Maps and Cartographic Ideas in Motion
José María García Redondo,
José María Moreno Martín (coords.)

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Maps and Cartographic Ideas in Motion: Circulation, Transfers and Networks. Introduction to the Special Issue

The circulation of geographical knowledge, understood through a material culture that comprises texts, instruments and images in various formats, is currently the focus of attention for specialists in different fields. Recent historiography on scientific practice, influenced by sociology and the philosophy of science, lays special focus on instruments, machines, individuals, theories and facts as consubstantial to the generation of scientific knowledge. This approach to scientific development does not only stress advances and discoveries, but goes beyond to consider the overall practices that constitute it as a complex cultural, social and material activity (Latour, 1987; Livingstone, 2003; Withers, 2007).

In recent years, historians of science have superseded the notion that the dissemination of knowledge in the Early Modern Age was a directional "centre-periphery" process between Europe and its colonies overseas. The role of the latter was hitherto seen as a passive producer of data, to be processed by foreigners, and the recipient of the resulting scientific knowledge (Delbourgo and Dew, 2008). In the field of geography, this "diffusionist" model reinforced traditional values of European scientific cartography as the only universally valid model for the expression and interpretation of space. Contributions by cultural history and colonial and post-colonial studies have replaced this view of the New World (and other regions around the globe) as the static stage where the investigations and experiments undertaken by Europeans (or at the service of Europeans) took place, and emphasises the translation of local knowledge beyond its locale of production and its dissemination and universalization as a multi-layered and multi-directional process of exchange, negotiation and integration of agents and knowledge. In this way, the history of science (and thus of maps) is presented as a history of global encounters and connections. Other mapping practices and alternative views on the territory have been incorporated to the narrative, hybrid representations, alongside experiential and inter-subjective evaluations of the environment and the role that every community plays in the cosmos.

Recently, different historiographical schools —especially in Latin America— have relativized the role of major cartographic centres or "laboratories" in the colonial metropolis, studying the production of maps and the interpretation of space not only in peripheral regions, but also by subjects traditionally regarded as peripheral. In this regard, cartographic practices are analysed in their complex relationship with society, imperial structures, scientific institutions and the local conditions for the production, transmission and handling of instruments and territorial knowledge (Mundy, 1996; Safier, 2008; Appelbaum, 2016; Erbig, 2020). The maps resulting from colonial and post-colonial encounters, and the multiple uses to which they were put in America and Europe, reveal a history of cartography which is as wide in the global sense as specific in the local scale, having the ability to simultaneously expanding and integrating empires and oppressing subordinate peoples.

Although in recent decades the history of maps has ceased seeing these visual devices as part of a process of lineal progress towards increasing "perfection" (Edney, 2019), it remains important to remember that maps were constantly circulated, read and elaborated by different subjects (in multiple places and times, and for multiple purposes), and must thus be regarded as "knowledge *in* transit": visual knowledge, the production, use and consumption of which was subject to the contingencies inherent to both the movement of the map-device (understood as a cultural object that goes from hand to hand) and the ontological displacement of the space represented in the map (the new lives of the represented space, which is transported to, and reinterpreted in, multiple spaces). The proposal of this monograph is to present maps as pieces of a knowledge "in construction" and "in motion": The map "as a place" of exchanges and experimentation, as an object that travels —throughout time— between different people, nations and empires, or as an instrument that creates, transmits or questions geographical knowledge. By analyzing the dissemination of cartographic practices and surveying tools, the

reproduction or imitation of visual models, the relationships between mapmakers and their audiences, as well as the political tensions and everyday practices on the territory, maps are displayed more as a image "in process" of the world than as a stable depiction of an immovable truth. In other words, maps are presented as a system of interpreted realities —provisional and contingent— the image of which changes and is constantly being adjusted.

From a global perspective, the eight articles in this dossier address the construction of geographical knowledge in America and Europe based on case studies spanning the 16th and the early 19th centuries. The circulation of maps is conceived as a locus for the formation of knowledge through the exchange of ideas, persons and images, the configuration and reconfiguration of both maps and the space that they represent. The focus of attention shifts from the places in which data was collected, the "laboratories" in which this data was processed and, even, the contexts of dissemination and use, to examine the transformations undergone by the maps in the course of this geographical, political and social transit. Each of the authors presents his or her own specialised perspective on sources —nautical charts, voyage records, maps in different formats and media, atlases and land registers— individuals, institutions and projects to illustrate the changing nature of maps "in transit" and the way maps and the territories that they represent, circulated by map-makers and users, were constantly being reinvented through the appropriation, reinterpretation and reconfiguration of their own image.

In the Early Modern period, the dimensions of the earth became redefined in different spaces and at different scales, connecting not only people from distant cultures, but also capital and political and religious systems in a new global network. The cartographic development that ran parallel to this process has been traditionally regarded as an outcome, the evidence of the progress of exploration, of nautical advances, the political image of an increasingly Europeanised world. However, in reality intellectual exchange and cultural and scientific development were determined by a complex process of hybridisation overseas, while European powers strove to collect, systematise and analyse the knowledge coming from every corner of the globe.

Maps and cartographic practice became, in and by themselves, an eminently scientific practice, agents and witnesses of the drastic global changes beginning in the early 16th century (Soler, 2015). Maps were living entities, revised and re-read every time a voyager returned to port with new discoveries and novelties. More, and faster, than any other discipline, cartography created and recreated the shape of the earth. According to Antonio Sánchez, Magallanes and Elcano's circumnavigation played a pivotal role in changing existing ideas about the earth, and about the potential role of the scientific techniques associated with navigation. Although historiography has stressed the accidental and involuntary nature of this feat, Sánchez emphasises not only the nautical developments that made it possible, but its impact on the configuration of modern geography within the framework of a long process of cosmographic and cartographic transference between Spain and Portugal. Changing scales and the need to create new maps with which to explain the world's spherical shape ran hand-in-hand with a thirst for visual —and, it is fair to say, spectacular— representations, the proliferation of cartographic images. The changes undergone by geography as a result of a historical accident and the synthesis of multiple observations taken worldwide, expressed and developed in a corpus of constantly evolving maps and texts, illustrates the contingent and oscillating nature of the objects through which the knowledge of the natural world was organised.

The creation of both formal and informal information channels between different map-making centres in Europe is one of the key factors to understand the dissemination and construction of an ever changing perspective of the world. José María Moreno Madrid traces information flows between nations and demonstrates the permeability of borders to the exchange of knowledge and the "permissibility" of governments, which challenged the "secrecy" policies adopted by the Iberian monarchies in the early 16th century, amid stories of "cosmographic espionage." While it is true that Portugal and Castile enacted laws to avoid the filtering out of strategic information, the exchange of specialists —and their geographical knowledge and everyday practice— between nations led to a homogenous visual apparatus and the emergence of a wealth of shared graphic conventions to which all nations contributed. As such, the flows of production, circulation and consumption of these maps (regardless of whether they were acquired legally, in the black market or as the outcome of individual initiative) created the basis of new communities of interpretation: groups of cartographers-readers-authors who interacted with other specialists, such as the pilots who fed them with information for the charts which they afterwards followed at sea.

Thinking about the role played by mapmakers as witnesses, communicators and interpreters of geographical information leads us to consider the singular nature of every experience and impression, especially if we consider that these were, in addition, mediated by the available instruments. In any case, few in the Early Modern Age doubted the direct witness's ability to grasp reality. This privileged first-hand accounts as sources of precise cartographic information for the representation of new discoveries. Therefore, navigation charts relied on the experience of seamen, which was seen as guarantee of veracity, a dependable instrument to guide new voyages. In his article, Chet van Duzer analyses a number of rare first-person accounts produced by authors of navigation charts and *isolarii*, or island books illustrated with maps, and how their

production changed to adapt to the emerging idea of the "author as witness" and to the broadening of their potential audience. In the early 16th century, the seed of what was to become *Cartographie de Cabinet* was planted, especially in relation to the elaboration and increasing reach of *isolarii* and map collections for erudite consumption; "a genre for armchair travellers, written by armchair geographers." These cartographers ensured the success of their work by turning their maps into an aesthetically pleasing but also authoritative document. For this, they relied on the compilation of trustworthy news, experiences and images.

The mapmaker's task was not only to translate these multiple sources into their own language, but also to convert texts and images into cartographic products. This involved the interpretation of specific experiences about place but also the incorporation of multiple flows of additional information, the repetition of visual models and the re-elaboration of new iconographic types. This resulted in a rich and complex re-creation of the nature represented in maps. Carolina Martínez analyses in detail the visual translation of the earliest description and chronicles of the New World into the plates of Guillaume Le Testu's *Cosmographie Universelle* (*c*. 1556). To these forms of translation, Carolina Martínez adds another formula concerning the discursive and graphic appropriation of historical events and the territory, in this case as a way to promote French expansion in South America. By providing exuberant images of nature in the New World, maps not only contributed to a better understanding of geography, flora and fauna. By presenting multiple layers of information that were pleasant to the eye and images that were full of life, maps greatly contributed to create attitudes and prejudices about American peoples.

In colonial environments, the development of Creole science encouraged communication between local knowledge and new forms of scientific expression for a global audience. In the 18th century, in the viceroyalty of New Spain, the priest José Antonio de Alzate compiled and valorised the natural knowledge of Mexicans to adapt it to universally recognised categories, which involved, on the one hand, the adaptation of his maps and texts to a variety of different publics, and, on the other, the reception, translation and transformation of his work in spheres that were beyond his reach, specifically in the Paris *Académie Royale des Sciences*. Based on the *Nuevo Mapa Geographico* (1767), José María García Redondo analyses the multiplicity of local and international dynamics of knowledge and, sometimes contradictory (even within the work of the primary author himself), intellectual influences that can converge on a single map as a result of its circulation. García Redondo argues that Alzate re-elaborated his map and imitated aesthetic and astronomical cartographic conventions to adapt his work to different audiences and thus increase its impact.

As pointed out by John Brian Harley (1988), in the context of territorial conflicts maps were perceived as a valuable instrument at the service of national interests, with their deliberate silences, alterations and secrets. In the late 18th century, the growing number of maps available (and of people with access to them) made diplomats increasingly aware of the need to choose the appropriate cartographic tools, as information and visual arguments could vary from map to map. Against the backdrop of the Treaty of San Ildefonso (1777), signed by Portugal and Spain to establish their national boundaries in Brazil, Júnia Ferreira Furtado analyses the circulation of Portuguese maps —and their interaction with Spanish cartography— and how the Brazilian borders were presented by European geographical works. The interaction of Portuguese diplomatic information with the cartographic and editorial work of the French Rigobert Bonne and Guillaume Thomas Raynal reveals a complex scenario in which maps were read and re-read: the use and interpretation of certain maps (as well as their copy and adaptation) determines subsequent interpretation patterns and perspectives on the territory thus represented. In this way, the perception of cartography as an aseptic and scientific endeavour is questioned by the changes and omissions undergone by Juan de la Cruz Cano's map (1775) over time, illustrating the use of maps by the Spanish and Portuguese empires to redefine their boundaries in the American continent.

The study of the publication, commercialisation and consumption of maps is one of the most recurrent and fruitful approaches to the history of European cartography (Pedley, 2005). However, the re-elaboration or updating of map designs is generally explained as the result of the changing of borders, more precise geographical knowledge, or the aesthetic or scientific revision of cartographic conventions. But, as Iris Kantor and Thomás A. S. Haddad point out, the material circulation of scientific information is a political act which, in the field of cartography, is illustrated by the transformations undergone by maps. Based on two atlases, one of the earth and another one of the heavens, produced in Portugal between the late 18th and the early 19th centuries, the authors trace the ever-shifting links between power and cartography in Great Britain, France and America at different timescales. The examination of the documents produced by the printers *Arco do Cego* and other Portuguese institutions, leading to the generation of new maps and the re-elaboration of Flamsteed's celestial atlas (1729), exposes the participation of mathematicians, astronomers, engravers and diplomats in the creation of a cartographic corpus that displayed and embodied the Portuguese ambitions in the world of international scientific research.

In addition to major imperial disputes over borders and their reflection on maps, on-the-ground experiences of territory and the need to establish local boundaries gave rise to specific cartographic practices related to land registers. The huge changes undergone by the northern frontier of the former viceroyalty of New Spain after the transfer of Spanish territory to

the newly-created United States was the beginning of a dialogue between the pre-existing cartographic corpus and the new political reality. In the last article, Matthew E. Franco focuses on specific, on-the-ground experiences of place, and on the creation of local networks of geographic information in the Lower Mississippi Valley in the turn of the 19th century. Faced by the new situation, local residents rescued and circulated the old (Spanish) land registers as proofs of ownership; this cartography followed land exploitation criteria, and was used to remodel categories of domination over the colonial territory and to legitimise the continuation of traditional practices despite the change of political regime. Franco argues that the Spanish organisation of space —defended by landowners through the use of land registers— gave shape to American perceptions of the region and was the base of later land exploitation models.

In conclusion, the processes of circulation and transference of geographical knowledge analysed in this volume address the (in motion) construction of knowledge through maps and their transformation in Europe and America from the 16th to the 19th century. The way maps participated and were built *in* and *during* their circulation, the result of broader historical circumstances and of changes in cartographic methods and practices, is analysed from different perspectives. The wide scope of these perspectives, with special emphasis in intellectual and material practices —and spanning a broad array of geographical spheres and conditions— contributes to a renovated approach to the construction and dissemination of maps through circulation and translation, to their transformation by different agents, the re-reading and re-elaboration of images in multiple spatial contexts. The editors want to express their gratitude for the quality of the work and the commitment of contributors in such difficult times for the movement of people, but not for the free circulation of knowledge and ideas.

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José María García Redondo
Pablo de Olavide University
e-mail: jmgarciared@gmail.com
ORCID iD: https://orcid.org/0000-0002-4349-3306

José María Moreno Martín
Naval Museum of Madrid
e-mail: jmormar@fn.mde.es
ORCID iD: https://orcid.org/0000-0003-0992-8342