

The Maritime Voyage of Jorge Juan to the Viceroyalty of Peru (1735-1746)

Enrique Martínez-García — Federal Reserve Bank of Dallas *

María Teresa Martínez-García — Kansas University **

Translated into English (August 2012)

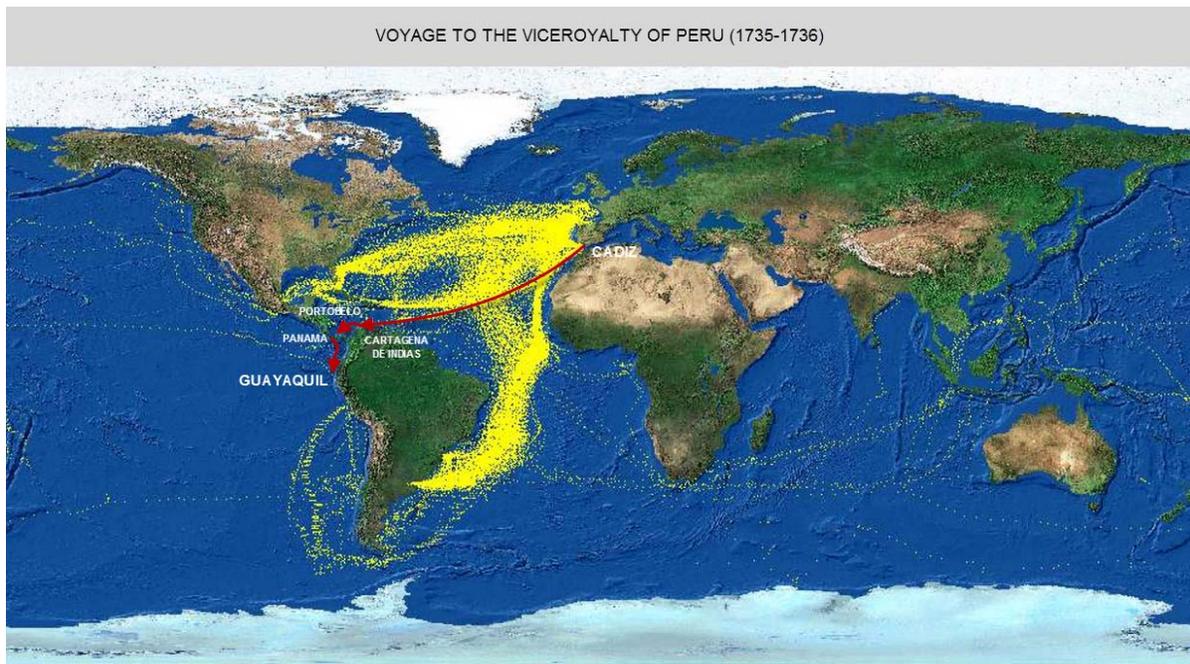
One of the most famous scientific expeditions of the Enlightenment was carried out by a colorful group of French and Spanish scientists—including the new Spanish Navy lieutenants D. Jorge Juan y Santacilia (Novelda 1713-Madrid 1773) and D. Antonio de Ulloa y de la Torre-Giralt (Seville 1716-Isla de León 1795)—at the Royal Audience of Quito in the Viceroyalty of Peru between 1736 and 1744. There, the expedition conducted geodesic and astronomical observations to calculate a meridian arc associated with a degree in the Equator and to determine the shape of the Earth. The Royal Academy of Sciences of Paris, immersed in the debate between *Cartesians* (according to whom the earth was a spheroid elongated along the axis of rotation (as a "melon")) and *Newtonians* (for whom it was a spheroid flattened at the poles (as a "watermelon")), decided to resolve this dispute by comparing an arc measured near the Equator (in the Viceroyalty of Peru, present-day Ecuador) with another measured near the North Pole (in Lapland). The expedition to the Equator, which is the one that concerns us in this note, was led by Louis Godin (1704-1760), while Pierre Louis Moreau de Maupertuis (1698-1759) headed the expedition to Lapland.

The knowledge of the shape and size of the Earth had great importance for the improvement of cartographic, geographic, and navigation techniques during that time. We revisit the trip of D. Jorge Juan as an example of the extent of the Spanish maritime routes, taking advantage of the information recently collected by the European project CLIWOC, in order to illustrate the role played by long-distance navigation in the international historical context of the 18th century. The initiative CLIWOC has compiled its information from the logbook of hundreds of ships to create a climate database for the period 1750-1850, which is especially detailed for the Atlantic and Indian oceans. Most of the location entries for Spanish ships in the CLIWOC database come from the period between 1765 and 1800, partly from the maritime postal service established by King

* (Contacting author) Enrique Martínez-García, Federal Reserve Bank of Dallas. Correspondence: 2200 N. Pearl Street, Dallas, TX 75201. Phone: +1 (214) 922-5262. Fax: +1 (214) 922-5194. E-mail: enrique.martinez-garcia@dal.frb.org. Webpage: <http://dallasfed.org/research/bios/martinez-garcia.html>.

** María Teresa Martínez-García, The University of Kansas. Correspondence: Department of Linguistics, 1541 Lilac Lane, Blake Hall, Room 427, Lawrence, KS 66045-3129. E-mail: maria.martinezgarcia@ku.edu.

Carlos III in 1765. The main documentary sources come from the *Archivo General de Indias* (Seville) and the *Archivo del Museo Naval* (Madrid),¹ complemented with the colonial archives preserved in Buenos Aires. In the enclosed maps, the location of the Spanish ships in CLIWOC is represented in yellow while we mark in red the most likely trajectory and ports of call that D. Jorge Juan followed to get to the Viceroyalty of Peru and back—based on D. Antonio de Ulloa’s account of the voyage in *Relacion historica del viage a la America Meridional hecho de orden de S. Mag.*²



On May 26th, 1735 D. Jorge Juan and D. Antonio de Ulloa started their journey from the Bay of Cadiz (Spain) in two warships, which were ready to take the 3rd Marquis of Villagarcía (1667-1746), the elected Viceroy of Peru, to Cartagena de Indias and Portobelo. D. Jorge Juan embarked on the *Conquistador* (Conqueror) and D. Antonio de Ulloa on the *Incendio* (Fire). According to the journal kept by D. Jorge Juan, they sighted the Canary Islands between June 2nd and 7th. The journey continued toward the Leeward Islands, crossing between the Islands of Martinique and Dominica on June 26th, and passing by the Windward Islands of Curaçao and Aruba on July 3rd. The 5th, they sighted

¹ Translator’s note: *Archivo General de Indias* refers to “the General Archive of the Indies” and *Archivo del Museo Naval* to “the Archive of the Naval Museum.”

² Translator’s note: This work was translated into English with the title “A Voyage to South America: Describing at Large the Spanish Cities, Towns, Provinces, etc. on that Extensive Continent.”

the *Sierra Nevada de Santa Marta* (Snowy Mountain Range of Saint Martha), the 6th they arrived to the estuary of the Magdalena River and the 7th they anchored in Boca-Chica, mooring in the bay of Cartagena de Indias on July 9th. As shown in the maps, this is a well-known and frequented transatlantic route for Spanish sailors.

In the meantime, the French expedition with Louis Godin (1704-1760), Pierre Bouguer (1698-1758) and Charles Marie de La Condamine (1701-1774), departed from La Rochelle (France) on May 16th, 1735 on the *Portefaix* (Porter). Having agreed to meet in Cartagena de Indias, D. Jorge Juan and D. Antonio de Ulloa had to wait there until the arrival of the French academics on November 15th. They departed together from Cartagena de Indias in the French ship 10 days later, landing in Portobelo (in the Kingdom of Tierra Firme) on November, 30th. On December 22nd, they reached the estuary of the Chagres River (or *Río de los Lagartos* (River of the Alligators)) and from there they paddled their way toward the dock of the town of Cruces (near Panama) on the 27th. They left Cruces on the 29th once everything was arranged for their departure, but they stayed longer than expected in Panama.

After getting passage on the ship *San Cristobal* (St. Christopher), they departed from the port of Perico (Panama) to Guayaquil (Ecuador) on February 22nd, 1736. They left the inlet of Panama through Punta Mala the 26th, sighting the bay of San Matheo on March 1st and reaching the cape of San Francisco the 3rd. They anchored on the beach of Manta the 9th to get supplies due to its proximity to the town of Monte Christo and the Cape San Lorenzo. On the 13th, they resumed the journey; they passed near the island of La Plata on the 15th and sighted cape Blanco (the southern tip of the bay of Guayaquil) on March, 17th. They reached the estuary of the Tumbes River and anchored in the Santa Clara Island (also known as *Isla del Muerto* (Island of the Dead Man)) on the 18th, where they stayed until the 20th in order to resolve some private matters of the ship's captain. On the 24th they reached the Puná Island, and the expedition went ahead to Guayaquil in time to observe a lunar eclipse which took place on the 26th. The *San Cristobal*, with most of their luggage and instruments, reached Guayaquil the same 26th at night.

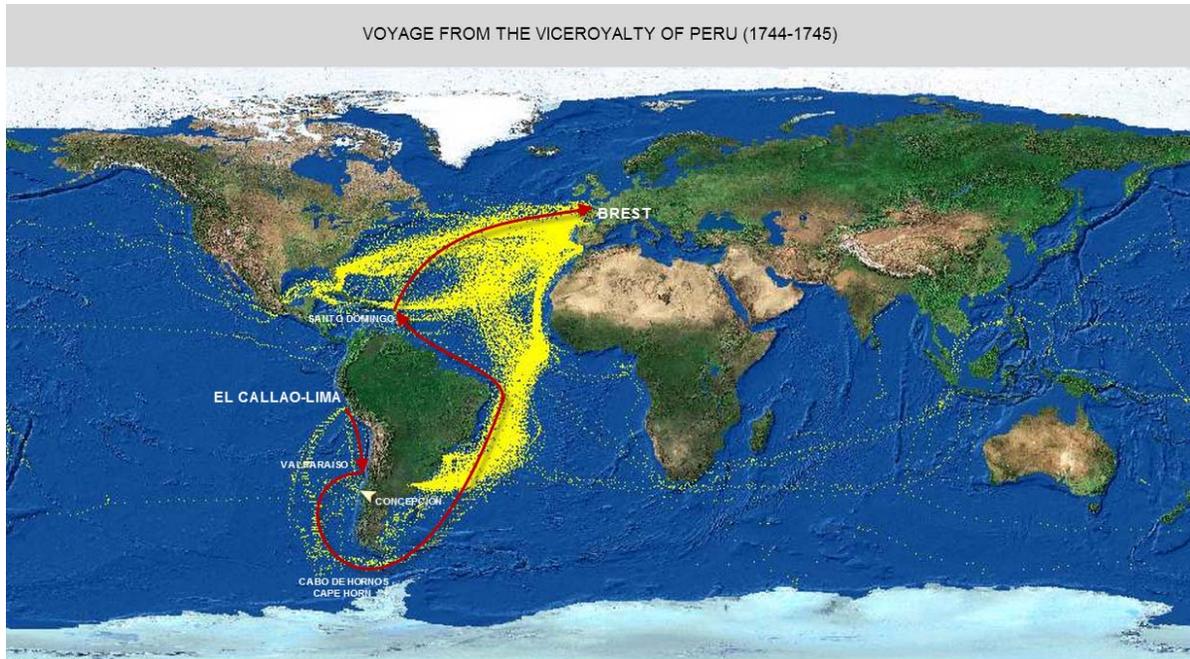
They departed from Guayaquil on May 3rd by river, and arrived to the town of Caracol on the 11th. With mules sent to them by the *corregidor*³ of Guaranda, they resumed the march on the 14th, wading across the Ojibar river during most of the journey.

³ Translator's note: A *Corregidor* is an administrative and judicial position over a town and its district appointed by the King in Castile since the late fourteenth century and later in all of Spain and its colonies until 1833.

They arrived at Guaranda on the 18th, and were hosted there until the 21st. They continued their way on the 22nd through the Chimborazo plateau, passing near Lacatunga the 27th, and reaching Quito the 29th. In Quito they were received by the president of that province, D. Dionysio de Alcedo y Herrera. For the scientists in the expedition that is when the hard work of measurement that would take place in the Andean valley spanning between Quito and Cuenca (present-day Ecuador) really started. Although the relationships were not always smooth among the members of the expedition and the local inhabitants, this trip had its moments of relaxation as well. It is worth mentioning, as Soler Pascual (2002) notes, the friendship that D. Jorge Juan established with the Jesuit Salas in Cuenca, who apparently was "from Jorge Juan's hometown (Novelda)."

When the measurements and astronomical observations were near completion, D. Jorge Juan and D. Antonio de Ulloa were required by the Viceroy Marquis of Villagarcía to take part in the War of Jenkins' Ear (1739-1748) between Spain and England. This war had its origin in the trade tensions resulting from the rights of "*asiento de negros*" (sale of slaves) and the "*navío de permiso*" (participation in the annual fair (market) of galleons in the Spanish America) obtained by the British with the Treaty of Utrecht (1713), and by the "*derecho de visita*" (right of boarding) later imposed by the Spaniards in the Treaty of Seville (1729). D. Jorge Juan and D. Antonio de Ulloa performed defensive duties in Callao-Lima between October of 1740 and September of 1741, in Guayaquil since December of 1741 and again in Lima in February of 1742. After the incursion in the Pacific ocean of the English squadron of Commodore George Anson, D. Jorge Juan in command of the frigate *Nuestra Señora de Belén* (Our Lady of Bethlehem) and D. Antonio de Ulloa of the *Rosa* (Rose) worked as Coast Guards in the area of Chile and the Islands of Juan Fernandez from December of 1742 until their return to Quito at the end of 1743 (although D. Antonio de Ulloa postponed his return a bit until January 27th, 1744). By then, only Godin remained in the province of all the French academics.⁴

⁴ Translator's note: The Juan Fernandez Islands are best known today as the place where Scottish sailor Alexander Selkirk was marooned between 1704 and 1709. His story is thought to be a direct inspiration for Daniel Defoe's famous character Robinson Crusoe.



Quickly after the remaining measurements were finished, they embarked on October 22nd, 1744 in the French frigates *Liz* (D. Jorge Juan) and *Nuestra Señora de la Deliberanza* (Our Lady of Deliverance) (D. Antonio de Ulloa) in the port of Callao for their return to Spain through the route of Cape Horn. In doing so, they tried to avoid the Caribbean route because it was considered more dangerous, given that the prolonged War of Jenkins' Ear had become by then another episode of the War of the Austrian Succession (1740-1748). The frigate *Liz* had to stop in the harbor of Valparaíso on November 11th, so its path separated from that of the *Deliberanza*. But once the *Liz* arrived to the harbor of Concepcion on January 6th, 1745 both frigates sailed together again. Joined by the frigate *Luis Erasmo* and the merchant *Marquesa de Antin* (Marquise of Antin), both French, they all formed a convoy and started the journey toward Cape Horn on January 27th. However, a leak put an end to their joint navigation on February 5th, forcing *Liz* to take refuge in Valparaiso again to undertake the necessary repairs. The *Deliberanza* crossed the Cape Horn with the rest of the convoy, and stopped in the Portuguese island of Fernando de Noronha between May 21st and June 10th to get the necessary supplies to continue their long journey. The *Deliberanza* alone escaped from an attack by two English privateers on July 21st, but it was captured in the harbor of Louisbourg in Cape Breton (Newfoundland) on August 13th. D. Antonio de Ulloa was careful enough to throw into the sea the classified documents that he was carrying before his capture, but he retained all the scientific work gathered in Ecuador with him while he

was in prison in Portsmouth (England) until he was allowed to return to Spain with those documents.

Once the repairs in the *Liz* were completed, D. Jorge Juan resumed his journey on March 1st. Pushed by the strong winds, the *Liz* passed the Juan Fernández Islands by their north side, before facing the frightening Cape Horn. Once they arrived to the Atlantic Ocean, they set course for the island of Martinique. On June 29th, they sighted the Leeward Islands, more precisely the island of Tobago and what they thought was the small island of San Gil. From Tobago, they continued sailing between the islands of Barbados and St. Vincent, but failed to find the Martinique, presumably because the ocean currents diverted the ship. However, they eventually sighted the islands of Puerto Rico and Santo Domingo on July 4th, 1745. After evading two English privateers, they anchored at the harbor of Guarico (in the western French side of Santo Domingo) on July 8th. Their arrival could not have been more fortuitous given that 5 French warships were in the area to escort a merchant fleet. The large convoy, consisting of 53 ships in total, left for Europe on September 6th. On October 17th, they discovered the capes of Ortegál and Prior in the coast of Galicia (Spain). In October 31st, 1745 they reached the harbor of Brest in France without any major mishap. From there, D. Jorge Juan went to Madrid on February 1746 but not before receiving the honor of being named *Correspondent* of La Condamine by the Royal Academy of Sciences of Paris in session of January 26th. This transatlantic route was performed in a French convoy, but followed shipping routes well-known to Spanish sailors of the time as may be inferred from the maps included in this note.

The ultimate purpose of our remarks is to highlight the importance of the journey itself that D. Jorge Juan made to South America to illustrate the role that long-distance maritime routes had in the political and economic relations of the Enlightenment. As a case in point, let us recall that it took D. Jorge Juan just over 5 weeks to sight the Spanish Atlantic coast leaving from Santo Domingo in his return to Europe through a well-established transatlantic route, whereas the trip from Guayaquil to Quito did often take more time despite the fact that the geographical distance was much smaller. D. Jorge Juan, of course, was well aware of the strategic value of knowing these oceanic routes based on the acquired experience of the Spanish sailors with the currents and wind circulation in the oceans. Not surprisingly, it is the enhanced accuracy of navigation and cartography the great technical achievement of this expedition that would have significant repercussions in the Enlightenment and the beginnings of the Industrial Revolution.

Bibliographic references:

Ricardo García Herrera, Dennis Wheeler, Gunther Können, Frits Koek, Phil Jones and María Rosario Prieto (2003): "CLIWOC Final Report," in <http://www.ucm.es/info/cliwoc/>

Julio F. Guillén Tato (1973): "Los Tenientes de Navío Jorge Juan y Santacilia y Antonio de Ulloa y de la Torre-Guiral y la medición del Meridiano." Caja de Ahorros de Novelda, Madrid.

D. Jorge Juan y D. Antonio de Ulloa (1748): *Relacion historica del viage a la America Meridional hecho de orden de S. Mag. para medir algunos grados de meridiano Terrestre, y venir por ellos en conocimiento de la verdadera Figura y Magnitud de la Tierra, con otras varias Observaciones Astronomicas, y Phisicas.* Impresa de orden del Rey nuestro Señor en Madrid, por Antonio Marin. Consulted online from the historical catalogue of the library of the Universidad Complutense de Madrid (catalogue *Cisne*).

Emilio Soler Pascual (2002): "Viajes de Jorge Juan y Santacilia. Ciencia y Política en la España del Siglo XVIII." Ediciones B, S.A., Barcelona, España.