel. Nelson and Probert, *A Man who can speak of Plants*, 30.

[35] Echenberg, 101-103, 112-115.

boldt's theory of the Gulph [sic] Stream".[36] McVaugh has mentioned that one of Coulter's botanical trips in Mexico had locations "well indicated on Humboldt's maps", implying Coulter was perhaps consciously following Humboldt's route.[37] However, Nelson quotes Coulter as being a bit dismissive of Humboldt's description of Northern Mexico stating that he (Humboldt) had "a bit too much of a poet in him (…) I think if one wants to see Humboldt's paradise one would have to look for it on the slopes facing the tropics".[38] Nevertheless, Coulter wrote to de Candolle in September 1826, expressing his pleasure that Humboldt's assistant Karl Kunth had named a new genus *Coulteria* in his honor based on research he had done while working with de Candolle some years earlier.[39]

Another prompt for Coulter to go to Mexico, and related to Humboldt's wide influence and that of others who followed him, was the British public's fascination with the "exotic" in Mexico and California.[40] A person who significantly stoked that fascination was William Bullock. He and his son went to Mexico in 1823. *Six months' residence and travels in Mexico*, the lengthy account of their travels, appeared in 1824.[41] Besides publishing a book on Mexico, Bullock also put on an impressive exhibition on "Ancient Mexico and Modern Mexico" in London's Egyptian Hall the same year. The exhibition opened on April 8, 1824.[42] It attracted the attention of botanists, ornithologists, conchologists and other scientists, and almost fifty thousand people visited.[43] According to Coulter's diary, he was in London in August 1824, but the exhibition ran until late 1825.[44] So, it is highly likely he attended, and perhaps he met

[36] Sunday, October 10, 1824, Coulter diary, TC papers, 10812/2, 27.

[37] McVaugh, "The Travels of Thomas Coulter, 1824-1827", 67.

[38] Quoted in Nelson and Probert, *A Man who can speak of Plants*, 78.

[39] See Nelson and Probert, *A Man who can speak of Plants*, 79, footnote 79 refers to Humboldt, Bonpland and Kunth, *Nova generate species plantarum*, 328.

[40] Aguirre, *Informal Empire*, 1-34. Burchell, "The Loss of a Reputation; or, the Image of California in Britain before 1875", 119.

[41] Bullock, *Six months' residence and travels in Mexico.*

[42] Costeloe, "William Bullock and the Mexican Connection", 277; Aguirre, *Informal Empire*, 1-34. It was originally two exhibitions, but was amalgamated into one.

[43] Costeloe, "William Bullock and the Mexican Connection", 282.

[44] He was staying at 27 Rathbone Place, Oxford Street, August 18, 1824. See TC papers 10812/2. See also Coville, 521.

Bullock who had visited the mines in Real del Monte. May the exhibition have further reinforced Coulter's decision to go to Mexico?[45] Certainly, it embraced his interests. According to one account, "On display were antiquities, plants, animals, minerals, handicrafts, and even a live Mexican Indian with his hut—all set against a panoramic view of the Valley of Mexico painted by William Bullock Jr."[46] The Ancient and Modern Mexico exhibition was followed by the Rotunda Exhibition, "Panorama of Mexico", which began on December 1825 in Leicester Square.[47] Coulter had already left for Mexico. However, these exhibitions indicate that the market was there for more information on Mexico when Coulter came back nine years later. The Nelson and Probert biography does not mention the exhibition or Bullock, nor do any of the other sources on Coulter. It is also noteworthy that Costeloe's article (2006) on Bullock and Aguirre's scholarship (2005 and 2007) on the exhibitions do not name Coulter, given the many similarities between Bullock and Coulter. They went to Mexico around the same time, they were interested in collecting, mining, and they had connections to Ireland.

The public fascination with Mexico was complemented by British business and diplomatic interests in the years after independence. Thus, formalization of relations with Mexico facilitated Coulter's travel and employment. William Swainson, an ornithologist and mine investor, commented in an article on William Bullock in 1827 in *The Philosophical Magazine* that "the intercourse which recent political events have opened between Mexico and Great Britain promises to be no less interesting to zoological science than important to the commercial prosperity of both nations".[48] This was true with regards to Coulter who used every spare moment he had in Mexico to collect plants, observe the skies, maps, and record various measurements of the landscape, temperatures, humidity, longitudes, latitudes, and altitudes. He carried with him a thermometer, a chronometer, a sextant and a barometer.[49]

Newly independent Mexico had failed and flooded mines which had

[45] He originally wished to go to Argentina, Chile, Bolivia, Mexico and California. Coville, "The Botanical Explorations", 520.

[46] GRI "Panoramas".

[47] Costeloe, "William Bullock and the Mexican Connection", 298.

[48] Swainson, "A Synopsis of the Birds", 364. This quote also appears in Costeloe, 282.

[49] Nelson, *A Man who can speak of Plants*, 34.

been abandoned by the Spanish, and needed expertise to get them running again.[50] Once again, Humboldt comes into this discussion, as his *Essay on the Kingdom of New Spain* (1811) extolled the possibilities of the silver mines in Mexico, and, according to some scholars, may have over-represented their potential. Indeed, prominent founders of the company that managed the first mine Coulter worked at in Real del Monte, were very much influenced by Humboldt's *Political Essay*.[51] John Taylor, the company's manager, edited Humboldt's writings about Mexico.[52]

In the early 1820s, it was in both Mexico's and Britain's interests to renew diplomatic relations. Britain wanted to protect investments and explore opportunities, and Mexico needed expertise and international recognition. In 1825, Britain formally recognized Mexico as an independent nation.[53] However, a few years earlier Mexicans allowed British into the country to repair and manage mines. In 1824, a number of British companies went on the stock market and British public started buying shares in the mines. The question whether British saw this as an imperial possibility and Mexicans saw it as a chance to use the British has been discussed by scholars.[54] What turned out to be a twenty-five year investment in Mexican mining by British companies eventually failed and, ironically enough, some blamed Humboldt for leading them to expect too much.[55] Coincidentally, Coulter was in London at this time of excitement about mining, and may have seen newspaper announcements about opportunities in Mexico.[56] Moreover, he was available for adventure and travel. In fact, for a while he had been planning an extensive trip to South America and Mexico. He wrote to de Candolle in August 1824, "I am going to Mexico for three years as a doctor to the

[50] Johnston, *Missions to Mexico*.

[51] Randall, "British Company and Mexican Community", 623.

[52] Nelson, "Trinity's Miner-Botanist", 11.

[53] George Canning, the British foreign secretary recognized Mexican Independence to protect British investments in business and in silver mines, and also to prevent United States and France from gaining influence. Britain opened consulates in Mexico, especially in the ports. Reid, *The Secret War for Texas*, 10.

[54] Randall sees the Mexicans eventually getting the benefit out of British expertise. Others like Costeloe, Aguirre and Fowler seem to see it as informal imperialism.

[55] Vassoler, "The Mexican Mining Bubble that Burst", 432.

[56] Randall, *Real del Monte*, 34.

Real del Monte mining company. There! You are astonished —I could answer you that I am a bit myself— the thing happened so quickly that I would like to be assured whether I am dreaming or not".[57]

His notes on his time at the mines reflect the problems that contemporaries and historians have mentioned about mismanagement, labor problems, and the wider disruptive political context. In September 1827, he wrote to de Candolle that, "I was so tired with the kind of revolution which we had in management of this company that I was obliged to give it up several times".[58] Historian Robert Randall has written a very interesting and comprehensive history about Real del Monte, but he does not mention Coulter, even though he does discuss medical care for the workers in some detail and he writes about some of the people Coulter interacted with.[59] Both Randall and Coulter identify similar problems with the mines. Flooding, getting and maintaining machinery, having enough mules, labor problems, and British misunderstanding of the culture of the Mexican *partido* system, were among them.[60] Therefore, there is no contradiction between the historian writing about the mine and the man who was there on the ground. Nevertheless, it is curious why Randall would not have mentioned Coulter in his discussion since the latter seems to have been a colorful, eccentric, and controversial character who was sometimes promoted and given salary raises but at the same time often provoked doubt in his management abilities.[61] Coulter became a manager after the desertion of some of the company employees. Due to problems within management and labor supply problems, Coulter moved from Real del Monte in Hidalgo to Veta Grande in Zacatecas, and later, to Hermosillo in Sonora.[62]

Likewise, in the sphere of early British Diplomacy, Coulter's experience and appearance in the primary sources and the scholarship is patchy,

[57] Nelson and Probert, *A Man who can speak of Plants*, 35.

[58] Letter sent from Zimapán, September 12, 1827, by Coulter to de Candolle in Geneva. He is replying to a letter of February 17th. He said that he delayed writing because of problems in management. TC papers, 10812/12/1.

[59] Randall, *Real del Monte.* Other scholars also who have written on British mining in Mexico have not discussed Coulter.

[60] Randall, *Real del Monte*, 138.

[61] Nelson, "Trinity's Miner-Botanist", 12-13

[62] Coville, "The Botanical Explorations", 521.

sporadic, and somewhat mysterious. His time in Mexico provides insight into the story of Irish experiences in, and connections with, Latin America, and, in this case, early independent Mexico. As in India, Argentina and elsewhere, the Irish as a group are often lost or obscured under the umbrella of British enterprise, institutions, language, and identity, as Ireland was part of the United Kingdom at this time. Coulter illustrates how the Irish managed to live in and visit many places outside the English-speaking world. They were able to avail of their British connection to work, travel, and sometimes, invest. The irony is that while some Irish or those of Irish descent (like Juan O'Donojú in Mexico) were part of the Latin American independence wars against the Spanish,[63] others were part of the British business and diplomatic world before and after independence.

Coulter was not the only Irish person working within a British context in Mexico. Charles T. O'Gorman, an Irishman fifteen years older than Coulter, and somewhat controversial, came to Mexico a little earlier. He was the first British Consul General to Mexico, arriving in 1823. He was appointed to Mexico City after diplomatic relations were established.[64] A Catholic, who already served time in Madrid, he married a fourteen-year old woman who was also the focus of Santa Anna's romantic attention.[65] O'Gorman's time in Mexico overlaps Coulter's, though his visibility was much higher and he had connections with the upper echelons of Mexican society. O'Gorman had a Patrick's Day party in Mexico City in 1826. Over ninety people attended.[66] The American ambassador Joel Roberts Poinsett caused a little stir when he stated that "May those civil and religious privileges which the Irish enjoy to the full in [the USA] … be not long denied to them in their native country".[67] Perhaps Coulter was at the party as he made occasional trips to Mexico City, though it is

[63] Fanning, *Paisanos*.

[64] BPP "Charles O'Gorman in Mexico"; Murray, "Irish-Mexican brothers Juan and Edmundo O'Gorman", 709; Johnston, *Mission to Mexico*, 47-48; and also see "Departure of the Commissioners and Consuls for Spanish America". *Freeman's Journal*, October, 1823.

[65] Johnston, *Mission to Mexico,* 47-48 and 271 (footnote 9). See also, Fowler, *Santa Anna of Mexico,* 419 (footnotes).

[66] Costeloe, "Bullock's Mexican Connections". 297 (footnote 80). See also *Mission to Mexico*, 209.

[67] Johnston, *Mission to Mexico*, 209-210.

not clear if he had any strong political sentiments. Regardless, Coulter and O'Gorman crossed paths.

Correspondence between them (and O'Gorman and others about Coulter) in 1829 indicates the two men had met. Indeed, it may have been out of friendship or their Irish connection that O'Gorman attempted to make Coulter a British Vice-Consul in Alta California when he decided to travel to the north. British did not have diplomatic representation there nor did they have the approval of the Mexican government to make such appointments. O'Gorman refers to himself and Coulter coming to the agreement in *viva-voce* (in person) in one of his letters to Coulter. It seems O'Gorman went beyond his remit.[68] The secretary to the British legation in Mexico Richard Pakenham eventually forced him to retract the proposal.[69] Nevertheless, it may have been O'Gorman's diplomatic connections that eventually enabled Coulter to get a pass of safe conduct from President Guerrero to Alta California.[70]

Social connections seem to have been strong between the British and Irish in Mexico City. In December 1826, Charles O'Gorman was a guest at the wedding of one of William Bullock's daughters. It seems reasonable to assume that Coulter and Bullock knew each other in Mexico, given that they both knew O'Gorman, but there is another Irish connection here. When William Bullock returned to Mexico in 1826, he brought seven miners from Waterford in Ireland. According to Costeloe, "Bullock and his family had visited his [other] daughter in Ireland in the summer of 1825, prior to his return to Mexico. It was almost certainly on this visit, presumably with the help of his son in law, that he was able to recruit at least some of the miners he took back with him to Mexico".[71]

Bullock was not the only one thinking of importing Irish miners. Captain John Vetch, who was Coulter's initial supervisor at Real del Monte, had previously worked at a British military garrison in Spike Island, Cork, Ireland. He considered bringing 500 Irish miners to Mexi-

[68] *Ibid*., 48.

[69] Nastir and Monell, *British Activities in California*, 209- 212. This collection contains a number of letters and communications in 1829 between Coulter and O'Gorman, and O'Gorman and Pakenham about this matter. For *viva-voce*, see 211.

[70] A copy of this pass can be seen in Nelson and Probert, *A Man who can speak of Plants*, 97.

[71] Costeloe, "Bullock's Mexican Connections", 301.

co.[72] He was regarded favorably by Coulter who commented that "Vetch's the only one of the commissioners sent out here who has any pretensions whatever in science".[73] There is no evidence that the five hundred miners arrived. However, in the 1840s, another Irishman Father Mcnamara had a scheme to bring several hundred Irish to Alta California to start an Irish settlement.[74] This did not materialize either.

Coulter's pass to travel to Alta California granted by President Guerrero was in keeping with the desire of the Mexican government to know more about the distant province.[75] Since Coulter did return to Mexico in 1834, this in part may have worked. Botanists like Coulter were not just collecting plants and sending back specimens to Europe. They were also finding about landscape, terrain and unfamiliar territories. Just as with the British mining companies, the botanists and other scientists could be seen as instruments of the new Mexican State. Jean Louis Berlandier was a Swiss botanist and zoologist who participated in the Mexican government Scientific Expedition in 1827 into Texas, as part of the Mexican Boundary Commission.[76] Coulter had met Berlandier in Geneva in the early 1820s when he was studying with de Candolle.[77] He was aware that Berlandier was in Mexico, but it is not clear if they met.[78] They and others facilitated further knowledge and understanding of the new nation of Mexico.

There is no space here to go into detail on Thomas Coulter's time in Alta California which was briefly alluded to at the beginning of this paper.[79] However, it should be noted that he continued his interest in gathering specimens and identifying new plants. The Coulter Pine and

[72] Randal, *Real del Monte*, 138.

[73] Written to his sister from Veta Grande, Zacatecas, May 28th, 1826. TC papers, 10812/1/4.

[74] Fox, *El Proyecto Mcnamara.*

[75] Nelson and Probert, *A Man who can speak of Plants,* 49.

[76] Berlandier, *Journey to Mexico*, see the introduction; Green, *The Mexican Republic*, 225-227.

[77] Nelson, "Trinity's Miner-Botanist", 10, also Nelson and Probert, 89-90.

[78] Coulter mentions Berlandier in a letter to de Candolle on September 12, 1827. He also mentions other botanists. TC papers, 10812/12.

[79] For a good synopsis see *A Man who can speak of Plants*, 95-116; and Lightner, *San Diego County Native Plants*, 12-19, and 31-37 for plants he collected in Alta California.

the Coulter Poppy are among the plants that bear his name today.[80] Unfortunately, many of Coulter's notebooks and specimens were lost on his way back to Ireland.[81] Nevertheless, enough survived for us to know that this man made a contribution in his field. What emerges out of this study is that his botanical accomplishments are not the only aspects that should be appreciated about his Mexican experience. It throws light into how newly independent Mexico was perceived by a fascinated British public, a speculative business community, opportunistic British and Mexican politicians, and also on botanists who at times were oblivious or disregarded, new and changing national boundaries. Apart from a number of botanists and the biographers Nelson and Probert, few scholars of those spheres have mentioned him, especially historians. Yet, his stay in Mexico deserves greater attention in order to learn more about these complex issues in the initial years after Mexican independence.

[80] Coville provides a list of 53 plants bearing his name. This was in 1895 and may not be up to date, "The Botanical Explorations", 527-530.

[81] Coville, "The Botanical Explorations", 525.

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Friedrich Wislizenus: A Humboldtean Explorer in Northern Mexico (1846-1847)

Thomas Janota
Robert Bye[1]

The scientific explorer, Alexander von Humboldt, and his partner, the French botanist Aimé Bonpland, traveled on foot, horseback and by boat through northern South America and Mexico, between 1799 and 1804. Their expedition combined the gathering of accurate measurements from a wide range of disciplines with an appreciation for the sublime beauty of Nature. On his return to Europe, Humboldt spent the next 30 years in the writing and publishing of 30 volumes of books that introduced the Americas to Europe.

The baron's work "stimulated an entire generation of German explorers to visit the American West".[2] One of the earliest, and least known, practitioners of Humboldt's approach was the ex-patriot German doctor Friedrich Adolph Wislizenus. His exploration of northern Mexico was consciously designed to complement the Prussian aristocrat's "excellent profile" of "the southern part of Mexico".[3]

Friedrich Adolf Wislizenus was born in Königsee, on May 21, 1810, in the forested mountains of Thuringia in what today is central Germany. Orphaned at an early age, Friedrich and his two siblings were raised by an uncle in the genteel surroundings appropriate to a member

[1] The authors wish to thank Georgina Ortega Leite of the Library of the Institute of Biology (UNAM) for her assistance with the bibliography.

[2] Goetzmann, *Exploration & Empire,* 191.

[3] Wislizenus, *Memoir*, 140.

of the rural judiciary. In 1828 he entered the nearby University of Jena to study medicine. Here, and later at Göttingen, Wislizenus accompanied his studies with a fervent participation in the General German Student Union that advocated the overthrow of aristocratic privilege and the unification of all German-speaking peoples in one country.

The future explorer was a charismatic agitator, an active leader in the Frankfurter Wachensturm, with an attempt to overthrow the monarchy by force of arms in 1833. With the failure of the attack, Wislizenus fled to Switzerland where he completed his medical studies in Zurich. Ever the radical, the young physician was expelled from Switzerland in 1834 for his involvement with Giuseppe Mazzini in the struggle for popular democracy in a united Italy.

His search for employment led him to Paris and later to New York City in 1835. Finally, he was drawn to a thriving German settlement in St. Clair County, Illinois, where he set up a medical practice in Mascoutah. But the cultured doctor was not cut out for country living and in 1839 he crossed the Mississippi River to live in the bustling city of St. Louis, Missouri, known as the Gateway to the West.

Founded as a fur-trading post by the French in 1764, the settlement's strategic location near the confluence of the Missouri and Mississippi Rivers, and proximity to the Illinois and Ohio Rivers, made St. Louis the hub for riverboat traffic in an era before the existence of a road system. In 1803 the US government purchased from France the vast Louisiana territory, which stretched west of the Mississippi River across the Great Plains to the Rocky Mountains. St. Louis became the jumping off point for the exploration and settlement of the newly acquired land. It served as the eastern terminus of wagon caravans for terrestrial commerce, communication and transportation for the Santa Fe, Oregon and California trails until the 1880s.

St. Louis, and the surrounding area, was one of the main destinations of German emigration into the United States. In part this was the result of Gottfried Duden's *Report of a Journey to the Western States of North America* (1829). The book's idyllic descriptions of frontier farming sparked the emigration of tens of thousands Germans to the Mississippi Valley, attracted by the abundance of water, fertile soil and inexpensive land. One of the most prominent leaders in St. Louis society was

George Engelmann, a prosperous physician and the leading botanist of the West. The two German expatriates struck up a friendship that would evolve into a partnership of mutual benefit.

Both physician/scientists were key figures in the formation of the Western Academy of Natural Sciences, founded in 1836. Living at the edge of the frontier, the sixteen German and American professionals who founded the Academy, proposed to investigate "that immense tract of country extending from the western borders of civilization to the Pacific Ocean".[4] Wislizenus and Engelmann would contribute a great deal in that quest.

On April 1839, seized by what he called "an irresistible fever for wandering",[5] Wislizenus joined an expedition of the Rocky Mountain Fur Company that crossed the prairies and climbed into North America's majestic western mountain chain. His account of his travels is contained in *Journey to the Rockies*, part romantic adventure tale, part scientific description of the fauna, flora and inhabitants of the "unknown west of the United States".[6]

In late 1845, inspired by the botanical projects of his friend Engelmann, and perhaps by another bout of wanderlust, Wislizenus prepared for a more ambitious journey. Whereas his earlier trip was a youthful rite of passage, this second journey was more serious. As the historian Goetzmann has observed in comparing journeys of adventure to those of exploration, "Exploration […] is the result of purpose or mission".[7] Wislizenus expressed his aim in words Humboldt might well have used "to examine the geography, natural history and statistics"[8] of California and northern Mexico.

To this end the German doctor assembled a modest, but substantial kit of scientific instruments: thermometers for measuring air temperature and the boiling point of water (for measuring altitude), wet and dry bulb thermometers for calculating humidity, a barometer, a sextant, a telescope and a "timepiece" (chronometer). With this equipment Wislizenus took hundreds of readings from his departure on May 1846 until June 1847. At the same time, he made observations of cloud cover and wind speed.

[4] Hale, *Wanderer between Two Worlds*, 245.

[5] Wislizenus, *A Journey to the Rocky Mountains*, 26.

[6] *Ibid.*, 161.

[7] Goetzmann, *Exploration & Empire*, xi.

[8] Wislizenus, *Memoir*, 3.

Together with his servant, Schwalbe, the scientific traveler steamed up the Missouri River to Independence, departure point for wagon trains heading southwest to New Mexico or northwest to the Oregon Territory. On May 14, 1846, he hooked up with the 22-wagon caravan of Prussian-born Albert Speyer who was taking the Santa Fe Trail to its western end, the Emporium of the West, then south to Chihuahua. On the day they left, the Mexican-American War was one-day old.

Along the route Wislizenus made frequent descriptions of the landscape, commenting on "the geological character of the surrounding country".[9] Amid the surprising diversity of the arid terrain, the amateur botanist collected the most characteristic specimens and sent packages of dried plants wrapped in buffalo hides back to Engelmann in St. Louis when opportunity allowed.

Like Humboldt the German doctor was moved by the beauty of his surroundings. Spring rains had brought the dry, sandy prairie on the climb to Santa Fe into glorious bloom. To Wislizenus it "looked more like an immense flower garden than a sandy desert".[10] Further on he described a "gathering thunder-storm (…) the setting sun illuminated the fast sailing clouds with so many tinted colors, changing their hues every minute, that it would be impossible (…) to do justice to the grandeur of the scenery".[11]

On August 29, shortly after the scientific traveler's arrival in the city of Chihuahua, a rider brought the message that General Stephen Kearney's troops had taken Santa Fe. The news ignited Mexican nationalistic passions, and that night a crowd gathered outside Wislizenus' hotel. Rocks and abusive words were launched, patriotic songs were sung, but nothing came of it as the Mexican governor intervened to cool things down.

Nonetheless, "threats and insults"[12] continued the next days with foreigners subjected to "numerous vexations".[13] On September the governor ordered a detachment of soldiers to escort the Europeans to the town of Cusihuiriachi, 90 kilometers southwest of Chihuahua in the heart of the

[9] Wislizenus, 42.

[10] *Ibid*., 11.

[11] *Ibid*., 14.

[12] *Ibid*., 50.

[13] *Ibid*.

Sierra Madre. There, they were to remain with instructions to stray no farther than two leagues (about 10 kilometers) from town.

Located at the bottom of a steep gorge, Cusihuiriachi had once been a thriving mining town. Now it's seclusion among steep mountain walls made it a "very fit place to control prisoners of state".[14] For plant collection, it was a gold mine. Engelmann found it "a favorable field for botanical researches",[15] with almost all of the specimens sent him by Wislizenus from the area being new to science.

In early March of 1847 their six-month "house arrest" was lifted when a regiment of Missouri volunteers, under the command of Colonel Alexander Doniphan, captured Chihuahua City. The German doctor was contracted to serve as surgeon for Doniphan's regiment and traveled with the troops heading east to return to the United States via Reynosa on the Rio Bravo, there to board steamboats bound for the Gulf of Mexico. They saw no action as the battlegrounds had moved south to Veracruz and Mexico City.

By July 1847, Wislizenus was back at home in St. Louis. During his 8 530 km journey by wagon, horse/mule, boat and ship, Wislizenus had gathered an impressive amount of information about the Borderlands. It was contained in *Memoir of a tour to northern Mexico: connected with Col. Doniphan's expedition, in 1846 and 1847,* which included a Botanical Appendix written by Engelmann.

In a resolution submitted by Missouri Senator Thomas Hart Benton, an ardent proponent of the extension of the Republic westward, the US Senate agreed to publish Wizlizenus' work in January 1848. Nevertheless, the *Memoir's* dense scientific language, complicated meteorological tables and maps delayed publication until May. By that time the Treaty of Guadalupe Hidalgo ending the war had already been ratified by the Senate, dashing the German explorer's hopes to have some influence on the peace settlement.

Even though Wislizenus encountered logistical setbacks, as did previous explorers (such as Zebulon Pike in 1806-1807), his pioneering contributions to knowledge of northern Mexico are firmly rooted in Humboldtean science. In *Memoir,* Wislizenus specifically acknowledges the

[14] *Ibid*., 51.

[15] Engelmann, "Botanical appendix", 102.

contribution of Humboldt and later German explorers to the geographic characterization of central Mexico. Specimens of plants and rocks were gathered at opportune sites. Local information on the meteorology, economy and population was obtained from collaborating sources. These data were of geopolitical value to the United States and were included in the narratives, appendices and maps of his *Memoir*; similar data gathered by US military expeditions in neighboring regions were also printed.[16]

Humboldt cited these congressional exploration reports of Wislizenus, Emory and others in relation to the earliest notices of the vulcanicity in the Rocky Mountains and geographic coordinates.[17] In addition, however, Wislizenus' observations were applied to other areas of science. In 1849, a year after the publication of the *Memoir*, Humboldt acknowledged Wislizenus' contributions in *Aspects of Nature,* specifically in the areas of geography and plant physiognomy. Later in his most influential treatise entitled *Cosmos*, Humboldt praised the *Memoir* as being "very instructive and scientific".[18] The famous British phyto-geographer, William Jackson Hooker, acclaimed Wislizenus' work as "a very valuable addition to our knowledge of the botany of a region of great interest (…) and hitherto almost wholly unexplored".[19]

The *Memoir* consists of a narrative with a travel log and statistics of certain localities as well as appendices covering botany, meteorological tables, and geology. The descriptive narrative of the route incorporates his personal observations and is supplemented by references to earlier descriptions for previous travelers, especially for the Santa Fe Trail that extended from St. Louis since 1821. His detailed account of the northern portion of Mexico's principal trade route (*El Camino Real de Tierra Adentro*, established in 1598, originating from Mexico City) is the earliest geographical description published in English; *Commerce on the Prairie,* by Josiah Gregg, a commercial trader from St. Louis, provided a general narrative of the region.[20]

The scientific appendices reflect the American and international academic network needed for the interpretation of the original data, an

[16] Emory, *Notes of a Military Reconnaissance.*

[17] Humboldt, *Cosmos*, 1862; 1872.

[18] *Ibid*., 380.

[19] Hooker, "Notices of books", 391.

[20] Gregg, *Commerce of the Prairies.*

academic model that Humboldt practiced. These sections were written by Wislizenus and George Engelmann, as well as the premier American botanist of the period, John Torrey. Engelmann was considered the "gatekeeper for all scientists going to the wilderness" during the "heroic age of botanical exploration of the American West between 1830 and 1850".[21] He shared Wislizenus' specimens and data with other American scientists (i.e., Asa Gray and Ferdinand Jacob Lindheimer) as well as the European botanists (i.e., Carl Friedrich Förster and Prince Salm-Dyck). The data tables were based upon Wislizenus' observations and calculations as well as those shared by local contacts (i.e., John Potts in Chihuahua City, Josiah Gregg who accompanied him on the return from Chihuahua City to Matamoros, William Emory who followed Wislizenus on the Santa Fe trail and the northern section of the Rio Grande valley, among others). The interpreted geographic, geologic and topographic data, were summarized in two maps and an elevation profile of the entire route. The contributions of Wislizenus may be best exemplified by his vanguard mapping of northern Mexico and his botanical contributions.

Wislizenus' maps were the first to be published for northern Mexico that were calculated upon astronomical and barometric observations. Humboldt's maps in *Atlas Geographique et Physique du Royaume de la Nouvelle-Espagne* were derived from sketches held in custody of the Viceroy of New Spain. Prior to Mexico's Independence, the first attempt to make a map based upon precise observations in the northern New Spain along the border with the Louisiana Territory was made by a United States of America military expedition, lead by Zebulon Pike in 1806-1807. His capture by Spanish authorities and the subsequent confiscation of his equipment and field notes prevented the accomplishment of this endeavor. Nonetheless, he published his experiences[22] along with maps, one of which apparently derived from the English cartographer Aaron Arrowsmith (1810) who Humboldt claims had stolen it.[23] After Mexican independence, Josiah Gregg (1844) produced a sketch map of trails and localities based upon personal observations and reckonings as

[21] Hale, *Wanderers between Two Worlds*, 270.

[22] Pike, *An account of expeditions*.

[23] Humboldt, *Political essay on the kingdom of New Spain*.

he travelled the trade routes between Missouri and northern Mexico, between 1831 and 1839. Gregg complemented Wislizenus' data for locations along Doniphan's route returning to the United States of America from Chihuahua City. Hence, the map in Wislizenus' *Memoir* became the first scientifically produced map of northern Mexico to complement Humboldt's earlier maps of New Spain.

Wislizenus' contribution was critical for the discovery of new plant species, characteristic of the Sierra Madre Occidental and northern Chihuahua Desert, the taxonomic amplification of previous botanical studies (including those of Humboldt and collaborators), and the utility of the flora for society, in regard both to inhabitants of the period and to those that followed. The botanical report of his medical colleague, George Engelmann (1848), that mentioned more than 155 plant specimens is the first floristic inventory transecting longitudinally the Chihuahuan Desert (see figure 21).

Humboldt's floristic and phyto-ecological contributions to Mexican plant ecology were not as apparent as those in South America (e.g., Chimborazo), in part due to taxonomic deficiencies at the time of diverse plant families such as that of cacti, which are restricted to the Western Hemisphere. In particular, Wislizenus' "place of […] exile"[24] as prisoner of war during the Mexican-American War was Cusihuiriachi which "especially (…) produced a number of Cactaceae".[25] The taxonomic perplexity was remedied when his medical colleague, George Englemann, emerged from among the international cohort of cactus taxonomists. Wislizenus with his living and dried collection of this interesting plant family "exerted a powerful influence upon his [Englemann's] subsequent botanical studies".[26] Consequently, scientific knowledge of the cacti developed rapidly. On one hand, Humboldt complemented his earlier discussion on plant form diversity of cacti based on South American species with new examples provided by Wislizenus' observations from southern North America.[27] On the other hand, Engelmann's studies of Wislizenus' specimens projected the St. Louis botanist into becoming

[24] Wislizenus, *Memoir*, 51.

[25] Engelmann, "Cactaceae of the boundary", 104.

[26] Sander, "George Englemann", 11.

[27] Humboldt, *Aspects of nature*.

the leading American expert of the time as seen in his classic publication on Cactaceae of the U.S.-Mexican Boundary Survey.[28]

The study of the endemic plants groups that are geographically limited has been critical to phyto-geographic and evolutionary studies. Humboldt, Bonpland and Kunth (1823) first characterized the iconic, MegaMexican[29] ocotillo or coach-whip cactus (in two genera, *Fouquieria* Kunth and *Bronnia* Kunth). A quarter of a century later, Wislizenus' collection of a new northern species, *Fouquieria splendens* Englm., led Engelmann to modify their taxonomic contribution by demonstrating that they belong to one morphological diverse genus that had radiated in different forms to the varied Mexican geography. In addition, Wislizenus recorded its cultural and ecological importance (which continues today) as a living fence, especially critical in arid environments where human modifications of the environment need to be ameliorated to benefit both domestic and native animals.

Accurate characterization of environmental necessities encountered along the routes of explorers was critical for the survival of subsequent travelers and settlers. Humboldt's publications such as *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the years 1799-1804* and *Political Essay on the Kingdom of New Spain*, were widely read and assisted international voyagers. Wislizenus' methodical annotations of the route and campsites were used by subsequent travelers and included references to the presence of water, trees for fuel and shelter, as well as pasturage plants (especially grasses) for contemporary consumption by draft animals and grazing potential for future livestock. His botanical collections of preferred pasturage plants included grama grass or blue blade (*Bouteloua gracilis* [Kunth] Lag. ex Steud.) originally described from Humboldt and Bonpland collection from Guanajuato at the southern limit of the Chihuahua Desert. Blue grama is considered the most widespread and most valuable of the grama grasses that form drought resistant mats of highly palatable forage grasses in the Great

[28] See Engelmann, "Cactaceae of the boundary".

[29] Mega-Mexico refers to a biogeographic unit circumscribed the distribution of endemic biota within the boundaries of natural regions (rather than political frontiers) resulting in contemporary Mexico with continental extensions into southwestern USA and northern Central America. See Rzedowski, "Diversity and origins of the phanerogamic flora of Mexico".

Plains of Canada and United States through the Altiplano of central Mexico.

Humboldt championed the importance of local food plants for human welfare through their "utility for society".[30] The staple edible seed for many indigenous peoples in northern Mexico at the time was derived from pinyon pine. Wislizenus' specimens allowed Engelmann to publish in the *Memoir* the first scientific description of pinyon pine (*Pinus edulis* Engelm.).

Although the text of *Memoir* projects a cold, sometimes bitter, impression of Wislizenus, his Humboldtean science also reflects an aesthetic sensitivity. The "madroño" or strawberry tree is reported as *Arbutus sanguinea*; the specific epithet refers to the vividly picturesque blood-red bark and edible fruits of this characteristic montane tree which Kunth described as four species based upon the specimens collected by Humboldt and Bonpland.[31] In addition, this colorful epithet was applied to a striking herb with similar attractive flowers discovered by Wislizenus, *Heuchera sanguinea* Engelm., said to be "most southern and certainly the most ornamental species of that genus".[32] Forty years after Wislizenus discovered this Chihuahuan endemic perennial herb, it was introduced into international horticulture and has since been used in breeding one of the most ornamental plants cultivated around the world. The National Garden Bureau designated 2012 as the "Year of the Heuchera" because coral bells are popular, easy to grow, widely adaptable, genetically diverse, and versatile.

Wislizenus' scientific pursuits shifted dramatically upon his return to the United States from Mexico. The first years were dedicated to expediting the publication of the *Memoirs* in Washington and Philadelphia, as well as attending the cholera epidemic in St. Louis. After meeting her in Washington, he pursued Miss Lucy Crane to Turkey where she accompanied her brother in law, George Perkins Marsh, the United States Minister Resident to the Ottoman Empire; they got married in 1850. During their honeymoon, the newlyweds travelled to Königsee,

[30] Bye and Janota, "Did Humboldt shift his paradigm of botanical exploration upon his arrival in New Spain?".

[31] Kunth, "Arbutus".

[32] Engelmann, *Memoir*, 107.

Germany, where he reunited with his family as well as to Berlin where he visited the venerable Alexander von Humboldt.[33]

Seeking to establish a new and prosperous residency, he then voyaged to California via Panama, but found undesirable conditions for settling with his family. His ambitious ramblings compressed in 1852, when they returned to St. Louis where he continued his medical practice, became politically active in the community, and "never went more than a hundred miles from St. Louis".[34] Also, the scope of his scientific inquires narrowed upon his return, although initially he was active in the establishment and governance of the Academy of Science of St. Louis (1856) and the Missouri Historical Society (1866). In addition to depositing his herbarium specimens and living plants with George Engelmann at the Henry Shaw's garden (that became the Missouri Botanical Garden in 1859), Wislizenus donated his archeological, geological and mineralogical specimens to the Academy and the Historical Society. With the reduction of the intellectual breadth of Wislizenus' pursuits, he restricted his botanical inquires to the plants of the St. Louis area as well as the cultivation of grapes at his country home in Kimmswick.

When not attending to his medical practice, he arduously recorded meteorological observations, especially data of atmospheric electricity. He published periodically meteorological themes in the Academy's *Transactions*, where he also occasionally commented on topics of ethnology, paleontology and other areas of natural history. As an authority on weather and climate in central United States, he was concerned about the negative anthropogenic impacts on the Earth especially related to rainfall. Unreasonable human actions as the cause of resource scarcity was a central theme advocated by his brother in law, George Perkins Marsh, America's pioneer environmentalist and author of *The Earth as Modified by Human Action*[35] which drew upon Humboldt.[36]

[33] Hale, "Friedrich Adolph Wislizenus: From Student Rebel to Southwestern Explorer".

[34] Wislizenus, Frederick, "A Sketch of the Life", 12.

[35] Marsh, *The Earth as Modified by Human Action*.

[36] Humboldt, *Aspects of Nature*.

Conclusions

In the preface to his *Memoir*, Wislizenus stated that the intention of his journey was "to gain information of a country that was but little known".[37] His success in that endeavor was a service to those in his adopted country who favored its territorial expansion. A self-described "German by birth and [an] American by choice",[38] Wislizenus advocated the establishment of a republican form of government in Mexico, thus echoing his earlier struggles for popular sovereignty in Europe. While the work did not have the political impact its author intended, the document was the first to scientifically describe northern Mexico.

Wislizenus applied Humboldtean scientific methodology while he developed an association with the emerging scientific network of St. Louis, Missouri. His early exploration in northern Mexico at the time of the Mexican-American War and their botanical results, was regarded as "his most valuable contribution to the science of his time",[39] and laid the foundation for the natural history studies of the "Boundary Surveys" conducted by the United States of America government after the cessation of northern Mexico to the US. Scientific description of many of the characteristic plants of the Aridoamerica (e.g., Cactaceae) are based upon Wislizenus' contributions. Being the first explorer to document the topography, geology and botany of the northern Chihuahuan Desert, Wislizenus complemented Humboldt's earlier description and map of the poorly known north sector of New Spain.

[37] Wislizenus, *Memoir*, 3.

[38] *Ibid.*, 4.

[39] Missouri Botanical Garden, Engelmann Papers, 468.

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The Voyages of Hermann Burmeister and the Indirect Influence of Alexander von Humboldt in the Development of Argentina's Natural Sciences

Pedro J. Depetris[1]

During the second half of the nineteenth century, the public position of Domingo F. Sarmiento[2] (1811-1888) grew in importance in Argentina. In time, he became an outstanding educator, journalist, writer, soldier, political leader and the seventh President of Argentina[3] (figure 22). Sarmiento's political views and his adamant opposition against Juan Manuel de Rosas —the iron-fisted governor who then ruled the Province of Buenos Aires and later became the head of the Argentine Confederation— forced him into exile in Chile twice, first between 1831 and 1836 and again in 1840. While in Chile, Sarmiento met several personalities that shaped his concepts on education, science, and economic growth. Among the conspicuous scientists that he met in Santiago were Ignacy

[1] I wish to acknowledge the assistance of Prof. Dr. F.D. Steinheimer (Martin-Luther Universität Halle-Wittenberg, Halle, Germany) for kindly supplying information on Hermann Burmeister and the facsimile of the letter sent by Alexander von Humboldt. Likewise, my most sincere thanks to my colleague and friend, Prof. Dr. Stephan Kempe (Technische Universität Darmstadt, Darmstadt, Germany) and his wife, Christhild Ketz-Kempe for the transcription and translation into English of the letter mentioned *ut supra*. I am grateful to my wife Elizabeth, who most willingly assisted in revising the original manuscript.

[2] Sarmiento was governor of Argentina's San Juan province (1862-1864), president of Argentina (1868-1874), senator (1874-1879), and minister of the Interior (1879).

[3] García Hamilton, *Cuyano alborotador. La vida de Domingo Faustino Sarmiento*, 50-153.

Domeyko (1802-1889), the Polish geologist, mineralogist and educator; Claude Gay (1800-1873), the notorious French naturalist; Pierre Aimé Pissis (1812-1889), the French geologist and geographer; and Rudolph Philippi (1808-1904), the outstanding German naturalist originally trained as a physician, as it was often the case with naturalists.

Between 1845 and 1847, commissioned by Manuel Montt Torres (1809-1880), the notorious political personality who in 1851 would become Chile's sixth President, Sarmiento travelled extensively throughout the world on behalf of the Chilean government. The purpose was to examine and investigate different systems and levels in education and communication. In the United States, he met Horace Mann (1796-1859) and his wife Mary Tyler Peabody Mann (1806-1887), as well as her sister Elizabeth Palmer Peabody (1804-1894). Particularly Mann, but also his wife Mary and his sister in law Elizabeth, were known as important and influential leaders in educational reform. Clearly, Mann's ideas strongly influenced Sarmiento's ensuing program on teaching and learning methods in Argentina.[4]

Sarmiento returned to eastern United States in 1865 as a special Ambassador, but this time appointed by the Argentine Government. In this capacity, he interacted extensively with intellectuals such as Henry Longfellow (1807-1882), Ralph Waldo Emerson (1803-1882), Thomas Hill (1818-1891), President of Harvard University, and Alexander Agassiz (1835-1910). While in the USA, he gathered extensive information, experience, ideas, and was distinguished with an *honoris causa* Ph.D. degree from the University of Michigan, at Ann Arbor. When he left the United States in 1867, he went on to Europe to visit the Universal Exposition in Paris. He returned to Buenos Aires the following year, when he had just been elected as Argentina's seventh President for the period 1868-1874.

In the final decades of the nineteenth century, Argentina had two universities. The oldest was the one founded in Córdoba by the Jesuits about 400 years ago, known since 1800 as *Real Universidad de San Carlos y de Nuestra Señora de Monserrat*. The university became national in 1856, and the curricula was limited to Philosophy, Theology, and Law.[5]

[4] E.g., Iglesias Illa, *American Sarmiento*, 1-288.

[5] Universidad Nacional de Córdoba, "Historia".

The other one was the *Universidad de Buenos Aires*, established in 1821, which offered courses in Law, Medicine, and Theology, among other subjects.[6] During his travels, Sarmiento strengthened his conviction that his young homeland would only prosper by promoting education at all levels, and he was determined to reach that goal. Therefore, concerned about the scientific level in the country, he contacted Karl Hermann Konrad Burmeister (1807-1892) (figure 23), few days before assuming the Presidency. He was a well-known German naturalist, at the time directing the Buenos Aires Public Museum.[7] He had arrived in Buenos Aires in 1857, bringing a letter of recommendation that Alexander von Humboldt had obtained from the King of Prussia.

Sarmiento's initial request to Burmeister was the preparation of a report documenting the level reached by the natural sciences (*lato sensu*) in Argentina. Burmeister complied swiftly and his testimony could not have been more discouraging: Argentina urgently needed strong promotion of teaching and research in the Natural Sciences at the undergraduate and graduate university levels. The direct result of this action, briefly stated, was a law passed by Congress (Registered with the Nº 322 and dated September 11, 1869), which authorized the President to hire as many as twenty foreign scientists, who should teach at the University of Cordoba and stimulate research in the Natural Sciences. This is the date now taken as the foundation of Argentina's *Academia Nacional de Ciencias*.[8]

Burmeister and von Humboldt

Burmeister was born on January 15, 1807, in the Prussian city of Stralsund. He began studying Medicine at the German university of Greifswald, and completed his career in 1829 at the Martin-Luther Universität (known

[6] In June 1865, Juan Maria Gutiérrez, Rector of the *Universidad de Buenos Aires*, founded the Department of Exact Sciences, 'including the Natural ones'. European professors were hired to teach physics, mathematics, chemistry, geology, zoology, and botany.

[7] Museo Argentino de Ciencias Naturales Bernardino Rivadavia, "Historia".

[8] Tognetti and Page, *La Academia Nacional de Ciencias*, 9-36.

today as Martin-Luther Univeristät Halle-Wittenberg), in Saxony-Anhalt, Germany, where also he almost simultaneously, obtained a doctorate in Philosophy. Burmeister barely practiced the medical profession and, as it often happened in the 19th century, directed his academic interest toward the Natural Sciences. He was mainly concerned about Zoology and Paleontology, although the wide spectrum of his interests included other disciplines, such as Geology and Mineralogy. After a relatively short period in Berlin, he became Professor of Zoology at his *alma mater*, the Martin-Luther University, in Halle.[9]

In 1843, he published the first edition of the renowned *Geschichte der Schöpfung*[10] (or *History of the Creation*) that, in five volumes,[11] reached the German bookstores years before Alexander von Humboldt's published his famous *Kosmos*. *Geschichte der Schöpfung* achieved six German editions, and was translated later into French, Italian, English, and Spanish. The strong impact that it caused, not only in the academic world, raised Burmeister's name to the level gained by famous scientists and intellectuals of the time. Moreover, it opened the gate of a significant relationship between him and von Humboldt that would turn out to be highly beneficial.

Alexander von Humboldt had read *Geschichte der Schöpfung*[12] with utmost interest. The enthusiasm that awakened Burmeister's ideas, led Humboldt to initiate a dynamic exchange of letters. The correspondence acquired an informal style, revealing a relationship of mutual respect and trust. A relevant example is a letter dated October 20, 1848, in Postdam (figure 24). In the letter, mostly written in *Kurrentschrift*,[13] von Humboldt addressed Burmeister as "Verehrtester Herr Professor".

The letter included political commentaries and enclosed another letter (which return was requested by von Humboldt). It apparently described Dr. Junghuhn's[14] activities in Indonesia and the Java Island. In the anno-

[9] Burmeister, *Viajes por los Estados del Plata, 1857-1860*, ix-xii.

[10] Burmeister, *Geschichte der Schöpfung*, 1-592.

[11] The fifth volume was published posthumously.

[12] The work is, essentially, a broad Geology and Paleontology treatise.

[13] Old German form of handwriting also known as *Current, Deutsche Schreibschrift, Altdeusch* or simply *Schrift*. *Sütterlin* is a late form of the same handwriting, taught in German schools until 1941.

[14] Franz Wilhelm Junghuhn (1809-1864), German physician and naturalist who, after 13 years in Indonesia, returned that year to Germany with collections that, sup-

tations at the margin, von Humboldt reaffirmed his conviction that the Chimborazo was the highest peak of the Andes. Nowadays it is widely known that the Chimborazo volcano, with a height of 6263 m above the mean sea level, is the highest mountain in Ecuador and one of the highest in the Andes.[15]

Burmeister entered politics between 1848 and 1850, winning a seat in the Prussian Chamber. The intricate nature of local politics and the environment surrounding the Prussian political world did not meet his expectations and he finally decided to return to the academic world. The liaison between von Humboldt and Burmeister reached significant relevance when the former interceded with the minister von Ladenberg to obtain an eighteen-month leave-of-absence and a significant grant for Burmeister, authorized directly by the Prussian monarch, Frederick Wilhelm III. The subsidy allowed Burmeister to start his first journey to South America, embarked in a sailboat toward the South American tropics in September 1850. It must be kept in mind that traveling and exploring the unknown world was of utmost importance for 19th century naturalists, if they wished to attain a notorious status among the scientific elite.[16]

Burmeister remained in Brazil for nineteen months, traveling widely, making observations and collecting specimens. He amply fulfilled his strong preference for Entomology and Herpetology and returned to Germany with very important biological collections.[17] He completed, afterwards, a couple of visits to Italy. Highly displeased with his domestic life and with the state of the political situation in Saxony, he decided to return to South America. Once again, von Humboldt's friendship proved invaluable: he obtained for Burmeister another leave-of-absence —this time for two years— and another substantial grant to cover his expenses

posedly, would be interesting to Burmeister. Humboldt was well informed of Junghuhn's "unfriendly feelings" towards him.

[15] The Chimborazo is not the highest mountain in the Andes. Its top, however, is the most distant point from the center of the Earth because the equatorial diameter is larger than the diameter at Mt. Everest's latitude (aprox. 28ºN).

[16] E.g., Depetris, *La Escritura de los Viajes*, 7-33.

[17] He suffered an accidental fall in Lagoa Santa (Brazil), breaking a leg, which was not properly treated. The consequence was a marked limping that persisted for the rest of his life (Burmeister, 1943, XIII).

for such period. On this occasion, he travelled southbound to the Río de la Plata, a journey that he had been considering for some time.[18]

He travelled extensively throughout Argentina, observing fauna and flora, and continuing with his biological collections.[19] He crossed the Andes through the Paso del Peñasco de Diego, in the Catamarca Province, and he then boarded a ship at the Chilean port of Copiapó that would take him to Panama. He crossed the isthmus and sailed to the British port of Southampton, where he arrived in May 1860.

The German version of his *Viaje por los Estados del Plata*[20] was finished and published upon his return to Germany, after starting again his tasks as a university professor.[21] Burmeister had a very strong character —discrepancies often led him to extemporaneous reactions— and his immovable differences with the then Prussian minister Bethmann-Hollweg drove him to give up the position. Knowing that the directorship of Buenos Aires' Public Museum was vacant (due to Auguste Bravard's[22] resignation before traveling to Mendoza), he applied for the position. Sarmiento's intervention —at the time minister in Mitre's government of Buenos Aires Province— was central in securing the post and Burmeister sailed once again to Buenos Aires, where he arrived in September 1861.

Burmeister in Río de La Plata: The birth of the Academia Nacional de Ciencias

Different difficulties conspired against Burmeister's well-being, and he could not occupy his new position up to almost six months later. His life,

[18] After visiting several British colleagues in the United Kingdom, he boarded in Southampton the steamship *Tamar*, which had Rio de Janeiro as the final destination. After a brief stay in Montevideo, he finally disembarked in Buenos Aires in 1857.

[19] In Argentina, besides Buenos Aires, he visited the cities of Rosario (Santa Fe), Mendoza, Entre Rios, Córdoba, Santiago del Estero, Tucumán, and Catamarca. In San Miguel de Tucumán, he met Petrona de Tejeda, who would later become his second wife.

[20] Burmeister, *Viaje por los Estados del Plata,1857-1860*, xiv.

[21] Originally published in 1861, as *Reise durch die La Plata-Staaten*.

[22] Pierre Joseph Auguste Bravard (1803-1861), French geographer and geologist, died in the earthquake that hit Mendoza on March 1861.

however, changed drastically from that moment on. He focused all his energy in modernizing the institution that he was now directing, and his talent, driven by his enthusiasm, led him to start dynamically the study of the natural history of Argentina. The minor, sketchy museum that Burmeister received rapidly became an institution comparable to the European counterparts, with an expanded library and scientifically valuable collections.

Around those times, Natural Sciences began to take root in the Río de la Plata.[23] An important element in that direction was the creation of the *Facultad de Ciencias Exactas* at the *Universidad de Buenos Aires* in 1865 —still provincial—, with a group of mostly Italian professors.[24] Furthermore, the museum directed by Burmeister published in 1869 the first volume of its Annals and thus started the dissemination of new knowledge, locally generated and with extreme effort.[25]

Burmeister had Sarmiento's intellectual deference. In a letter sent from New York in 1868, he asserted, "I have Burmeister in Buenos Aires, a German scientist that claims a standing comparable to that of Agassiz. I would trust to them both the organization of the geological map of Argentina, with Botany, Mineralogy, etc." Among other personalities, Sarmiento had met —as mentioned before— Alexander Emanuel Agassiz (1835-1910) in the United States of America, renowned mining engineer, oceanographer, and marine zoologist, son of Jean-Louis Agassiz (1807-1873), also a prominent Swiss naturalist, widely known for his important contributions to the understanding of glacial dynamics. Sarmiento clearly saw the extreme difficulties that conveyed developing scientific disciplines in the young country of his time, where there was practically no adequate infrastructure and there were no professors available fully trained in Exact, Physical, and Natural Sciences. In other words, there was no platform to support the ambitious program. Moreover, very few of the intellectuals residing in Argentina, mostly trained in humanistic disciplines, could fully understand the project that Sarmiento had in mind.[26]

[23] E.g., Rapela and Depetris, "Geochemistry in Argentina: from pioneers to the present", 1-15.

[24] Facultad de Ciencias Exactas y Naturales de la Universidad de Buenos Aires, "Breve historia de la Facultad".

[25] Museo Argentino de Ciencias Naturales Bernardino Rivadavia, "Anales".

[26] Tognetti, *La Academia Nacional de Ciencias en el Siglo XIX*, 13-18.

Sarmiento learned that he had been elected the next Argentinian President before reaching Buenos Aires harbor, on his way back from his second voyage to the United States of America and Europe. Several days before assuming the presidency, in a clear evidence of his eagerness to develop science, he asked Burmeister to write a report describing the level reached by the natural sciences in Argentina. He was also required to describe the actions that he considered important to foster the development of science in the country.[27] The German scientist answered in a memorandum dated on October 5th, 1868, one week before Sarmiento took office as President of Argentina. In his detailed report, Burmeister depicted a grim picture of Argentine science and coincided with Sarmiento that the most appropriate place to start the ambitious project was the University of Córdoba.[28] It lacked the necessary and the enough infrastructure, but it was the only national university at the time. It had prestige, and belonged in the group of the oldest universities in the Americas.[29]

In October 14, 1869, Sarmiento's minister Nicolas Avellaneda, wrote a letter to Burmeister asserting the government's intentions to put him in charge of a project that would promote teaching and research in the broad field of the Natural Sciences (*sensu lato*). The letter said,

> Considering since then the implementation of this project, the President has always believed that you are the ablest person to whom he could trust its accomplishment, taking into account your prominent scientific reputation, your contacts with German universities and scientists, and because those are the disciplines to which you have mainly dedicated your life.[30]

[27] Tognetti, *La Academia Nacional de Ciencias en el Siglo XIX*, 13-18.

[28] Universidad Nacional de Córdoba, "Historia".

[29] Its beginning must be sought in 1610, when the Jesuits created in Córdoba the *Collegium Maximum*. Graduate studies began in 1613, although without the authorization to give degrees; this faculty was granted in 1621 by the Pope Gregorius XV, and ratified by King Philip IV of Spain.

[30] Original text in Spanish: "Pensando desde entonces en la ejecución de este proyecto el señor Presidente siempre creyó que era Ud. la persona más competente, a la que podía confiarse su realización, ya por su alto renombre científico, por sus relaciones con la Universidades y los sabios de Alemania, como por tratarse de las ciencias a cuyo cultivo ha dedicado Ud. principalmente su vida".

The first scientist to arrive Córdoba was the chemist Max Hermann Siewert (1843-1877), born in Marienwerder (Eastern Prussia) who, like Burmeister had studied at the Martin-Luther Universität Halle-Wittenberg. Paul G. Lorentz (1835-1881, botanist), Alfred Stelzner (1840-1895, geologist), Hendrik Weyenbergh (1842-1885, zoologist), Karl H. Schulz-Sellack (1844-1879, physicist), and Karl A. Vogler[31] (mathematician) followed Siewert in a relatively short time, in what is known as the "first generation" (figure 25).[32] Other professors arrived in a relatively short time (i.e., in the group known as the "second generation", replacing in some instances the initial scientists), like the brothers Adolf and Oskar Döring, Ludwig Brackebusch, Franz Latzina, and Eugene Bachmann, among others[33] (figure 26).

By decree Nº 9182 (November 15, 1872), signed by President Sarmiento and his minister Avellaneda, a special commission was appointed with the objective of directing the construction of a seat for the Academy in the city of Córdoba. The historical building remains the Academy's headquarters. The Italian engineer Pompeyo Monetta drew up the original project, but the Swedish architect Hendrik Åberg finished it.[34] After postponements and myriad difficulties, the building —whose style has Florentine reminiscences— was inaugurated in 1885 and was totally completed by 1887 (figure 27).

A series of conflicts and misunderstandings appeared early between Burmeister and the European professors. The key issue was the reticence of most of them to lecture in Spanish and their manifest preference to devote all their available time to research. This problem was not the only one. There were other differences concerning material to be published and the intellectual property of new findings. These disagreements led the Rector of the *Universidad Nacional de Córdoba*, Manuel Lucero, to separate the Academy from the University, a task that apparently took two years, between 1876 and 1878. Accordingly, Hendrick Weyenbergh became the Academy's first formal President, from 1878 to 1880; Bur-

[31] There is no biographical information on K.A. Vogler, who arrived in replacement of Gustav Holzmüller, unable to travel due to the Franco-Prussian war.

[32] García Castellanos, *Breve Historia de la Academia Nacional de Ciencias de Córdoba, República Argentina*, 10-15.

[33] Tognetti, *La Academia Nacional de Ciencias en el Siglo XIX*, 21-30.

[34] Tognetti and Page, *La Academia Nacional de Ciencias*, 59-85.

meister had been its first Director, back in 1870. The Academia Nacional de Ciencias pursued a series of wide objectives, such as "contributing to the development, progress, and diffusion of the Exact, and Natural Sciences in their widest definition". Likewise, the Academy became a consulting body for the national government and for provincial governments. Furthermore, it could provide support to all official institutions, "should they require assistance in matters related to the scientific fields developed by the Academy".

After the separation of both institutions —which undoubtedly had some traumatic aspects— teaching at the upper university level became a forbidden activity for the Academy. The Facultad de Ciencias Físico-Matemáticas, created in 1873 and today known as Facultad de Ciencias Exactas, Físicas y Naturales (FCEFyN), would exclusively tackle such endeavor (i.e., teaching of Natural Sciences).[35] Some of the European scientists remained as professors in the newly born academic unit.[36]

Hermann Burmeister returned to his original position as Director of Buenos Aires's Museo Público immediately after resigning as the Director of the Academy. He continued directing the prestigious museum until his death —due to an accidental fall at the institution—, which occurred in 1892 when he was 85 years old.

Burmeister published about 300 scientific contributions, a significant proportion devoted to Entomology and Herpetology. Among his many works produced while in Argentina, *Description physique de la République Argentine d'après des observations personnelles et étrangères* is, unquestionably, his most remarkable work. Dedicated to Sarmiento and also published in a German edition, it reached the libraries between 1876 and 1879. Almost simultaneously, *Vues pittoresques de la Republique Argentine* became available in the European libraries. It is a volume with magnificent illustrations (mostly produced by Burmesiter himself) of Argentine scenery, flora, fauna, Geology, and Paleontology[37] (figure 28).

Hermann Burmeister did not support the Darwinian theory of bio-

[35] FCEFyN, "Historia".

[36] Depetris, "Las Ciencias de la Tierra en la FCEFyN: breve historia de la investigación científica", 99-111.

[37] Published by the *Instituto Geografico Argentino*, it was awarded the gold medal at Venice Geographical Exposition in 1891.

logical evolution and this adamant attitude led him to maintain a tough conflict with Florentino Ameghino[38] who, in contrast, was an active supporter of Charles Darwin's evolutionary interpretation of Nature. In some of his writings, Burmeister sustained, "We cannot deny the principle of unchangeable species without pulling down to the ground all scientific Zoology".[39] Burmeister's strong opinions and influence did not prevent the first Academy President, Hendrik Weyenbergh's, sponsoring in 1878 the appointment of Charles Robert Darwin as *Miembro Honorario* of the *Academia Nacional de Ciencias*. Such resolution should be understood as a bold decision, considering that in those years, Darwinian thought was far from reaching the wide scientific acceptance that it has nowadays. Darwin thanked the distinction in a letter dated on March 18, 1879 (figure 29), also sending an autographed picture and a copy of the *Origin of the Species*, still kept in the corporation's library.[40]

The scientific research supported by the Academy progressively began to lose strength near the end of the 19th century, while it became vigorous at the university. During the 20th century, the Academy targeted its efforts in sustaining its library, which holds valuable collections of scientific publications of widely varied origin. It continued with the publication of the *Actas*, and the *Boletín*, as well as the *Miscellaneas* and other special ones of the sort.

During the last half century, Argentina's *Academia Nacional de Ciencias* has slowly recuperated the drive that it had initially possessed.[41] As shown above, Alexander von Humboldt was who, by means of timely and foreseeing actions, led Hermann Burmeister to place the cornerstone of modern Argentine science.

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[38] (1854-1911), outstanding self-educated Argentine natural scientist. Climatologist, paleontologist, zoologist, geologist and anthropologist, developed a theory on the autochthonous origin of American human beings, in opposition to the *allochthonous* interpretation, universally accepted at present.

[39] "No podemos echar abajo el principio de la invariabilidad de las especies sin que se venga también por los suelos toda la zoología científica".

[40] Depetris, "Charles Robert Darwin and Argentina's National Academy of Sciences", 8-12.

[41] Depetris, "La Academia Nacional de Ciencias: Algo de su historia y los últimos 25 años", 77-93.

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Byron in Yucatan. War and Ruins

Adrian Poole

The great British Romantic poet, George Gordon Lord Byron (1788-1824), was never in the Yucatán. But he did write a great deal about ruins. And he shaped the way in which British, American and European writers and readers thought about ruins, through the rest of the nineteenth century, and beyond, to the present day.[1]

So it comes as no surprise to discover that Byron was the favourite poet of the American writer credited with uncovering the Maya ruins in Central America, less than twenty years after Byron's death in 1824. Born in New Jersey, educated at Columbia College, and trained as a lawyer, John Lloyd Stephens (1805-52) set out for the "Old World" in 1834, following Byron's footsteps. His first stop was Missolonghi in Greece, where Byron had famously died, fighting for Greek independence. In Odessa he narrowly avoided having his copy of Byron confiscated by Russian border-control.[2] He worked at high speed to publish two accounts of these travels: *Incidents of Travel in Egypt, Arabia Petræa, and the Holy Land* (1837), which went through six printings in its first year and sold some 21 000 copies, and then *Incidents of Travel in Greece, Turkey, Russia*

[1] See Buzard, "Being Byron", *The Beaten Track*, 114-30. Elfenbein comments further that "As James Buzard has documented, Byron's invention of his experience of European greatness as unique, privileged, and profoundly individual proved to be a boom to the Victorian tourist industry. Early Victorian guidebooks included substantial quotations from Byron's poems, especially *Childe Harold*, to guide tourists to develop themselves by copying Byron". See *Byron and the Victorians*, 32-33.

[2] Byron was outlawed in Russia because of the scandalous portrayal of Catherine the Great in Cantos 6-10 of *Don Juan* (1822). Taylor, "Catherine the Great".

and Poland (1838). The titles of all four of his books feature the word "Incidents" with a purposive kind of mock-modesty. Then in 1838, hungry for new adventures, Stephens turned his attention to Central America. He read Humboldt's 1810 account of his Mexican visit, descriptions by Antonio del Rio and Guillermo Dupaix of the ruins of Palenque, and Juan Galindo's report of his 1835 expedition to Copán.[3] He teamed up with the English artist and architect Frederick Catherwood, who had also had extensive experience of the Old World territories and antiquities, and they set off together. They produced together in due course two best-selling publications, *Incidents of Travel in Central America, Chiapas and Yucatan*, Catherwood (1841), and *Incidents of Travel in Yucatan* (1843).[4]

First, though, more about Byron and ruins.[5] In the early years of the nineteenth century, Byron was writing about ruins of two different kinds: most immediately, the new ruins created by years of war across a shattered Europe; and then the ancient ruins of Rome, Athens, Egypt. What was the relation between them? Not just of the distant past to the present, but also to the future? For ruins can be new, like the ruins created by the seismic upheavals of the last 25 years across Europe, from 1789 to 1815 and beyond. What happens now?

When the protagonist of Byron's poem *Childe Harold* (1812-18) encounters the ruins of Athens, his first question is "Where are thy men of might? thy grand in soul?" And Byron has an extensive, eloquent note to this effect:

> We can all feel, or imagine, the regret with which the ruins of cities, once the capitals of empires, are beheld […] But never did the littleness of man, and the vanity of his very best virtues, of patriotism to exalt, and of valour to

[3] Ackerman, *Incidents*, 4-5.

[4] It is also important Catherwood's independent volume of 1844, *Views of Ancient Monuments*, 25 hand-coloured lithographs, 300 copies, dedicated to Stephens. This was a scaled-down version of the more ambitious project for a huge volume (with Stephens) of 100-125 engravings, with texts by Prescott, Humboldt and others, which came to nothing. See Bourbon's modern edition, *Lost Cities*, and Von Hagen, "Artist of a Buried World".

[5] For a rich discussion of Byron's complex investment in "ruins", see Keach, "The Ruins of Empire".

> defend his country, appear more conspicuous in the record of what Athens was, and the certainty of what she now is.[6]

The modern Greeks were degraded, so Byron (and others) considered, unworthy of their great ancestors who fought at Marathon and built the Acropolis. But the fall was not complete. The contrast between past glory and present degradation was unfinished, an ongoing process to which the modern world was viciously contributing. Byron goes on:

> This theatre of contention between mighty factions, of the struggles of orators, the exaltation and deposition of tyrants, the triumph and punishment of generals, is now become a scene of petty intrigue and perpetual disturbance, between the bickering agents of certain British nobility and gentry. "The wild foxes, the owls and serpents in the ruins of Babylon", were surely less degrading than such inhabitants.[7]

So much may be conspicuous and certain, but what of the future? What can those ancient ruins tell us about what lies ahead? They can tell us that the past is not locked away; they can remind us that what now is past, was once future. Look at the Parthenon: it has been "a temple, a church, and a mosque". It has been partly destroyed, rebuilt, re-purposed. It has served as a sacred place to different religions, and now it is suffering, as Byron sees it, a new kind of a violation, "a triple sacrilege".[8] Is this what the future holds, a world from which the idea of the sacred has been erased, its vestiges reduced to objects for sale? Perhaps. But who can know, for certain? The ancient Athenians could not have known that their temple would go on to serve as a church and a mosque, nor the even more ancient Babylonians that their great city would be rased to the ground, even as they had themselves rased Jerusalem. Those Old Testament images of wilderness to which Byron gestures —the wild foxes, the owls and the serpents— these serve as prophetic emblems of the future no less than of the past.

In fact, we can see in Byron an important contradiction. He was attracted by the seductive charm of ruins in a spirit of rumination and

[6] Note to Canto II, l. 6, in *Works*, II: 189.

[7] *Ibid.*, 189.

[8] *Ibid.*, 190.

nostalgia for the past: he speaks of himself as "a ruin amidst ruins".[9] The stories he makes of these ruins are *myths*, in various senses. But we also hear in him a strong line of critical thought about the *history* embodied in those ruins, as an unfinished process that starts in the past but goes on to the future. Between these two attitudes there is a dynamic dialogue, played out in his writings, between myth (which is fixed) and history (which is not).

We can see this distinction between myth and history in a certain inconsistency that Byron displays in his own attitude towards relics. Where the great Parthenon marbles were concerned, he was happy to denounce the depredations of his compatriots Lord Elgin and Lord Aberdeen. The latter, George Hamilton Gordon, fourth Earl of Aberdeen (1784-1860), in fact was his cousin. Though less notorious than Elgin, Aberdeen developed a key role in shipping reliefs from the amphitheatre on the Pnyx in Athens back to London and securing the Parthenon marbles in 1806; he served as a Trustee of the British Museum and president of the Society of Antiquaries, before going on to a distinguished political career that culminated in terms as Foreign Secretary (1841-1846) and Prime Minister (1852-1855). Byron expressed his uninhibited scorn for them both in his early work, *English Bards and Scotch Reviewers* (1809):

> Let ABERDEEN and ELGIN still pursue
> The Shade of fame through regions of Virtu;
> Waste useless thousands on their Phidian freaks;
> Mis-shapen monuments, and maimed antiques;
> And make their grand saloons a general mart
> For all the mutilated blocks of art:[10]

He displayed a similarly righteous indignation at Marathon, site of the famous battle between the Greeks and the Persians in 490 BCE. By contrast with the Parthenon, there was little remaining there to be seen let alone purloined and shipped off. When the main funeral barrow was excavated, few or no relics were to be found. Instead, in the absence of any material signs of commemoration, the very plain of Marathon itself was offered to the poet for sale, he tells us, for a mere "sixteen thou-

[9] *Childe Harold*, Canto IV, l. 219, in *Works*, II:132.

[10] Lines 1027-1032, in *Works*, I: 261.

sand piasters, about nine hundred pounds! Alas!", he exclaims, "was the dust of Miltiades [the heroic Athenian general] worth no more? It could scarcely have fetched less if sold by *weight*!"[11]

Athens and Marathon carry —for Western readers— the aura of myth. But Byron could take a different view when the relics were less hallowed by myth than the sacred Athenian marbles or the tale of the battle of Marathon. The name of "Morat" is far more deeply buried in history. In Canto III of *Childe Harold*, Byron writes about the bones of the Burgundian forces defeated at Morat by the Swiss in 1476, and in a note (to l. 607) he confesses to having himself taken away some of these bones "as much as may have made the quarter of a hero".[12] Such humble unprotected human remnants as these old bones lacked the charisma of those ancient Greek stories and artefacts; the very chapel that housed them had been destroyed. It is true that Byron aligns Morat and Marathon as sites where men fought for their liberty, in contrast to Waterloo and Cannae where states fought for dominion over each other (ll. 608-609).[13] Yet the bones of those Burgundian soldiers are frail and exposed, both literally and figuratively. Byron's note betrays an instructive anxiety about discriminating between theft and salvage, when he admits that his "sole excuse is, that if I had not [taken the bones of the quarter of a hero], the next passer-by might have perverted them to worse uses than the careful preservation which I intend for them".[14] This argument is scarcely different from the one advanced on behalf of the British Museum's claim to the Elgin marbles, that they would be (and have been) more "carefully preserved" than they would have been if left to deteriorate further in Athens.

Stephens's travel writings have attracted much interest over the last 50 years. Two dominant stories emerge. One portrays Stephens in a warm light, as a founding father of American archaeology, an heroic or at least admirable figure.[15] In the 1960s the English poet Donald Davie concludes his homage like this:

[11] *Works*, II: 198.

[12] *Ibid*., 307.

[13] See McGann's commentary, *Works*, II: 307.

[14] McGann notes that Byron sent the bones back to his publisher John Murray in London, "where they are still preserved". See *Works*, II, 307.

[15] See for example von Hagen, *Search for the Maya*; and Ziff, *Return Passages*, 58-117.

> And not that sort of hero, not
> Conquistador Aeneas, but a tourist!
> Uncoverer of the Maya, John L. Stephens,
> Blest after all those beaks and prows and horses.[16]

Well, not many tourists risk life and limb as fearlessly as Stephens (and Catherwood). In fact, it was exactly the risks the two of them ran that made the travel books such compelling reading: the sheer physical labour, the threat of violence and disease, everything from which the tourist industry seeks to protect its clients. Stephens might not be quite up to the epic feats of Stephen Spielberg's Indiana Jones, but the movie legend owes something to the trail he blazed.[17] At a more august historical level, there are those for whom Stephens has more in common with conquistador Aeneas or Cortez than with the tourists for whom he helped to pave the way.[18] In fact Stephens was writing only a few years before a traditional form of military intervention in the epoch-making war between the United States of America and Mexico, following the American annexation of Texas in 1845. As for the great cultural artefacts he had "uncovered", Stephens felt few qualms about trying to buy them up and ship them off. The British Museum had the Parthenon marbles, so why couldn't "we" do the equivalent? Stephens may have been an admirer of Byron, but he failed to notice or conveniently forgot these lines from *Childe Harold* denouncing the theft of the marbles from Athens by his Fellow-Scot, or "Caledonian", Lord Elgin.

> But who, of all the plunderers of yon fane
> On high, where Pallas linger'd, loth to flee
> The latest relic of her ancient reign;
> The last, the worst, dull spoiler, who was he?
> Blush, Caledonia! Such thy son could be![19]

[16] From "Homage to John L. Stephens" (1964), *Collected Poems*, 125.

[17] Mackenthun, "The Conquest of Antiquity", 100.

[18] There's a well-known passage where Stephens starts fantasising about the business opportunities represented by a defunct volcano: "I could not but reflect, what a waste of the bounties of Providence in this favoured but miserable land! At home this volcano would be a fortune; with a good hotel on top, a railing round to keep children from falling in, a zigzag staircase down the sides, and a glass of iced lemonade at the bottom". See *Incidents of Travel in Central America*, II, 13.

[19] Canto II, ll. 91-5, in *Works*, II, 47.

Throughout the nineteenth century there was considerable rivalry between the United States and Britain over the antiquities of Central America, as Robert D. Aguirre has demonstrated in his study of the traffic in cultural goods across the Atlantic, and specifically of the "contest between Britain and the United States over territory, resources, and political influence in Central America".[20] Of the negotiations between British and Mexican elites over the possession or purchase of cultural artefacts, he writes suggestively of "the indigenous presence that haunts these discourses", that it "constitutes a kind of colonial unconscious, an anxious, ambivalent reminder of violent or symbolic dispossession".[21] Stephens had rivals; in 1839 representatives of Colonel MacDonald, superintendent in British Honduras, thwarted his efforts to take possession of Palenque. Like Stephens, the British conspired unsuccessfully to remove the ruins of Copán, Quiriguá and Tikal, sites that had been popularized by Stephens and Catherwood. Drawing on an archive of letters between 1841 and 1855 in the British Colonial and Foreign office between 1841 and 1855, Aguirre shows how the British Museum recruited the Foreign office to try and bring these ruins to London.[22] This confidential correspondence stands in contrast to the popular and commercially successful publications by Stephens and Catherwood. There is no question which of the two modes of writing was more effective.

There are two main ways of appraising Stephens. He gets great credit for recognising that the Maya ruins did not derive from the Old World, from the ancient Greeks or the Egyptians or the Israelites, but from an indigenous culture. On the other hand, he promotes the myth of a single indigenous culture that *began* up north and gravitated south. And that, therefore, all its remains belong as of right to "us". This confidence depends on a belief that "we" Americans of the United States are, and will continue to be, as integrated an entity as "those Central Americans" tearing each other apart in civil strife are not. Stephens did not foresee the Civil War that would rend the United States apart less than ten years after his death in 1852.

The political motives and consequences of Stephens's work may be clear (and "conspicuous") to us now, but what role does his "artistry"

[20] Aguirre, *Informal Empire*, 77.

[21] *Ibid.*, xix.

[22] *Ibid.*, 61-101.

play? And Catherwood's? Are there no alternatives to the *conquistador* and the tourist? Do their arts simply collaborate with the politics of which they are servants? Or do they create a residue, a remnant of possibilities that could point in other directions? What of "his [Stephens's] willingness to consider the monuments of Maya civilization in aesthetic, as well as merely historical or anthropological terms"? asks Nigel Leask. Perhaps this is "his most enduring achievement, one which, uncommon in its own day, still challenges our contemporary post-colonial *episteme*".[23] To this we should add the massive contribution of Catherwood's visual images.

Leask makes another helpful suggestion when he says that "The books' archaeological interest is counterpointed, and often diluted, by its description of contemporary politics".[24] David Brading says something similar, when he describes the contrast Stephens draws between "ancient, forgotten, civilizations and contemporary political barbarism, the high aesthetic appeal of Maya sculpture undercut by the appalling civil wars of the present era".[25] "Diluted" and "undercut": I would put it more strongly than this. The pressures of contemporary history to which Leask and Brading point are exactly what made the books so readable then and gives them continuing value now.

Here I want to introduce a word that plays a significant role in Stephens's writing about the contemporary political situation in Central America: the word "distracted" and the idea of "distraction".[26] We normally think of being distracted from something of greater importance to something of less, whether the importance is one of value or significance or risk or threat. It is true that the term has acquired new currency as a way of describing political strategy;[27] back in 2001 the novelist Saul Bellow presciently commented that "Public life in the United States is a mass of distractions" ("Afterword" to his *Collected Stories* (2001). But politics aside, the only context in which we now use the word in a strong

[23] Leask, "A Yankee in Yucatan", 143.

[24] *Ibid*., 136.

[25] Quoted by Leask, 136, from Brading, *The First America*, 629.

[26] The Spanish equivalents for the English noun appear to be "distracción" (interruption); "diversion" (entertainment); "aturdimiento" (distress, anxiety, daze).

[27] E.g. "Trump is a master of distraction and throwing out shiny objects to divert attention". David Smith in Washington, the *Guardian* 25 Jan 2019.

sense is when we speak of being "driven to distraction", or of being "distraught". To a modern anglophone ear the term normally implies something quite mild, whether a matter of irritation or pleasure, a "diversion".

When Byron writes of boating on Lake Leman, however, that "This quiet sail is as a noiseless wing / To waft me from distraction",[28] he is thinking of "distraction" as a state of violent disturbance, the turbulence of a world set on fire by the French Revolution and the consequent ruins, and then the new dungeons and thrones that followed. The Latin roots of the word "distraction" are about tearing or being torn apart. It is in this sense that Stephens repeatedly writes of the "distracted state of the country" into which he ventures. It is the word he uses of Greece on his first arrival; it is the word he uses of Central America, a country "distracted by a sanguinary civil war"; and it is the word he uses at the end of the Yucatán volume, as he laments the volcanic eruption of civil strife, again:

> Alas! before these pages were concluded, that country which we had looked upon as a picture of peace, and in which we had met with so much kindness, was torn and distracted by internal dissensions, the blast of civil war ….[29]

I pointed near the start to a significant contradiction in Byron's attitude towards the ruins of the ancient world. It was not a contradiction by which *he* was torn apart; on the contrary, it was for him a source of creative inspiration and power, a way of expressing his own doubts and uncertainties, a way of asking questions. For all the manifest differences between their literary projects, I see a comparable artistic motive at work in Stephens, an analogous contradiction by which he was moved to write, and to which readers may respond. On the one hand we recognise an indomitability, the sheer sense of physical risk, the determination to "survive": from one perspective Stephens's writing is "all about himself", though the self-characterisation is not overtly boastful or triumphalist, but self-deprecatory, ironic, self-parodic. Leask comments perceptively: "In common with many post-romantic travel writers, Stephens often cultivate a self-parodic narrative voice to deal with this sense of belated-

[28] Canto III, ll. 801-2, in *Works*, II: 108.

[29] Stephens, *Incidents of Travel in* Greece, I: 7; Incidents *of Travel in Central America*, I: 3; and *Incidents of Travel in Yucatan*, II: 455.

ness, an attitude derived from his favourite poet Lord Byron".[30] And on the other, there is at the heart of Stephens's adventure an interminable uncertainty about the history both past *and future* of the indigenous peoples with the ancient remains of whose artefacts he is "dealing".

Like Byron, Stephens was dismayed at the contrast between the greatness of the culture that produced these relics and the degradation of those living amidst them. Like Byron he is sceptical about the possibilities of revival and renewal. Like Byron he does not rule it out completely.[31] Like Byron, Stephens cannot know what ruins, whether ancient or modern, portend for the future. But here the similarities break down before the massive difference between the ancient ruins over which Byron was meditating in Athens and Rome and those at which Stephens and Catherwood were staring in the Maya cities of Central America. Byron knew what his ruins meant, *or thought that he did*, because of all the stories that, for him and his readers, connected the past and the present.

Stephens too, in his travels round the "Old World", sought and found connexions to shared collective memories. Throughout Greece and the Near East, he encountered individuals who extended a welcome to the visitor from the "New World". In a convent on Mount Sinai, the Greek superior thanked him for the American support for his compatriots' struggle for independence. It had been the same everywhere, Stephens boasted: "I remember a ploughman on immortal Marathon sang in my greedy ears the praises of America."[32] Deep in the salt-mines of Wielitska in Poland, he could draw for making sense of them on "Polish annals as early as twelve hundred and thirty-seven", on the legend of a prayer to St. Anthony, the patron saint of Cracow.[33] From ancient Greece to medieval Poland, the stories abounded. But Central America was completely different. The Maya ruins at which Stephens and Catherwood stared were by contrast wholly illegible —and remained so until over a century after

[30] Leask, "A Yankee in Yucatan", 134-135.

[31] Towards the end of *Incidents of Travel in Yucatan*, he reflects that "teaching might again lift up the Indian, might impart to him the skill to sculpture stone and carve wood; and if restored to freedom, and the unshackled exercise of his powers of mind, there might again appear a capacity to originate and construct, equal to that exhibited in the ruined monuments of his ancestors" (II: 326).

[32] Stephens, *Incidents of Travels in Egypt*, I, 277.

[33] *Ibid*., 260-270.

Catherwood copied all those glyphs so scrupulously.[34] Ruins are not all about the past. Let me say it once more. They represent a past that once had a future —as we all do—, a future that is by definition unknown. As witness the greatest of Romantic poems about ruins, "Ozymandias" (1817), by Byron's friend Percy Shelley, worth quoting here in full:

> I met a traveller from an antique land,
> Who said —'Two vast and trunkless legs of stone
> Stand in the desert . . . near them, on the sand,
> Half sunk a shattered visage lies, whose frown,
> And wrinkled lip, and sneer of cold command,
> Tell that its sculptor well those passions read
> Which yet survive, stamped on these lifeless things,
> The hand that mocked them, and the heart that fed;
> And on the pedestal, these words appear:
> My name is Ozymandias, King of Kings;
> Look on my Works, ye Mighty, and despair!
> Nothing beside remains. Round the decay
> Of that colossal Wreck, boundless and bare
> The lone and level sands stretch far away'—.[35]

In 1847 Stephens finally met his great predecessor, Alexander von Humboldt in Potsdam. Humboldt didn't want to talk about the Maya ruins. He was much more interested in the war going on at that very moment between Mexico and the US.[36] War is a great distraction from archaeology, and vice-versa. Nothing makes ruins more swiftly than war —in Greece, in Yucatan, wherever. As Byron knew.

But Byron could not have known the future that lay ahead for the ruins over which he lamented, in Athens and Rome. No more could Stephens and Catherwood as they contemplated the Maya ruins of Central America. The once sacred sites continue to be "theatres of contention", to borrow Byron's significant phrase, again. How should we

[34] Coe, *Breaking the Maya Code*.

[35] *Poems*, 310-311.

[36] Consider also the Caste War in Yucatán that broke out in 1847, five years after Stephens returned to New York, and would last for fifty years, as Leask points out: "Stephens could never have guessed the train of events that were about to transform the region". See "A Yankee in Yucatán", 139.

honour the past as it continues to occupy space, often precious if no longer sacred space?

In Britain, as I write, we endure an apparently interminable controversy about Stonehenge. The arguments are all about tourists and traffic, commerce, economy and logistics. How do we preserve these ancient monuments while catering for the pressing needs of the contemporary world, looking ahead to the future? There are so many interested parties: the ministry of defence, the farmers, the local inhabitants, the long-distance travellers, the tourists.[37]

Over the centuries this site has attracted as many theories about its construction as the Maya pyramids. It "has been confidently credited to giants, wizards, Phoenicians, Mycenaeans, Romans, Saxons, Danes and aliens". It has nothing like the grandeur of many other such ancient constructions, but it has played an extraordinarily powerful role in the collective imagination of "Britishness". "Stonehenge, with the possible exception of Big Ben, is Britain's most recognisable monument. As a symbol of the nation's antiquity, it is our Parthenon, our pyramids, although, admittedly, less impressive".

The writer concludes that "Stonehenge, then, is not so much about solidity and eternity as confusion and internal contradiction".[38] Or in other words, about living history.

Meanwhile the great pyramid at the Maya ruins of Cobá in the northern Yucatán swarms with intrepid tourists. Yet the site is not nearly as infested by the fairground ambience at the more commercially developed sites of Chichén Itzá and Tulúm, where the vendors endlessly tout Maya this and Maya that, including cheap hotel deals on the Maya Riviera. Not so different, after all, from the circus surrounding "Old World" sites such as Mont St Michel, the Colosseum in Rome or the Acropolis in Athens. Or Stonehenge.

And yet of course, to return to the leading theme of this essay, the relations between ruins and war, the chaos of commerce and tourism is a world away from the violent mayhem surrounding, say, the ancient city

[37] Higgins, "Battle for the Future of Stonehenge".

[38] *Ibid*.

of Palmyra, in the Syrian desert, north-east of Damascus.[39] Endlessly built and ruined, as it seems, only then to be restored and re-ruined. In August 2018 the web-site "artnet" reported that "Nearly Destroyed by ISIS, the Ancient City of Palmyra Will Reopen in 2019 After Extensive Renovations".[40]

For ruins, there will always be a future.

[39] In 1834 Catherwood travelled to Palmyra in native costume and made extensive drawings —which have not survived (Koch, *Stephens and Catherwood*, 42). A couple of years later Stephens's plans to go there fell through; he reported that "the route to Palmyra is now entirely broken up by the atrocities of the Bedouins" (*Incidents of Travel in Egypt*, 192-193).

[40] Cascone, "Art World".

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Figures

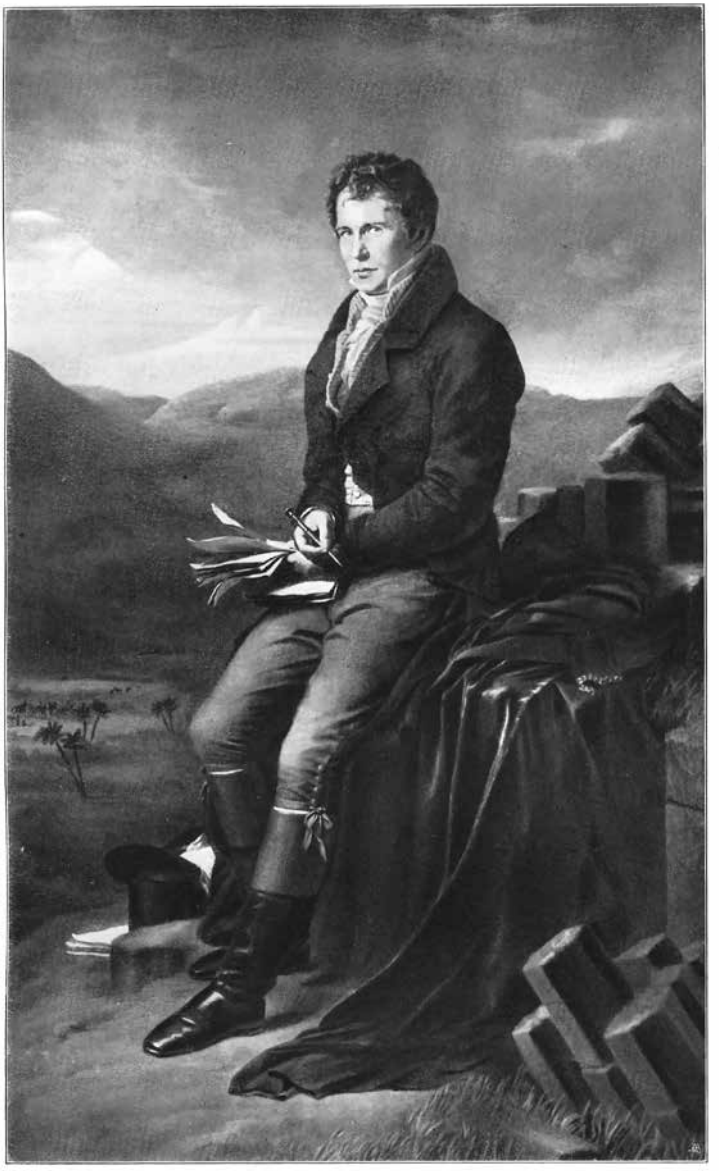


Figure 1. Schrader painting of young Humboldt and the Chimborazo volcano. Source: https://commons.wikimedia.org/wiki/File:Baron_Alexander_von_Humboldt_by_Julius_Schrader_1859.jpg.

Figure 2. Steuben painting of Humboldt with Chimborazo as background. Source: https://commons.wikimedia.org/wiki/File:Jahrhundertausstellung_1906_KatNr._1724.jpg.

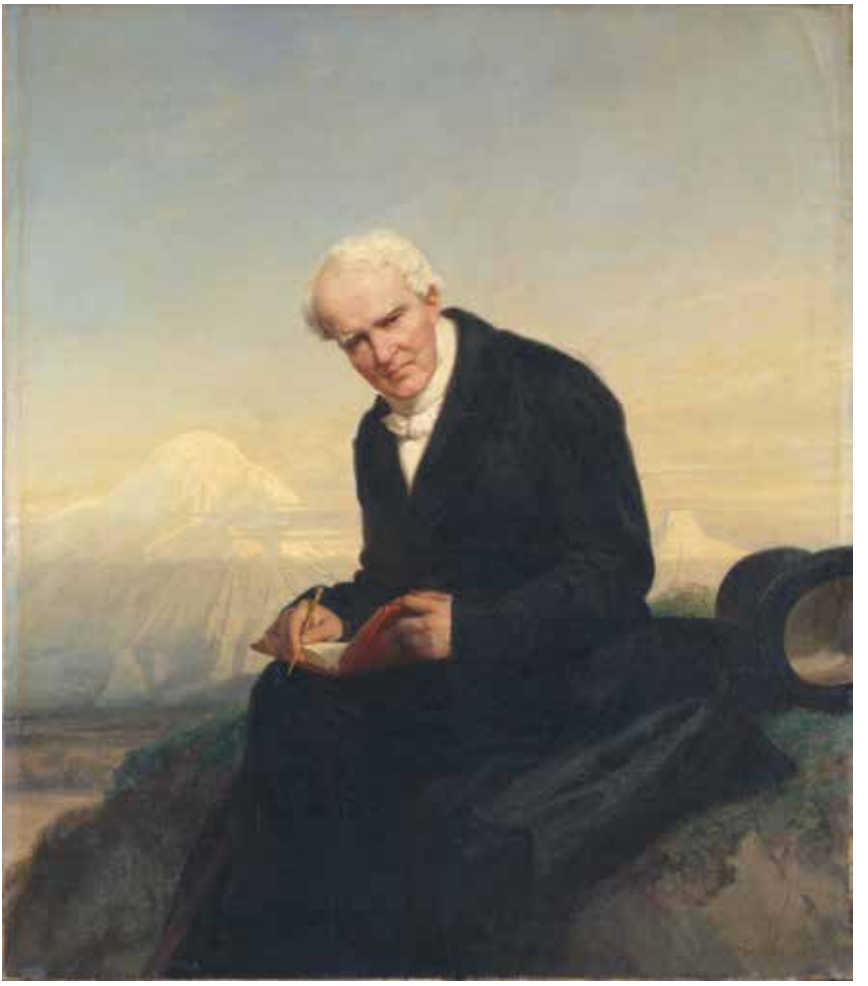


Figure 3. Humboldt and the Chimborazo by Friedrich Georg Witsch (1810). Source: https://commons.wikimedia.org/wiki/File:Humboldt-Bonpland_Chimborazo.jpg. Copyright: Public Domain.

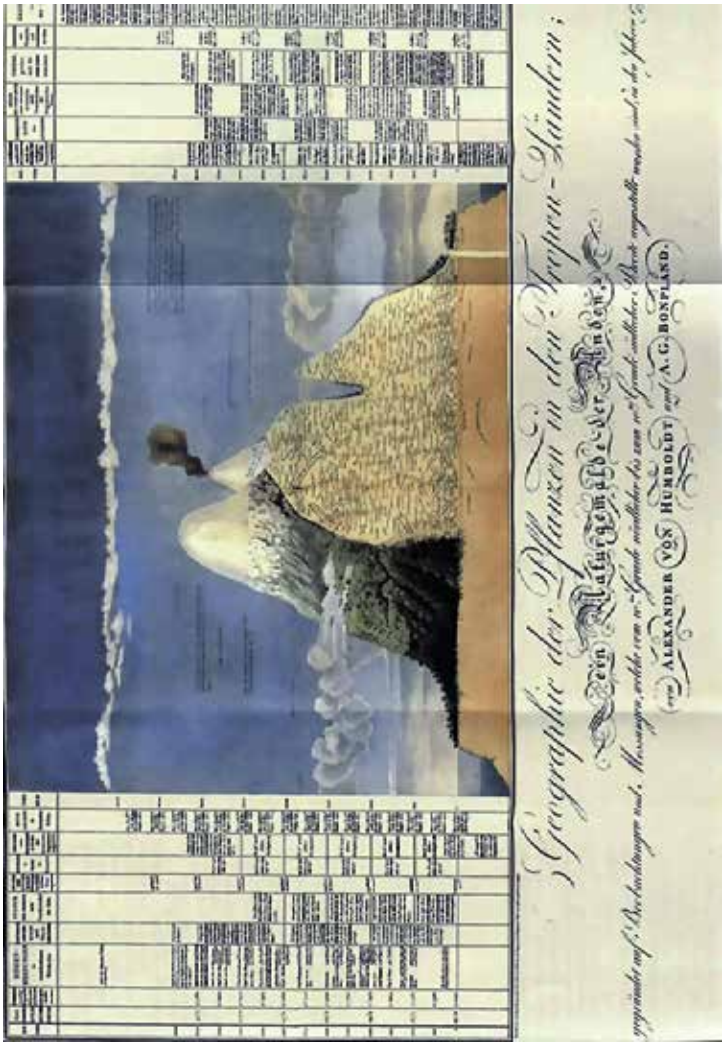


Figure. 4. "Tableau physique des Andes et Pays voisins" (1807). Source: https://www.researchgate.net/figure/Figura-4-Alexander-von-Humboldt-Geographie-des-plantes-equinoxiales-Tableau-physique_fig4_279242970.

Figure 5. Stone plaque on the Cathedral in Calpi.
Source: Photograph taken by the author.

Figure 6. View today of the caves-in Yunaurcu. Source: Photograph taken by the author.

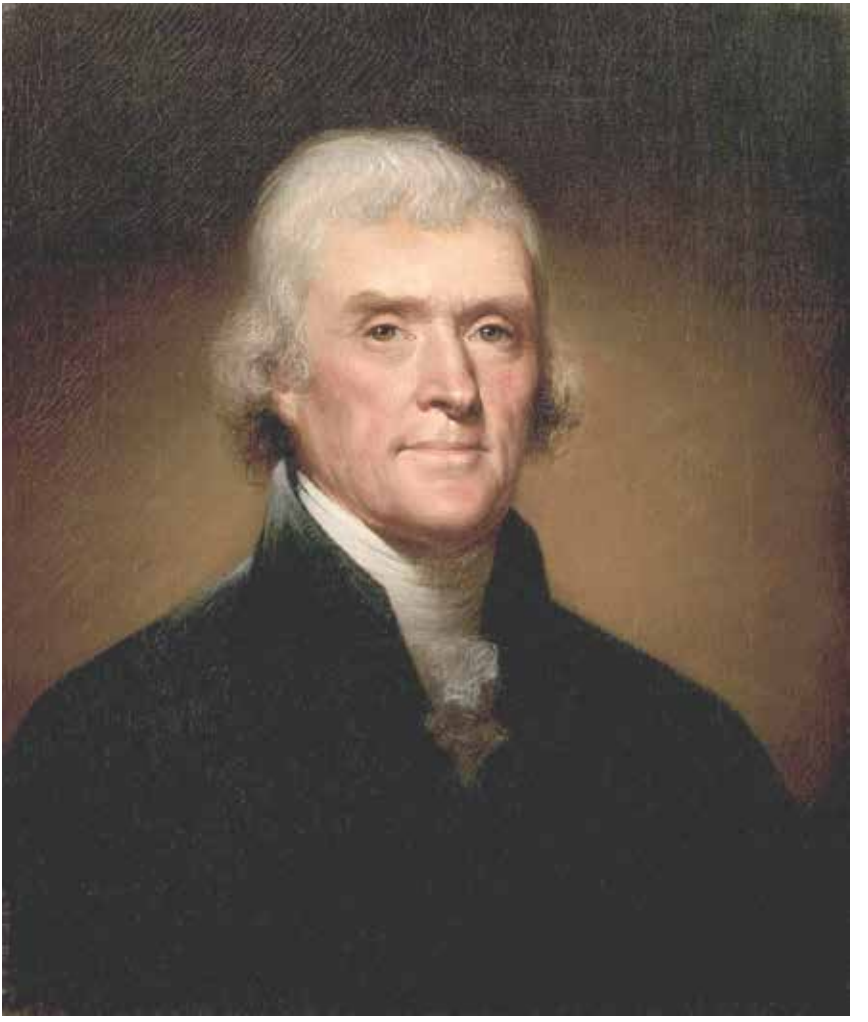


Figure 7. Thomas Jefferson painted by Rembrandt. Source: https://commons.wikimedia.org/wiki/File:Thomas_Jefferson_by_Rembrandt_Peale,_1800.jpg.

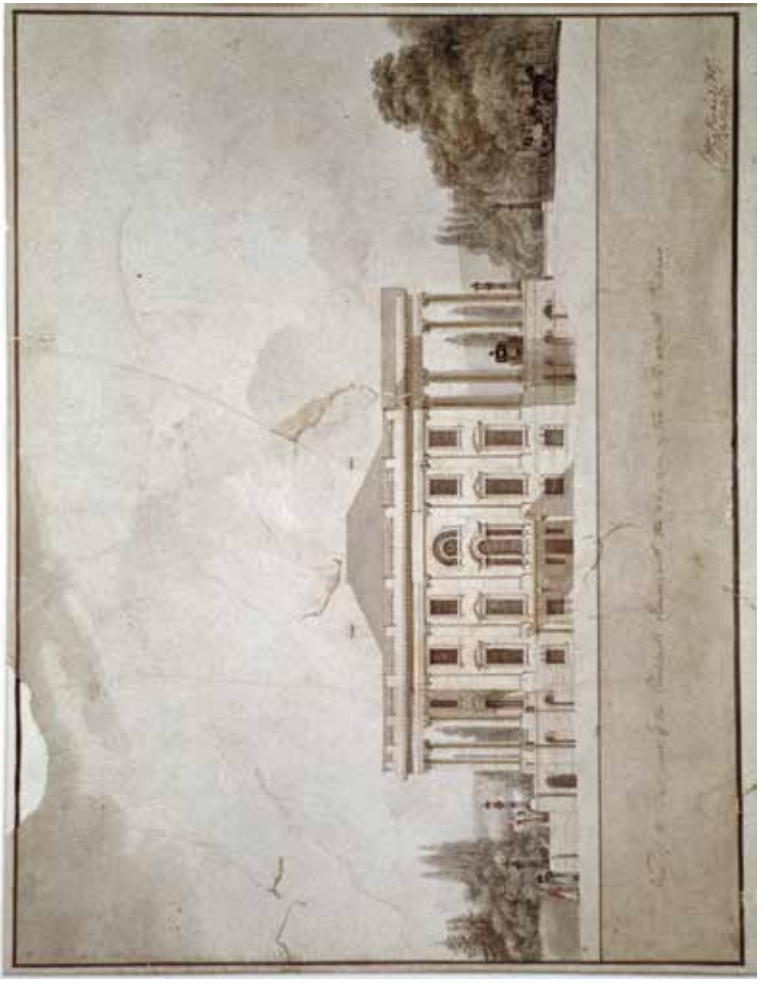
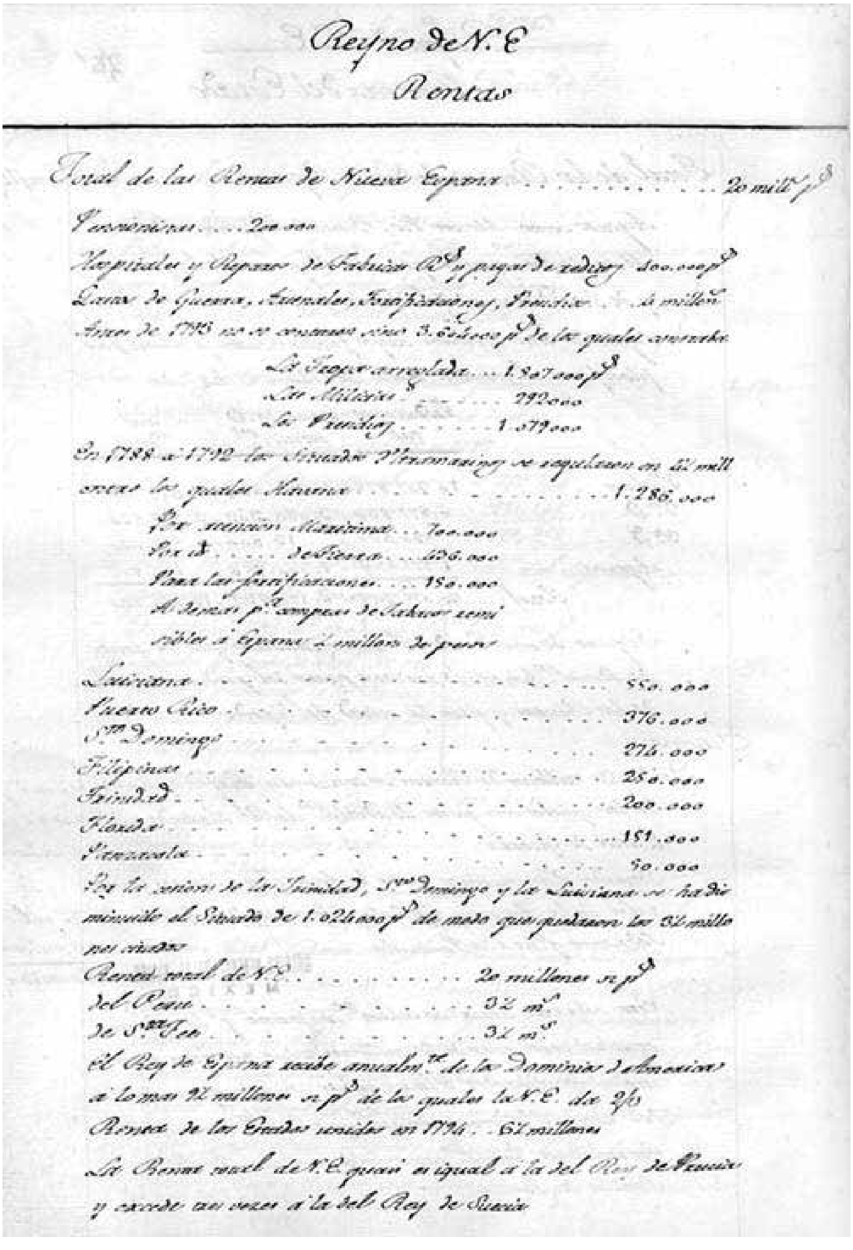


Figure 8. The White House ("President's House") Washington, D.C. Source: https://www.loc.gov/resource/cph.3b51648.

Figure 9. Louisiana Territory. https://en.wikipedia.org/wiki/Louisiana_Purchase#/media/File:Louisiana_Purchase.jpg.



Reyno de N. E

Rentas

Total de las Rentas de Nueva España .... 20 mill. ps

Pensiones.....200 000

Hospitales y Reparos de Fabricas R.s y [illegible] 500.000 ps

Gastos de Guerra, Arsenales, Fortificaciones, Presidios .. 4 millon.

Año de 1793 no se contaron sino 3.621000 ps de los quales [illegible]

La Tropa arreglada ... 1.847000 ps

Las Milicias 292000

Los Presidios 1.577000

En 1788 a 1792 los Situados Ultramarinos se regularon en 4 mill

[illegible] los quales Havana 1.786.000

[illegible] ... 700.000

[illegible] ... 626.000

Para las fortificaciones ... 150.000

[illegible]

[illegible]

Luisiana	550.000
Puerto Rico	376.000
S.to Domingo	274.000
Filipinas	250.000
Trinidad	200.000
Florida	151.000
Panzacola	50.000

Por la cesion de la Trinidad, S.to Domingo y la Luisiana se ha dis minuido el Situado de 1.024000 ps de modo que quedaron los [illegible] mill [illegible]

Renta total de N. E. .... 20 millones de ps

del Peru .... 32 m.s

de S.ta Fee .... 32 m.s

El Rey de España recibe anualm.te de los Dominios d'America a lo mas 32 millones de ps de los quales la N. E. da 2/3

Renta de los Estados unidos en 1794 .. 67 millones

La Renta total de N. E. [illegible] es igual a la del Rey de Prusia y excede [illegible] veces a la del Rey de Suecia

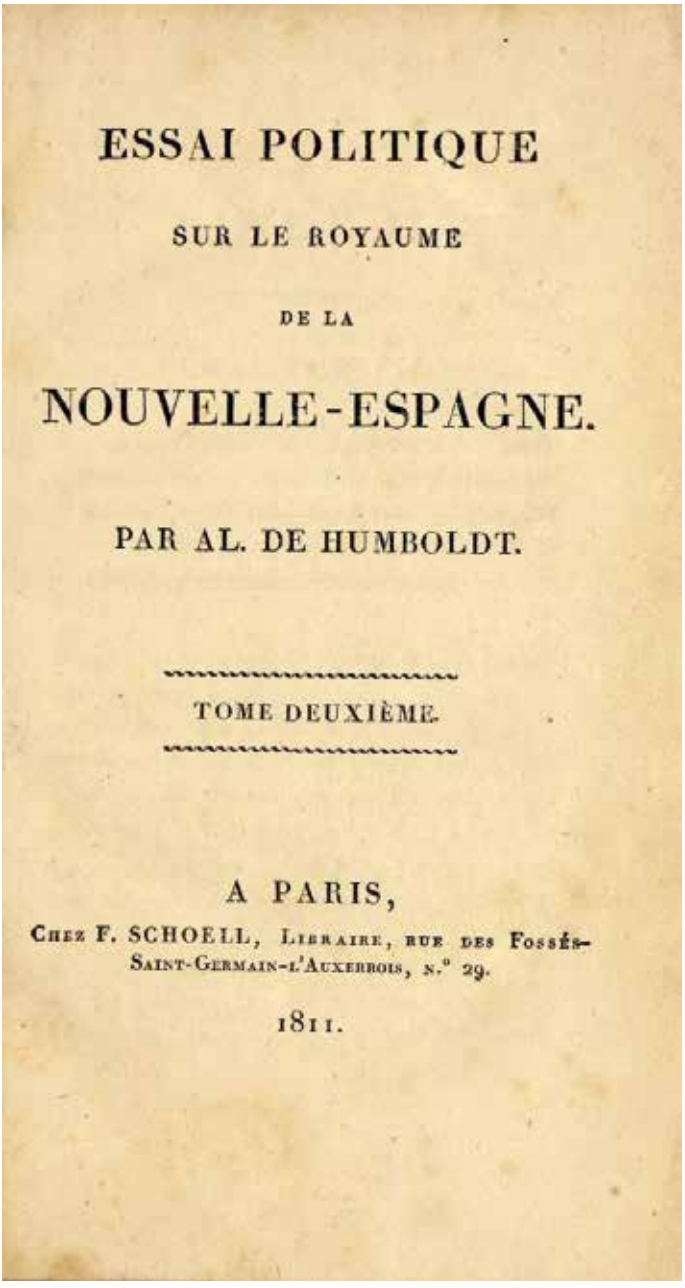
Figure 10. Tablas Geográfico Políticas: Source: http://bibliotecadigital.ilce.edu.mx/sites/humb/humboldt/img-33.html.

Figure 11. Carte Generale du Royaume de la Nouvelle Espagne by Humboldt. Source: http://www.davidrumsey.com/maps2896.html.

Figure 12. Lewis and Clark Expedition. Source: https://commons.wikimedia.org/wiki/File:Lewis_and_clark-expedition.jpg.

Figure 13. William Dunbar: Source: https://commons.wikimedia.org/wiki/File:William_Dunbar_portrait.jpg.

Figure 14. James Wilkinson. Source: https://commons.wikimedia.org/wiki/File:James_Wilkinson.jpg.



ESSAI POLITIQUE

SUR LE ROYAUME

DE LA

NOUVELLE-ESPAGNE.

PAR AL. DE HUMBOLDT.

TOME DEUXIÈME.

A PARIS,

CHEZ F. SCHOELL, LIBRAIRE, RUE DES FOSSÉS-SAINT-GERMAIN-L'AUXERROIS, N.° 29.

1811.

Figure 15. Essai politique sur le royaume de la Nouvelle Espagne. Source: https://archive.org/details/essaipolitiquesu01humb_0.

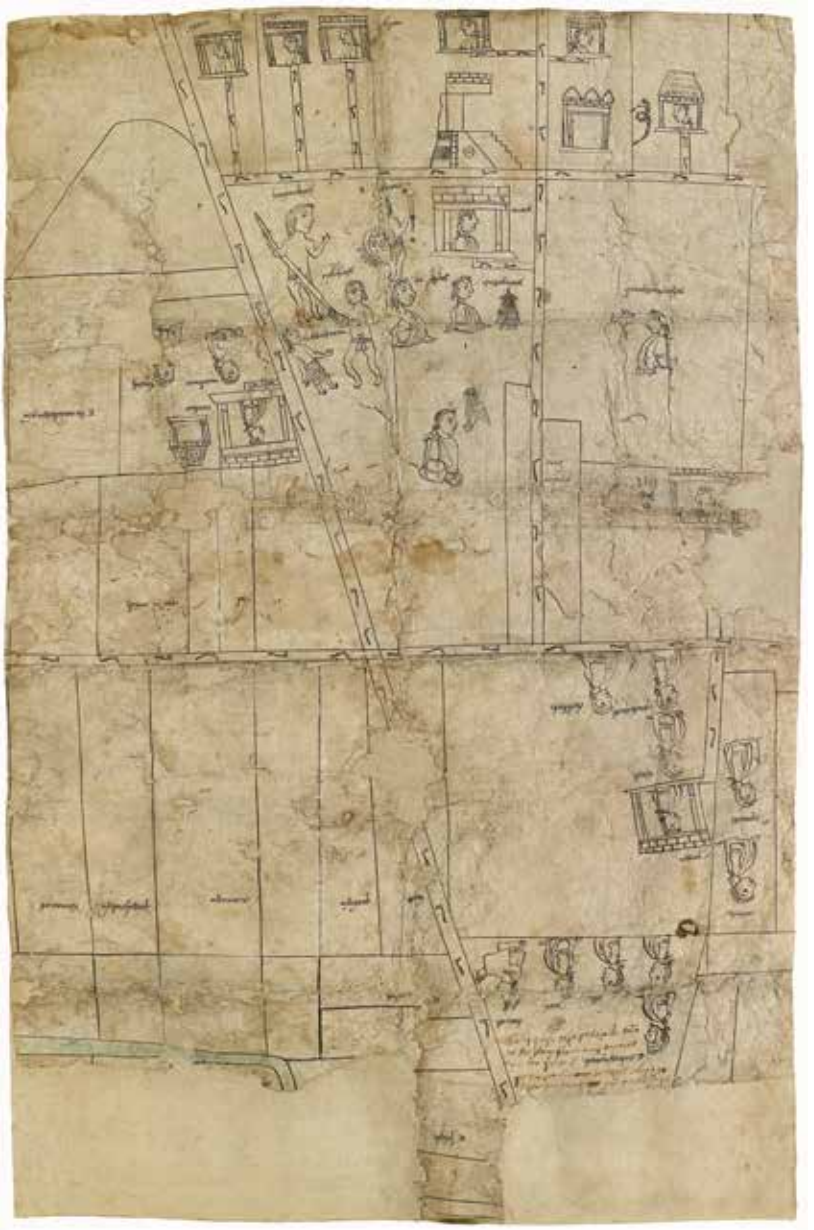


Figure 16. "Genealogie des Tlazcantzin". Source: IV Ca 3014. Ethnologisches Museum, Staatliche Museen zu Berlin. Photo by Claudia Obrocki.

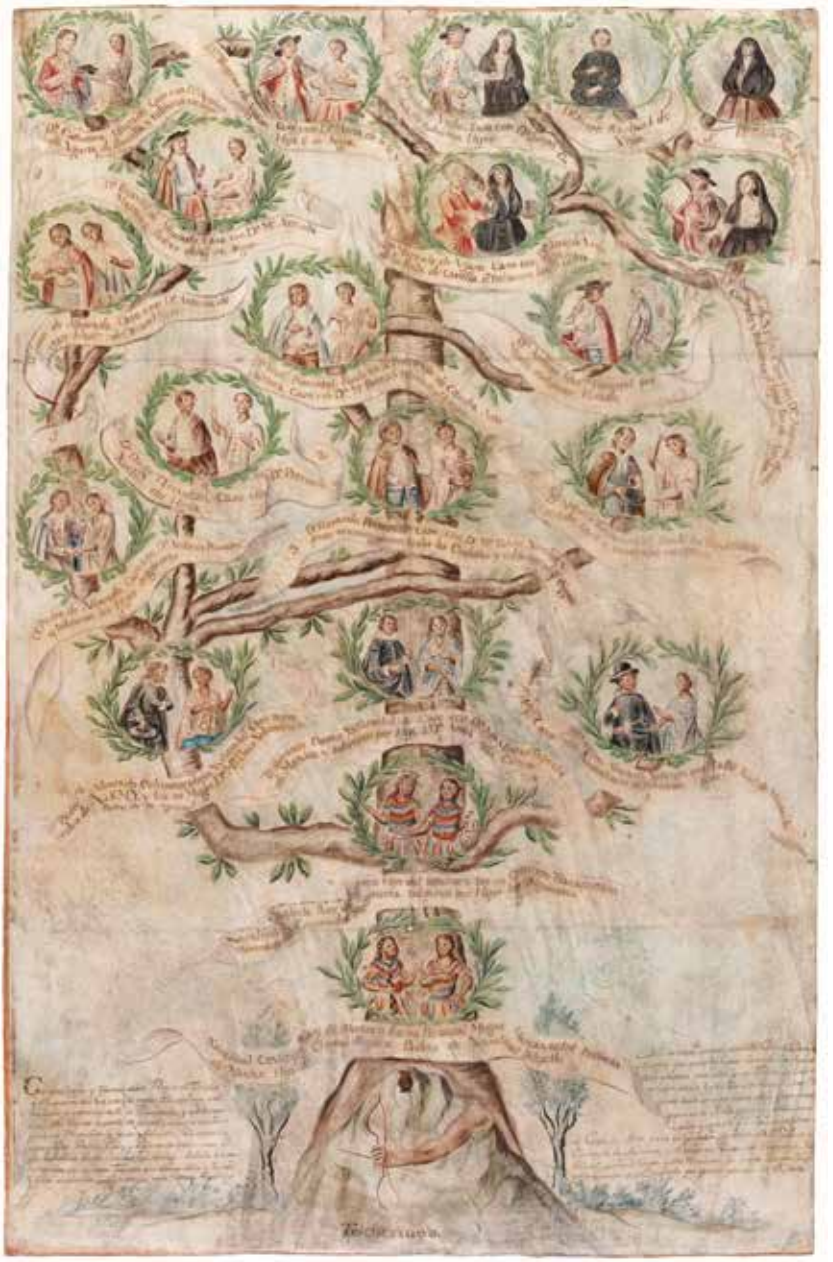


Figure 17. "Genealogie von Tezcoco", IV Ca 3011. Ethnologisches Museum, Staatliche Museen zu Berlin. Photo by Claudia Obrocki.

Figure 18. "Berliner Tlotzin-Fragment". Source: IV Ca 3013 alias IV Ca 50045 Ethnologisches Museum, Staatliche Museen zu Berlin. Photo by Claudia Obrocki.

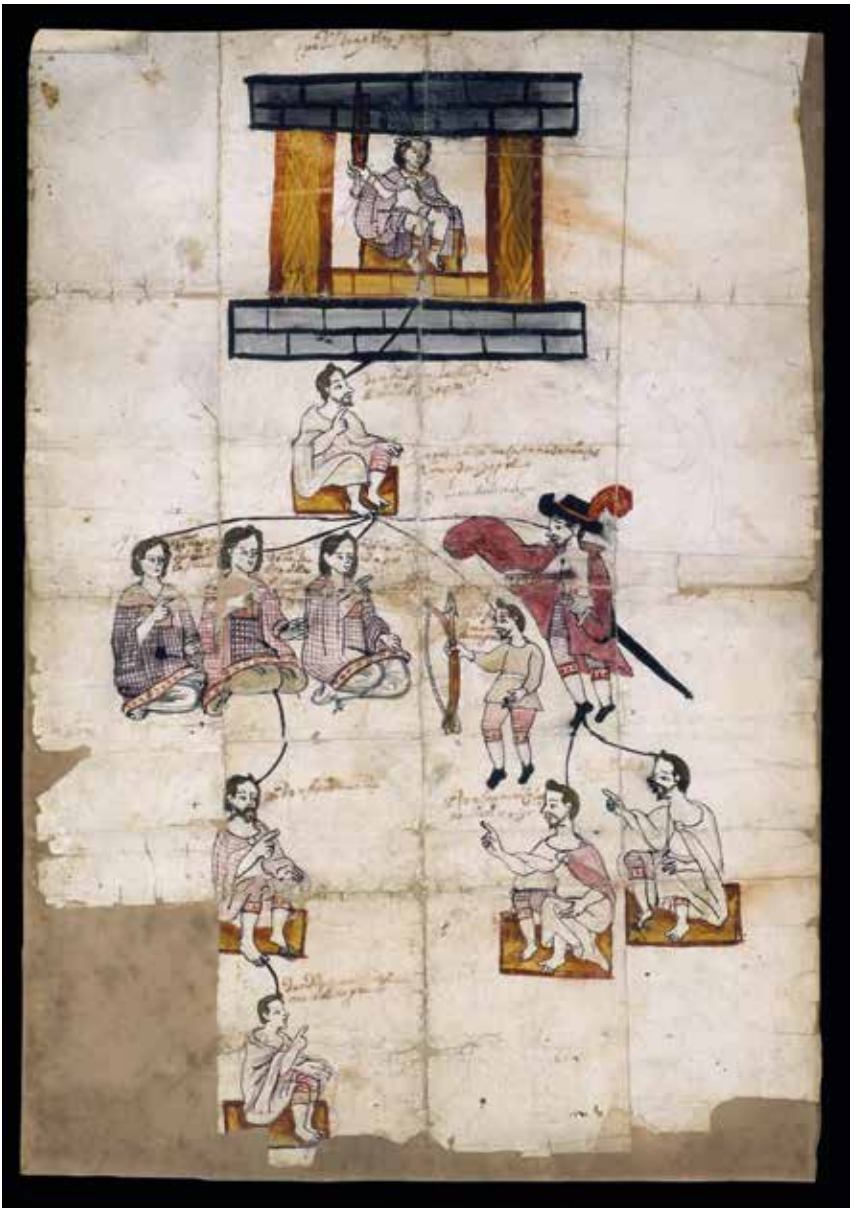


Figure 19. "Dokument der Familie Mundanegre". Source: IV Ca 3012 Ethnologisches Museum, Staatliche Museen zu Berlin. Photo by Claudia Obrocki.

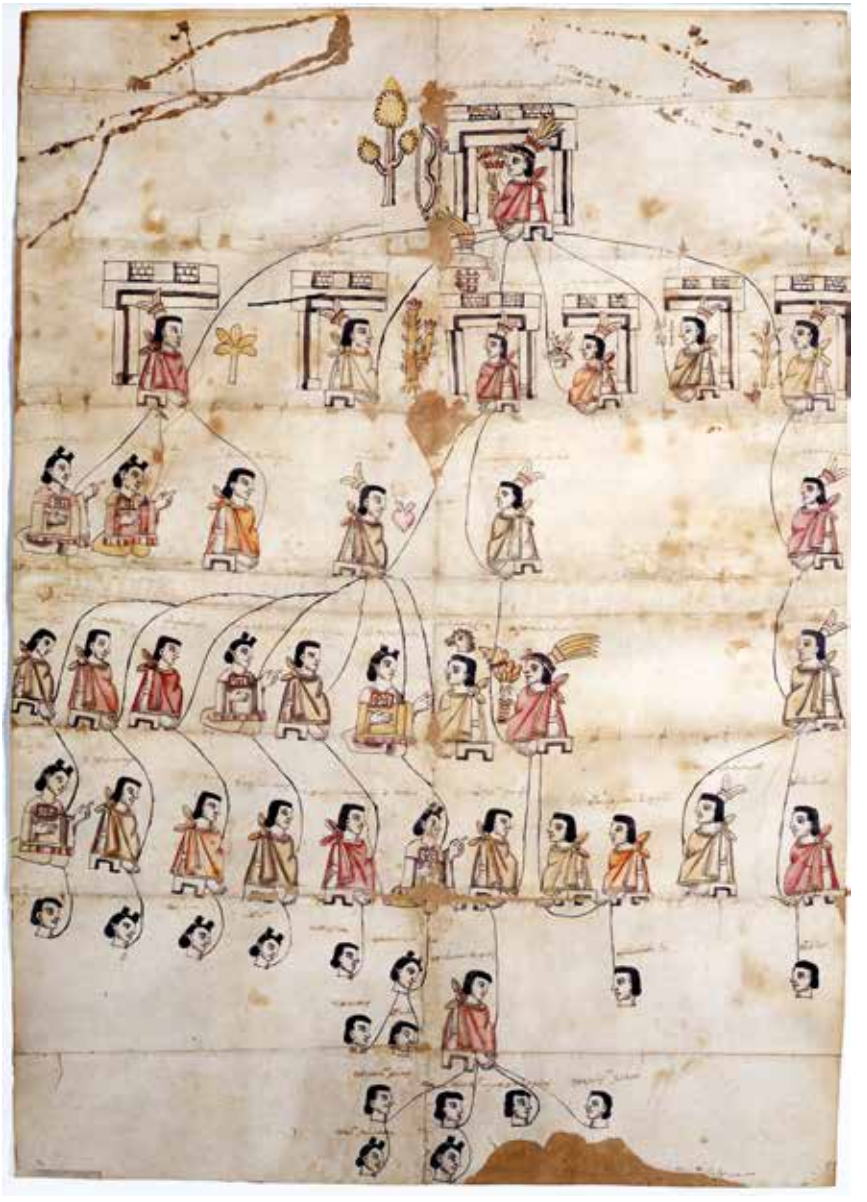


Figure 20. "Genealogie des Tlazcantzin". Source: IV Ca 3014 Ethnologisches Museum, Staatliche Museen zu Berlin. Photo by Claudia Obrocki.

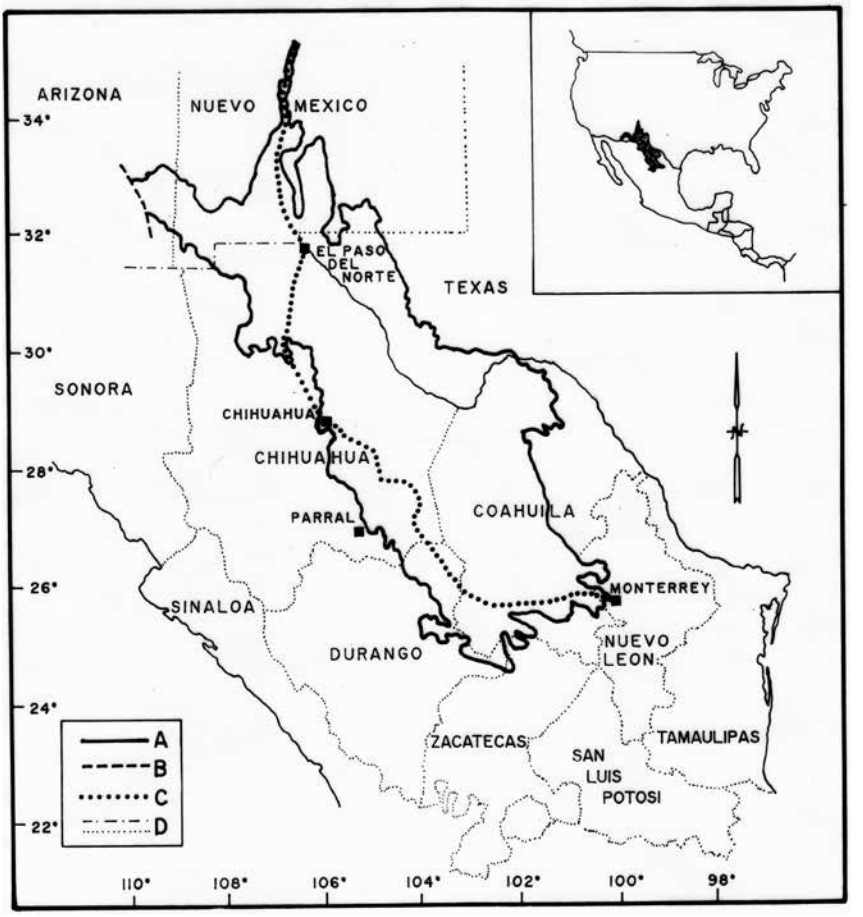


Figure 21. The route of Friedrich Wislizenus transected the Chihuahuan Desert from the North to South (Santa Fe to Chihuahua City to Monterrey). A) outline of the geographic limits of the Chihuahuan Desert. B) approximate limit between Chihuahua Desert and Sonoran Desert. C) approximate route of F. Wislizenus during the periods of 8 July to 11 September 1846 (Santa Fe to Chihuahua City) and 5 April to 26 May 1847 (Chihuahua City to Monterrey). D) international and state boundaries (respectively). Source: Map prepared by the authors with help of Felipe Villegas.

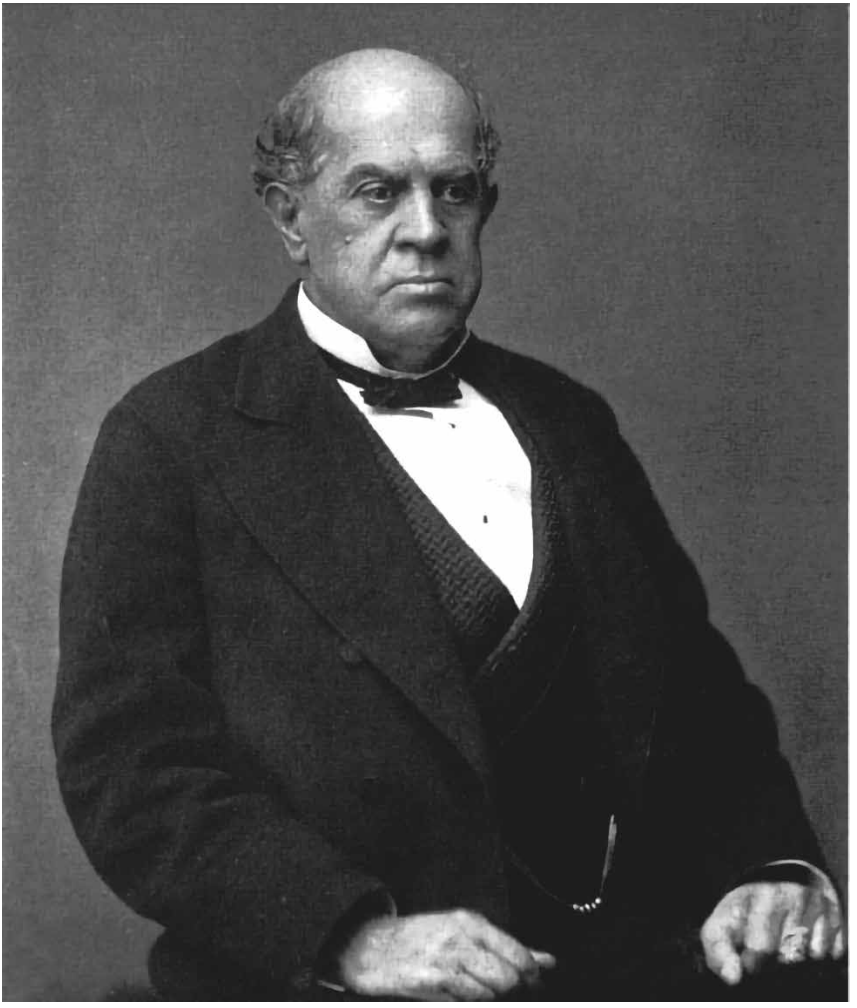


Figure 22. Portrait of Domingo Faustino Sarmiento. Source: https://es.wikipedia.org/wiki/Domingo_Faustino_Sarmiento#/media/Archivo:Sarmiento.jpg.

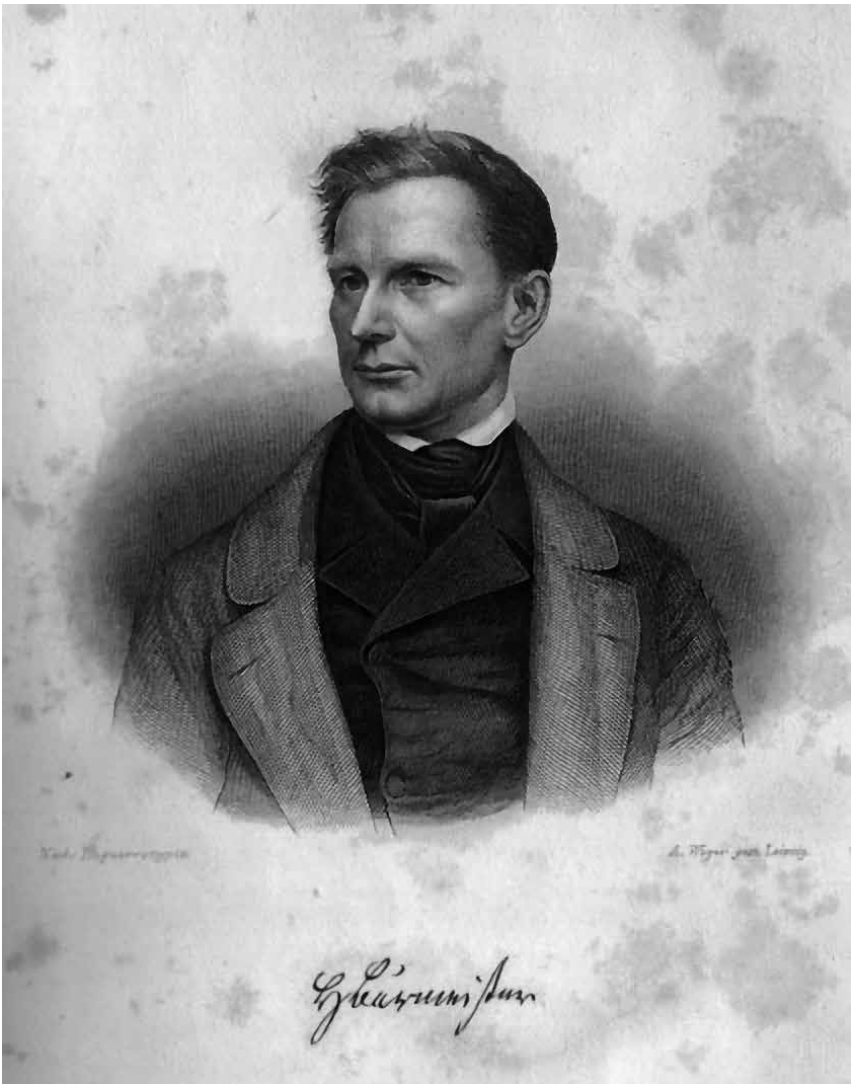


Figure 23. Portrait of Karl Hermann Konrad Burmeister (Stralsund, Germany, 1807- Buenos Aires, Argentina, 1892). Source: https://de.wikipedia.org/wiki/Hermann_Burmeister#/media/Datei:Burmeister_hermann.jpg.

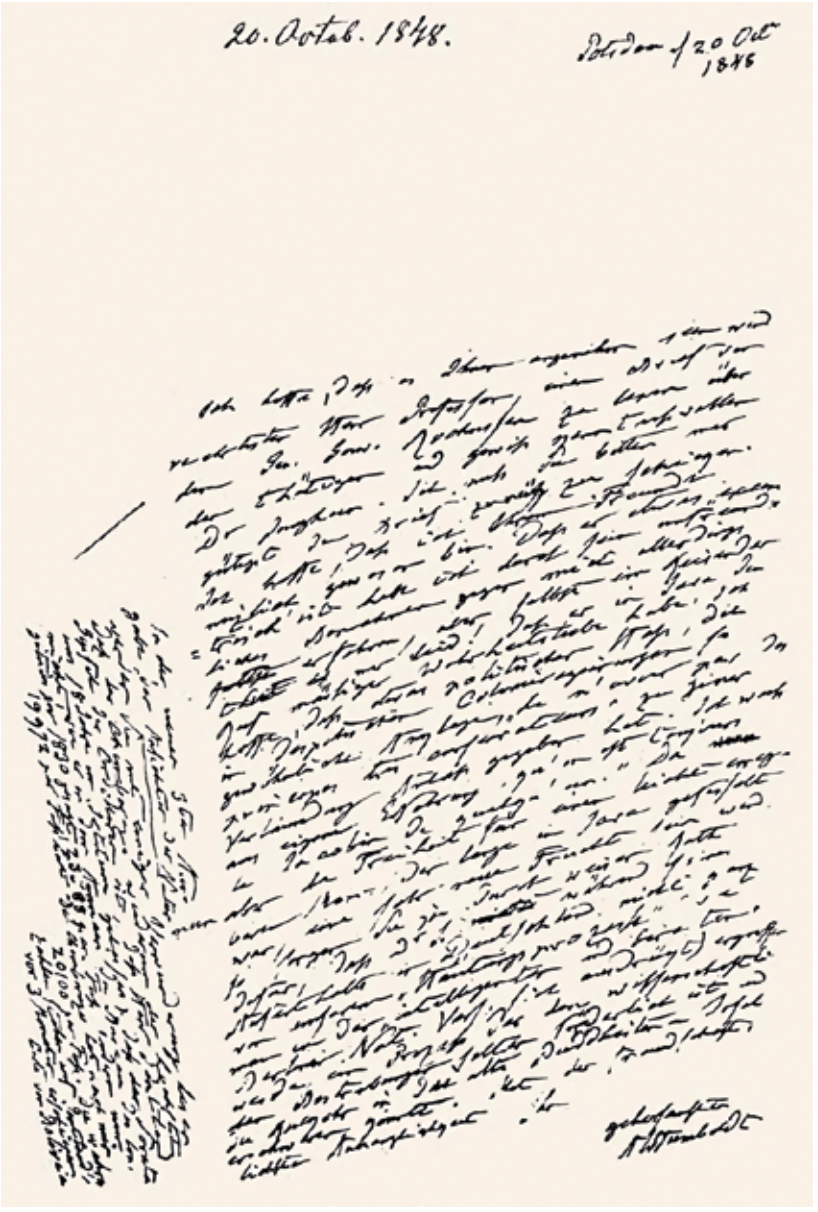


Figure 24. Facsimile of a letter written in ancient German calligraphy sent by Alexander von Humboldt to Hermann Burmesiter, dated in Postdam, October 20, 1848. Source: Courtesy of the Archives of Halle-Wittemberg University.

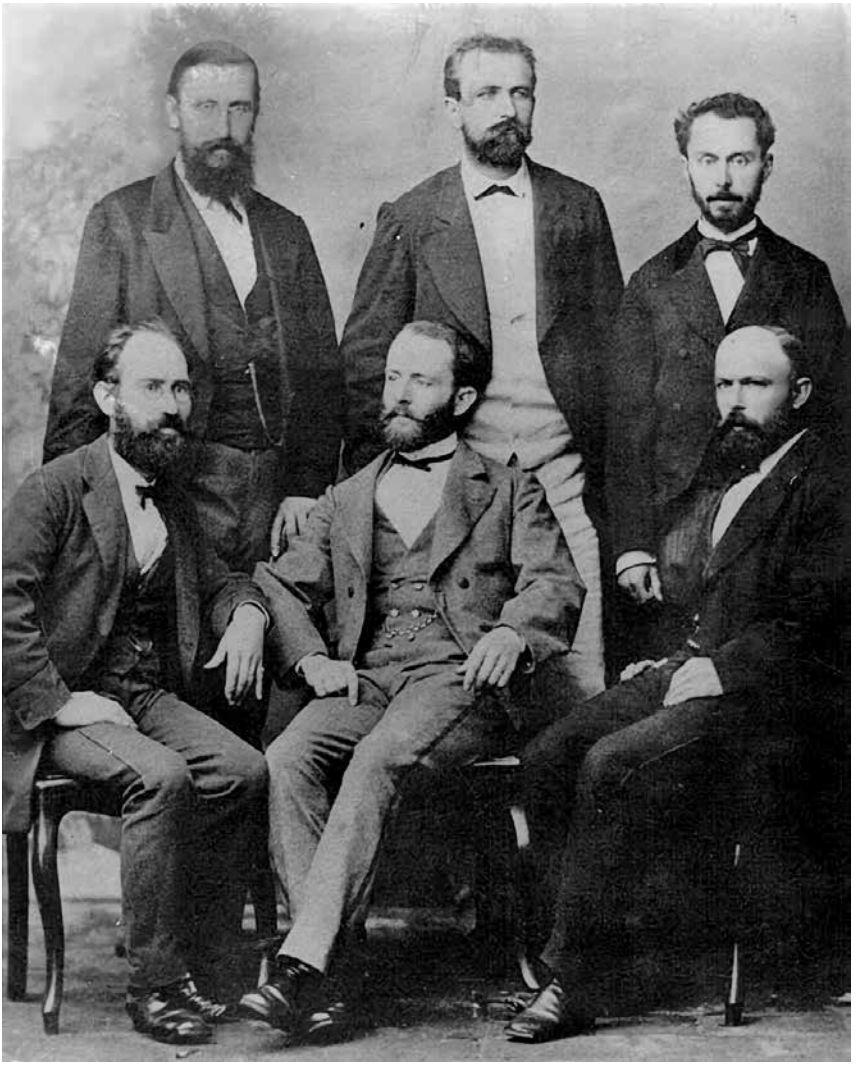


Figure 25. Photograph of the first European scientists arrived at the Academia Nacional de Ciencias. From left to right, standing: P. Lorentz, K. Schulz-Sellack, H. Weyenbergh. Sitting: M. Siewert, A. Vogler, A. Stelzner. Source: Courtesy of the National Academy of Sciences, Argentina.

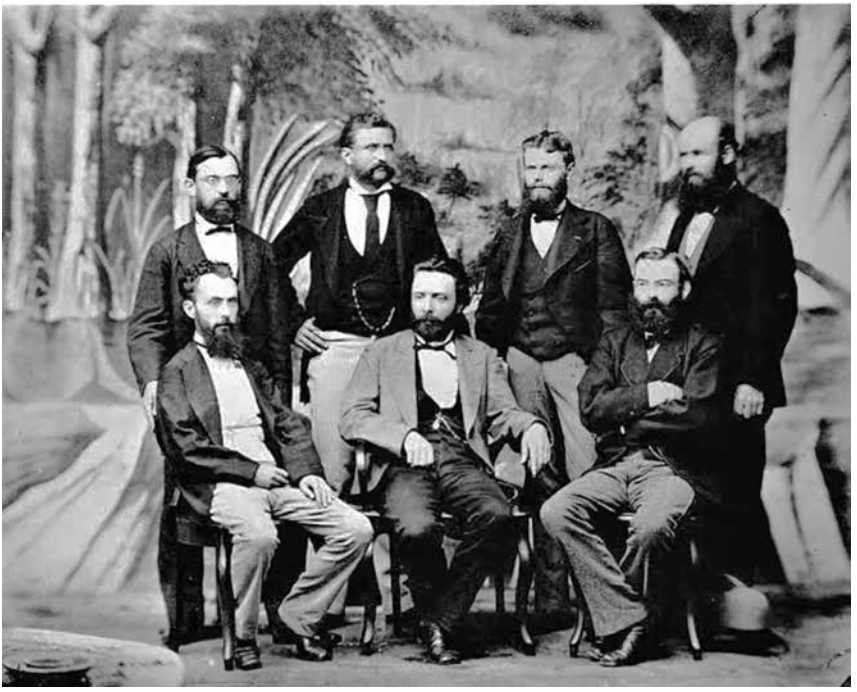


Figure 26. Photograph of the European scientists arrived in the Academia Nacional de Ciencias, some pertaining to the so-called "second generation". From left to right, standing: G. Hieronymus, L. Brackebusch, A. Döring, F. Schultz; sitting: H. Weyenbergh, F. Latzina, O. Döring. Source: Courtesy of the National Academy of Sciences, Argentina.

Figure 27. Current view of the historical building of the Academia Nacional de Ciencias, in the city of Córdoba (Argentina). Source: Courtesy of the National Academy of Sciences, Argentina.

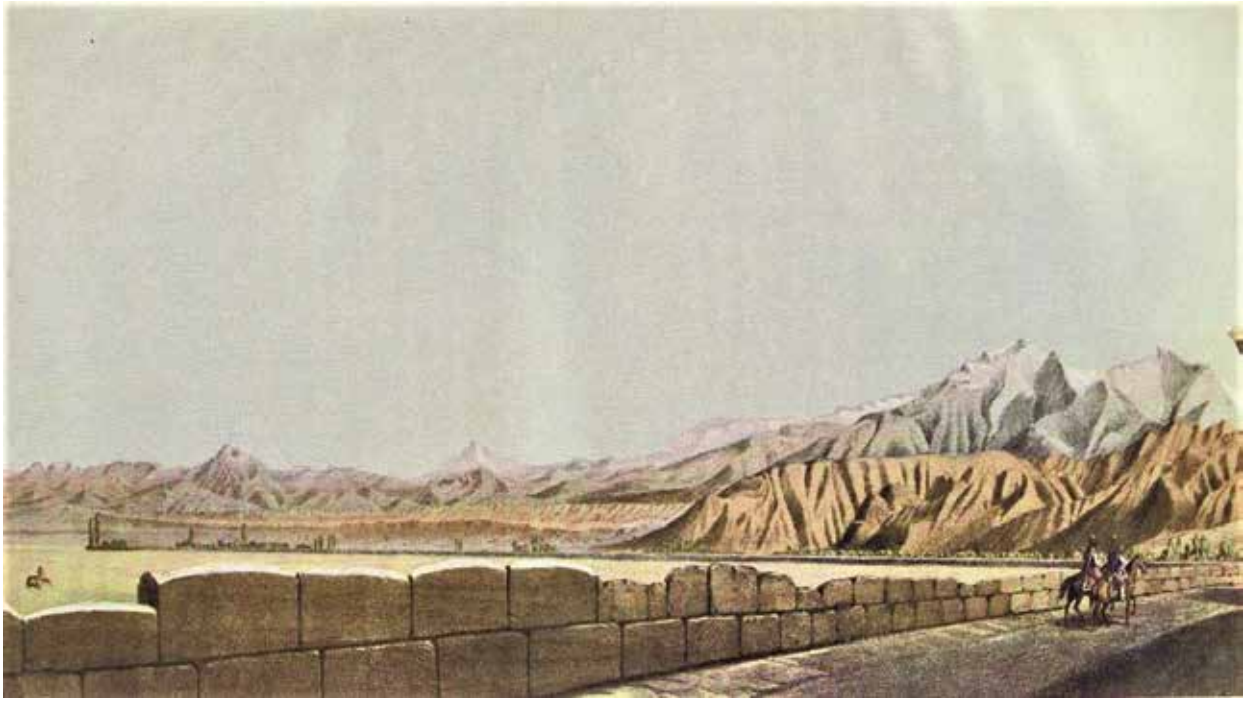
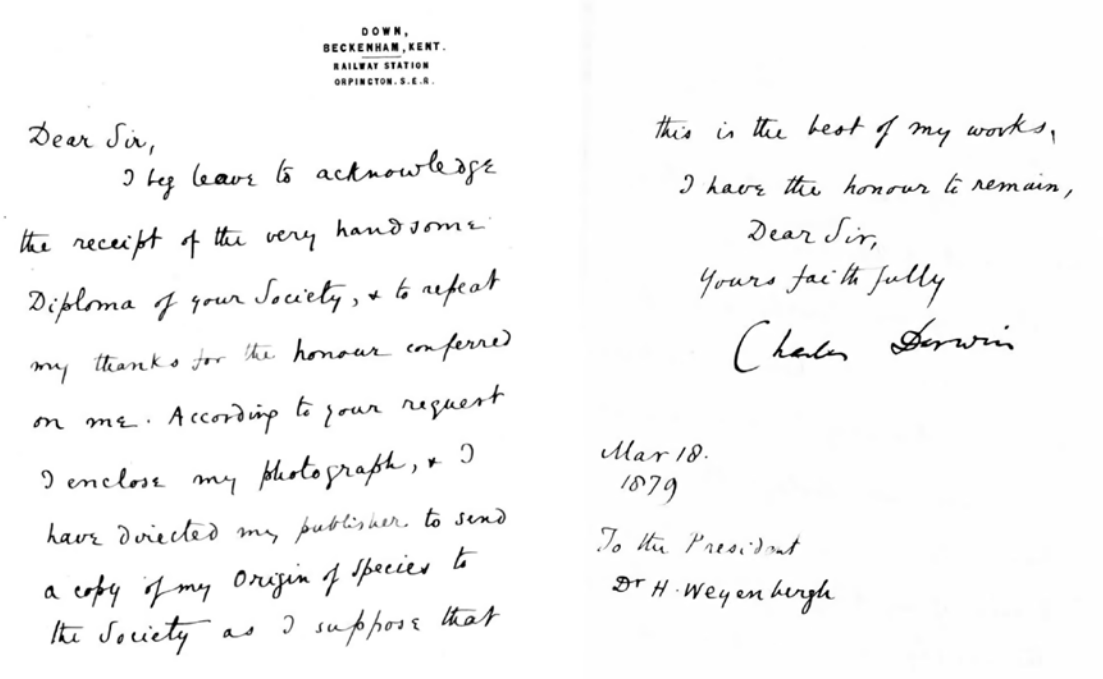


Figure 28. View of the Andes Cordillera painted by H. Burmeister on May 23, 1857. The view is from Villa de Luján, near Mendoza. The mountains on the right belong to the southern extreme of the Sierra de Uspallata; behind is the Cordillera's eastern branch, south of Mendoza River. Source: Burmeister, Hermann. Viajes por los estados del Plata, 1857-1860. Argentina, 1943, p. 233.



DOWN,
BECKENHAM, KENT.
RAILWAY STATION
ORPINGTON. S.E.R.

Dear Sir,
I beg leave to acknowledge the receipt of the very handsome Diploma of your Society, & to repeat my thanks for the honour conferred on me. According to your request I enclose my photograph, & I have directed my publisher to send a copy of my Origin of Species to the Society as I suppose that this is the best of my works,
I have the honour to remain,
Dear Sir,
Yours faithfully
Charles Darwin

Mar 18.
1879

To the President
Dr H. Weyenbergh

Figure 29. Facsimile of the letter written by Charles R. Darwin, dated on March 18, 1879, addressed to the President of the Academia Nacional de Ciencias, acknowledging his appointment as Miembro Honorario. Source: Courtesy of the National Academy of Sciences, Argentina.

editado por el Centro Peninsular en Humanidades y Ciencias Sociales, siendo el jefe de Publicaciones Salvador Tovar Mendoza, se terminó de imprimir el 8 de abril de 2022 en los talleres de Gráfica Premier S. A. de C. V., 5 de febrero 2309, col. San Jerónimo Chicahualco, C. P. 52170, Metepec, Estado de México. El texto estuvo al cuidado de Carlos Alberto Martínez López. La formación (en tipos Caslon Pro, 11:13, 10:12 y 9:11 puntos) la llevó a cabo Salvador Tovar Mendoza. El diseño de los forros lo elaboró Samuel Flores Osorio. El tiraje consta de 250 ejemplares en tapa rústica, impresos en *offset* sobre papel cultural de 90 gramos y sobre papel cuché mate de 150 gramos.