



| LATIN AMERICA IN THE HISTORY OF KNOWLEDGE AND THE HISTORY OF SCIENCE DURING THE LONG NINETEENTH CENTURY

| AMÉRICA LATINA EN LA HISTORIA DEL CONOCIMIENTO Y EN LA HISTORIA DE LA CIENCIA DURANTE EL LARGO SIGLO XIX

CHRISTIANE HOTH DE OLANO
Katholische Universität Eichstätt-Ingolstadt
Christiane.Hoth@ku.de

The history of science and especially the recent history of knowledge are two booming and interrelated fields of research. But it is not only history as a discipline that has been increasingly concerned with knowledge as a kind of ‘resource’ for about twenty years. In the sociology of knowledge, which has significantly shaped the history of knowledge as a subdiscipline, knowledge is conceived as a kind of agency. Historians, in contrast, are interested in what contemporaries considered to be knowledge. While the history of science focuses mainly on academic knowledge, and in earlier times presented thoroughly positivist master narratives, the history of knowledge can now identify more clearly conceptual approaches and perspectives. Moreover, the history of knowledge does not only focus on scientific knowledge, but also on other forms of knowledge. The old epistemic privilege of scientific knowledge thus gives way to a more dynamic and praxiological, an altogether more complex concept of knowledge. However, the history of knowledge is still far from being a coherent research field that can be clearly defined. Currently, it can be situated between a widening scope of methods and frameworks, a (re)fashioning of traditional and new subjects, and a broadening of contexts without detachment from the new cultural history. Further, the history of knowledge is also pushed by political discussions on scientific truths or alternative facts, which underlines the present status of knowledge. Recently, events such as the LASA congress 2017 on “Dialogues of Knowledge”, the ADLAF congress in 2021 on “Knowledge, Power and Digital Transformation in Latin America”¹ or the research focus “Knowledge Production and Cultural Transfer: Latin America in a Transregional Context” of the Ibero-American Institute in Berlin, among others, are just three examples that show the importance ‘knowledge’ has taken within Latin American studies. Furthermore, these focal points also bring the popularization of knowledge into focus. Thus, in the processes of exchange between academic and non-academic forms

¹ See https://lasaweb.org/lasa_archive/lasa2017_archive/index.aspx and <https://adlaf.de/de/tagungen/adlaf-tagung-2021/>.

of knowledge, new knowledge is generated, distributed and continuously changed. For the history of knowledge and science related to Latin America, the praxeological perspective is particularly fruitful, focusing on subjects that have so far received too little attention in historiography (for example, healers, women, etc.). Likewise, certain epistemological communities (for example, indigenous peoples, missionaries, etc.) and material cultures raise new questions for historians and contribute to the consolidation of new knowledge spaces. In this context, the natural sciences, medicine and ethnography are examples of such knowledge spaces that continue to receive attention in the Latin American context.

This collective review presents five books published between 2017 and April 2020 that can be classified as histories of knowledge and histories of science. To ensure comparability, the review is limited to studies that deal primarily with the long nineteenth century. In addition, the review is limited to studies on Spanish-speaking regions. Publications were selected that represent different approaches to the history of knowledge and science. The monograph *From Idols to Antiquity* written by Miruna Achim represents three different approaches at once. In her study, objects as well as related practices (e.g., collecting; cataloging) play a significant role. Moreover, the spatial perspective (the museum as an upcoming space of *doing archeology*) is important. In Lina del Castillo's monograph *Crafting a Republic for the World*, the focus is on individual actors and, in approaches, around their practices, which accompany the reader through the narrative. Alexander van Wickeren's *Wissensräume im Wandel* has taken a decidedly spatial approach, and the two anthologies edited by Carlos Sanhueza Cerda, *La movilidad del saber científico en América Latina*, and Carolina Valenzuela, *Tendencias y perspectivas de la cultura científica en Chile y América Latina*, offer a broad portfolio of different approaches.

The first monographic study entitled *From Idols to Antiquity: Forging the National Museum of Mexico* was published in 2017 at University of Nebraska Press. Miruna Achim, professor at Universidad Autónoma Metropolitana-Cuajimalpa in Mexico City, presents the 'invention of Mexican antiquities' through the first decades of the chronically underfunded National Museum, the today's Museo Nacional de Antropología. It is not a book about a national museum as a successful expression of a constructed 'national identity' (p. 4). On the contrary, it tells the story of an institution that was founded in 1825 –but was “neglected by the state” (p. 1)– and the survival of its objects during the first four decades of its existence. In fact, the directors faced a disinterested state that provided no funds for expeditions, acquisitions, storage, or exhibitions between its foundation and the end of the Second Empire in 1867. On the international stage of that period, the museum's representatives resisted a North Atlantic scholarly consensus that viewed Mexicans as unworthy heirs to their country's ancient past. Indeed, “local, national, and international politics of collecting were being played out” by the contemporaries, who “were not simply passive transition points” (p. 9). Hence, the museum's history “is inseparable from the mixed commodification of preconquest antiquities, with their value set by science and politics as well as rarity and

fashion” (p. 10). In this respect, *From Idols to Antiquity* also proposes an exploration of “the spaces, agents, and literary and material technologies that contributed to shaping these debates and thereby to defining the (economic, cultural, and symbolic) uses of Mexican antiquities in the first half of the nineteenth century” (p. 14). It is a book that tries to follow the storylines of intellectual and material property.

Chapter 1 (pp. 21-54) focuses on the enlightenment legacies and the education of Lucas Alamán, minister of internal and external relations, the founder of the museum. It tells the history of Alamán’s first experience with a foreign prospector, the English William Bullock, whose private collection of antiquities depended on travel and trade. In particular, it was Alamán who helped Bullock to obtain access to information, contacts and – of course – to objects. In a chronological way, the second chapter (pp. 55-94) continues by focusing on one of the protagonists in the museum’s history, Isidro Icaza, the first curator. He quickly understood that it was up to him to come up with an initial inventory and a protocol to document daily activities. To avoid losses and to comply with its institutional function, the protection of the collections by law constituted the main part of his vision for the museum. Chapter 3 (pp. 95-129) shows the museum’s struggle to become a significant agent in nineteenth-century collecting cultures. Until the 1830s, it was not recognized as an important center for collecting objects. The loss of control over the acquisition of coveted artifacts by collectors and supposed travelers from Europe or the U.S. once again expressed the need to develop new strategies to prevent a massive export of objects. *Modes of Display* is the title of the fourth chapter (pp. 131-169), which explains the difficulties with which the museum had been confronted due to the war between Mexico and the United States. Consequently, the officials published lithographs, drawings and photographs to compensate for the museum’s invisibility. Chapter 5 (pp. 171-209) turns back to biographical storytelling about José Fernando Ramírez, protagonist of the museum’s consolidation process between 1852 and 1867. Ramírez’s experience in Europe allowed him to better understand foreign motifs and thus better protect Mexican antiquities in the face of the onslaught of financially strong museums and collectors. The sixth and last chapter (pp. 211-250) explores the history of the museum in another difficult period, this time during the French intervention and the establishment of the Second Empire under Maximilian of Habsburg. During these years, Napoleon III created the Commission Scientifique du Mexique, which received a huge budget to collect information and objects of Mexican antiquity. Here more than ever, the search for collections was linked to the political, economic and social project involved in the occupation of this new territory by a European power. The author shows how the museum became part of Maximilian’s strategies to legitimize his rule in foreign lands. It was as part of this project that the museum finally came to occupy a central place in Mexican politics.

In the first decades of the museum whose history this book tells, it was not clear to contemporaries where the artifacts came from or what significance they had for the culture from which they emerged. Nor was it clear what (im)material value these relics had or to whom they belonged or should belong. Miruna Achim also presents a book

about the ignorance or ‘non-knowledge’ of the contemporaries who could not ‘read’ the objects that became part of the museum’s collections. She shows, for example, the local collecting practices that competed or at least existed in parallel with those of the museum’s specialists and curators. Achim also shows the ambivalence that defined the relationship of the political and cultural elites who built the museum to objects from the pre-Hispanic past.

Many of the individuals featured in the museum’s history are among the political elites who struggled to determine the destiny of the Mexican nation shortly after independence. Hence, it is clear that political, economic, and commercial goals were closely linked to the development of archaeology and collecting in the first decades of the National Museum. Moreover, one of the book’s main arguments is that the laws of protection, preservation, and display that applied in the museum’s early decades do not necessarily correspond to practices in the handling of antiquities.

Achim pays particular attention to Ramírez’s efforts to validate local knowledge. Ramírez and others were trying to break down the prejudices of European and American academics who imagined that removing the objects from Mexico was a way to save them from neglect and ignorance. Hence, Miruna Achim’s book does not repeat “the standard museum narrative” (p. 5) as a kind of constructed national identity. The work is also more than an institutional history of a museum. Inspired by Irina Podgorny’s book on Argentina’s museums (pp. xi-xiii)², it also tells the history of collecting cultures, “which were in turn defined by even broader political and cultural (national and international) contexts” (p. 6). Even though the author takes a very classical approach, foregrounding certain protagonists in almost every chapter and recounting their biographical stages in connection with the museum, *From Idols to Antiquity* is an extremely valuable study. Although her book is a history of the knowledge and science of a national museum with a strong cultural-historical orientation, Miruna Achim manages to question the national in several respects. She does this on the basis of a very extensive corpus of primary sources, which includes texts and images from Mexico, the United States, France and Great Britain (p. 289).

The second monographic study written by Lina del Castillo, professor of history and Latin American studies at the University of Texas in Austin, and published in 2018 at University of Nebraska Press, deals with the scientific crafting of the Colombian republic during the time of state-building in the nineteenth century. Del Castillo starts *Crafting a Republic for the World. Scientific, Geographic, and Historiographic Inventions of Colombia*³ with the sentence “There are no colonial legacies in Spanish America” (p. 1) and makes it clear right at the beginning what she is concerned with in

² See Podgorny, Irina. 2000. *El Argentino despertar de las faunas y de las gentes prehistóricas. Coleccionistas, estudiosos, museos y universidad en la creación del patrimonio paleontológico y arqueológico nacional (1875-1913)*. Buenos Aires: University of Buenos Aires Press.

³ The Spanish version of the book, *La invención republicana del legado colonial. Ciencia, historia y geografía de la vanguardia política colombiana en el siglo XIX*, had also been published in 2018 at Universidad de los Andes/Banco de la República de Colombia.

this study. In comparison to Miruna Achim's book, which deconstructs the national, Lina del Castillo tries to give more importance to precisely this level of observation for the Colombian case and instead to invalidate the narrative of colonial legacies. The author argues that the 'colonial legacy' was an invention of the Colombian postcolonial elites and was used to legitimize a complex scientific project of national importance. Hence, these actors negated the Hispanic enlightenment to build up "new histories, new sciences, and new geographies that offered radical new ways of understanding the past" (p. 1).

Until recently, Colombian historiography has been dominated by the view that elites – liberal and conservative – in the nineteenth century preferred Eurocentric models to local needs and realities. This book argues, on the other hand, that there had instead been a definite awareness of imperial structures among elites, which resulted in processes of separation from Europe and, in particular, from Spain on a cultural level. In this context, the 'crafting' examined here underscores the material cultures and practices important to knowledge production. For instance, the book focuses on spaces of scientific sociability, especially the Instituto Caldas and the Colegio Militar, where the elites, including lawyers, merchants, government officials, military engineers, religious and provincial leaders, architects, naturalists, journalists, novelists, and educators, configured great projects for the still very young country, such as mapping, road construction and the science of constitutionalism (pp. 1-4). In this circumstance, there was a need to reach political consensus to avoid violence and instability, and scientific sociability facilitated this process. Hence, Lina del Castillo deals with questions of sovereignty, trade, civil wars, slavery, emancipation, land struggles and the role of the Catholic Church. Methods of book history, prosopography, social history, as well as traditional constitutional history, cartography reading, and tools of literary analysis build up a diverse 'mixed methods' portfolio to analyze the primary sources presented here (pp. 4-7). But above all, the book aims to tell postcolonial histories of science, giving "voice to an array of actors that long-standing, dominant historiographies have rendered voiceless" (p. 8).

In fact, del Castillo's book is very ambitious. In six thematically and temporally interlinked chapters, the author explores "the consensus, continuities, and contentions that drove the dramatic territorial, constitutional, and sociopolitical changes that shaped Colombia during the nineteenth century" (p. 11). From an actor-centered perspective, she is concerned with the analysis of practices and discourses in or about certain scientific fields such as geography, cartography, land surveying, ethnography, constitutional science, sociology, and calculation.

The first chapter (pp. 27-75) argues that officials of the first Colombian Republic used print culture as a technology to support the new republican project by erasing the Spanish enlightened past of the late colonial period. Presenting the important but already very well studied case of Francisco José de Caldas, who had been executed in 1816 by Spanish Reconquista armies, del Castillo calls special attention to Caldas' position through print culture. As Caldas' proposals for free public education became

a postulate to members of the Liberator Party, schoolbooks were developed to educate children about the wisdom of independence leaders and the tyranny of Spain. Also, Caldas –not Alexander von Humboldt– would go down in history as the founder of geographic knowledge of New Granada (p. 75). The second chapter (pp. 76-121) takes off in the 1840s and focuses on the different kinds of circulation throughout the national territory. The flows of people, products, ideas, and capital across regions became easier through homogenization of currency, units of weights and measures, language, morality, and values. Infrastructure and educational institutions made Bogotá the heart of the nation. For instance, the Colegio Militar was originally conceived as part of practical transformations that sought to reach all New Granada's provinces through institutions, academies, and the employment of international experts. Despite the military nature of the school, elite students at the Colegio Militar could choose to study civil engineering without undergoing military training. *Calculating Equality and the Postcolonial Reproduction of the Colonial State* (pp. 122-158) is the title of the third chapter, showing how between the 1820s and 1870s, graduates of the Colegio Militar tried to solve communal landholding problems aiming for agrarian equality. It shows their willing to incorporate indigenous peoples within the republican project by abolishing and privatizing *resguardos* and inventing the trope of the *indijena* that replaced the 'indio'. Finally, this project failed because of the blindness regarding the deep legal knowledge of the republican system by *indígenas*. In fact, the *resguardos* that the young experts surveyed were still under litigation during the 1870s and beyond. The fourth chapter (pp. 159-211) deals with the spread of political rights in the context of multiplied municipalities and provinces at midcentury, accompanied by a vast emergence of print newspapers that created, in a way, public spaces. In connection with this, the Instituto Caldas was founded in 1848 by Manuel Ancízar, who mainly postulated an early form of political ethnology that later on developed *costumbrismo* as one of its technologies. Hence, the Chorographic Commission was founded by provincial elites to collect statistics and to introduce entrepreneurial republican virtues. Chapter 5 (pp. 212-261) draws the development of the so-called 'science of constitutionalism' that introduced universal manhood suffrage in 1853, in the wake of the abolition of slavery in 1851. It outlines that both liberal and conservative elites supported the Instituto Caldas and the Chorographic Commission to engage more with local realities. Finally, the sixth chapter (pp. 262-306) tells the story of the Olimpo Radical, a radical liberal movement that became dominant in national politics for two decades after 1863 with the creation of the United States of Colombia. It offers an overview of church-state relations and presents the negotiations between liberals and conservatives to implement the policies that targeted the Catholic Church throughout Colombia, for example facing questions of public education. In the final conclusion, Lina del Castillo highlights the innovative and unique intellectual oeuvre of republican scientist José María Samper, which is largely unknown, building a bridge to the still dominant interpretations in Colombian historiography that "reaffirm the long-standing trope of Liberal federalists challenging Conservative centralists" in the nineteenth century. She con-

cludes that “at least at the elite level, [everyone] was a democrat, Catholic, and moral republican who championed popular education” and that “for the nation to succeed, it needed to foment circulation of ideas, people, and material goods” (p. 323).

Lina del Castillo’s book *Crafting a Republic for the World* is about complex state-building dynamics in Colombia during the decades after independence. Even though the book is a considerable achievement overall, studying such a complex subject over such a long period always carries risks. Thus, some questions remain unanswered and gaps can be identified here and there. Firstly, the title of the English version could lead the reader to expect the study to be more international and global in scope. Even though the example of Manuel Ancízar, who had a large international network as a mason, and whose activities as a diplomat show the entanglements of the Colombian elite with others, such passages are rather rare (pp. 238-241). However, a local or regional approach to the topic is also omitted. Instead of taking a closer look at individual provinces that have received little attention to date, the focus is on the capital Bogotá as the central hub of know-how. This restriction is understandable and legitimate for various reasons, although it is regrettable at the same time. For example, the history of scientific, geographical and historiographical developments in Colombia could have been explained on the basis of certain universities or other institutions such as the Colegio de Antioquia (founded in 1822), the Universidad Central and the Academia Literaria (founded in 1826), the Universidad del Cauca (founded in 1827), the Universidad Nacional de Colombia (founded in 1867), or the Academia Colombiana (founded in 1871). However, due to the fact that Colombian universities in particular were very strongly influenced by the Catholic church and that their traditional structures could not be so easily put aside, such an addition might have called the main argument of ‘the new’ into question. Beside the institutions, del Castillo’s history of Colombian sciences tells the story of male experts of their fields searching for a vision. This raises the question of how to interpret hybrid identities, in terms of, for example, scientists who were also masons or belonged to Sociedades Económicas, which was dedicated to the ideas of the Enlightenment, and who formed global networks.

In summary, Lina del Castillo’s book counts as a history of science, but it is actually more than that. Strictly speaking, it is a history of science of the political, whose narrative intends, primarily, to break with traditional Colombian historiography, which moved political fragmentation, chaos and corruption into the spotlight of national storytelling.

The anthology *La movilidad del saber científico en América Latina. Objetos, prácticas e instituciones (siglos XVIII al XX)* edited by Carlos Sanhueza Cerda, historian of science at Universidad de Chile, was published in 2018 by Editorial Universitaria. It includes a total of seven articles; in addition to an article by the editor, the book includes chapters by historians working in Chile, Argentina, Germany, and the United Kingdom. The project was made possible by funding from the Rector Juvenal Hernández Jaque Fund, while the manuscript was compiled thanks to the support of the Alexander von Humboldt Foundation and the Consejo de Ciencia y Tecnología de Chile. The introduction

(pp. 13-18), which is quite short overall, takes Jürgen Renn as its starting point and discusses the question of the gradual shift from a history of science to a history of knowledge as it has taken place in recent years.⁴ While in English (*knowledge*) and in German (*Wissen*) there is one term, in Spanish there is a distinction between *conocimiento* and *saber*. However, both terms are used here to mean ‘knowledge’.⁵ Thus, it is postulated at the outset that the history of knowledge has primarily asked about the forms of production of scientific knowledge or its conditions of mobility. However, little has been done to problematize how and for what purpose knowledge circulated in the first place (p. 13). Following Steven Shapin, Simon Schaffer and Bruno Latour, knowledge began to be studied as a practice where authors, institutions, objects and ideas converge.⁶ At this point, the dynamics of circulation or mobility of knowledge needs to be clarified, especially regarding their spatial dimensions (‘center’ – ‘periphery’; local – global). According to Sanhueza Cerda, it is necessary to examine not only those agents that exert an ‘influence’ as a mobility in one direction, but rather the context of reception that enables and frames the movement of such knowledge (p. 14). The editor highlights the work of Kapil Raj, which is of considerable importance for the study of the mobility of knowledge in the Latin American context. For him, science at the ‘periphery’ is the result of a scientific interaction between local and foreign actors. Raj argues that South Asia was an active but unequal participant in an emerging world knowledge order.⁷

The first article, “Hacia una historia burocrática de las ciencias” (pp. 19-54), written by Irina Podgorny, deals with bureaucratic practices of artillerymen, draftsmen, scribes, priests and surgeons in the Río de la Plata, which shaped the American world from the Iberian Peninsula. Once the colonial bond was broken, the Bourbon reforms generated sociable forms based on collecting, as private interests intermingled with the weak initiatives of the new governments, the requirements of the foreign consuls and the most diverse mercantile enterprises. In this sense, archives, libraries and cabinets represented the indispensable nodes for the processing of information. Further, Podgorny makes a plea for the materiality of paper and its importance to the history of knowledge, which has received too little scholarly attention. The second article, “A kind of little Wiesbaden, or rather Leukerbad, in the bosom of the Andes’. Experiencia científica y cultura termal en los Andes, siglo XIX” (pp. 55-74), written by María José Correa Gómez, argues that the thermal waters of Cauquenes (Chile) were

⁴ Renn, Jürgen. 2015. “From the History of Science to the History of Knowledge – and Back”. In: *Centaurus* 57, 37-53.

⁵ “En este sentido, aquí vinculamos los aspectos cognitivos del ‘conocimiento científico’ (o ‘saber científico’) con los sociales y materiales” (p. 13).

⁶ Shapin, Steven/Schaffer, Simon. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press. Latour, Bruno. 1987. *Science in action*. Cambridge: Harvard University Press.

⁷ Raj, Kapil. 2007. *Relocating Modern Science. Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*. Basingstoke: Palgrave Macmillan.

transformed into “scientific objects” during the nineteenth century. Correa Gómez asks how a sector of Chilean society came to consume water for curative purposes and how these practices emerged as constitutive of a therapeutic modernity. Likewise, material culture plays a role in this context: the study of water required the use of instruments, such as thermometers and barometers. Finally, the material and symbolic transformation of thermal areas went from being a rural secret to a projection of medical modernity in peripheral spaces. In the following article, “El comercio global con plantas medicinales de Hispanoamérica, 1717-1815”, Stefanie Gänger shows how the global trade of medicinal plants and plant-based remedies from Spanish America such as ipecacuanha, guaiacum, sarsaparilla, jalap root and cinchona involved a continuous reintroduction and reconstruction of supposedly ancient American knowledge and know-how in the eighteenth century. She argues that the existence of a global medical network led to these ‘exotic’ remedies traveling the entangled world. In “El cultivo de una cultura chilena de historia natural, siglo XIX”, Patience A. Schell uses the example of Chile to present a textual framework that allowed the emergence of a culture of natural history in a series of writings published in journals, newspapers, and books. This example shows that this framework, beyond the boundary that separated the layman from the connoisseur, and beyond the influence that this culture had on the formation of a national identity, provided a place for Chilean and foreign naturalists and scholars. Sandra Carreras, author of “¿Un mismo origen con diferente destino? Los científicos alemanes en Argentina y Chile entre mediados del siglo XIX” (pp. 127-148), compares the cases of Chile and Argentina through the biographical trajectories of German naturalists and professors, presenting the examples of Rodolfo A. Philippi, Carl Hermann Burmeister, Rodolfo Lenz and Robert Lehmann-Nitsche. She asks how German scientists were established in both countries and concludes that in both cases we observe the inclusion of activities of German scientists in the broader set of activities of the colonies of immigrants of German origin and, to a certain extent, their activities also corresponded to the interests of German foreign policy, which does not mean that they were directly subordinated to them. Kathrin Reinert argues in “Saber e imaginación: fotografías científicas de los legados Uhle y Lehmann-Nitsche” (pp. 149-168) that the photo-objects of the Uhle and Lehmann-Nitsche legacies at the Ibero-American Institute in Berlin acquire their own meanings in unique and singular processes. Her analysis of the photographic object thus demonstrates how they become intermediaries between industry and academia. Showing the indigenous population of Jujuy in Argentina, the photographs circulated in scientific journals as well as in public magazines. These displacements and separations of the photographs’ original settings are the focus of Reinert’s paper. Finally, Carlos Sanhueza Cerda presents a study called “Coleccionismo en el Museo Nacional de Chile (1853-1897)” about the National Museum of Chile. He shows that the formation of the museum’s collections depended on the national and global networks in which the objects, persons, etc., circulated. Hence, the museum can also be understood as a localization and concentration of knowledge and objects. But this does not mean that museums were not also places of transition of

objects, publications, and correspondence, and that these were characterized by certain material and immaterial flows.

Carolina Valenzuela Matus, historian at Universidad de Playa Ancha, also published an anthology entitled *Tendencias y perspectivas de la cultura científica en Chile y América Latina, siglos XIX-XXI* in 2019. The project was supported by Universidad Autónoma de Chile through the Center of Scientific Communication and CONICYT through their program FONDECYT Iniciación. The volume includes a total of seven articles as well as an introduction. According to the editor, the aim of the book is to interpret Latin America as an active participant in the context of a global history of science (p. 11). Valenzuela Matus starts by reflecting on recent trends within the history of science, emphasizing the importance of colonized regions of the world that have long played a marginalized role in Western science. She also cites Kapil Ray's 2007 work as pertinent in this context (pp. 11-12). In what follows, the editor presents the current state of research on the history of knowledge and science in Chile, not only addressing recent publications, but also emphasizing institutional initiatives and cross-university networks such as the Laboratorio de Historia de la Ciencia, Tecnología y Sociedad⁸, which provides a discussion platform for interested historians of knowledge and science in Chile and beyond. The present anthology was inspired by a seminar held at the Universidad Autónoma in 2018. For the publication, other authors joined the project, with the aim of advancing discussions about the sciences from the Cono Sur (p. 13).

In the first article entitled “La Ciencia de la Independencia en Hispanoamérica: el conocimiento al servicio de la nación, 1788-1830” by Francisco Martínez Hoyos (pp. 19-49), the author emphasizes the knowledge traditions that can be traced back to the Enlightenment movements and examines them in the context of nation-building after the independences in Spanish America. Through different examples, he analyzes the degree of engagement of science and scholars in the process of emancipation in Spanish America, highlighting the existence of a Creole Enlightenment. Following independence, power was legitimized by a secular ideology based on the idea of progress and using practically applicable knowledge as a tool, among others, to exploit natural resources. “La configuración de un espacio para el saber natural en Chile. El Gabinete de Historia Natural de Santiago, 1830-1842” is the title of the second contribution by Daniela Serra (pp. 51-76) about the cabinet of natural history as the first space for knowledge on collections of natural objects in the charge of Claudio Gay. Her focus is on naturalists' practices that made possible the installation of this space for knowledge of the natural. The following article, “Los naturalistas en Chile y su aporte a los museos de historia natural del país”, by Carolina Valenzuela Matus (pp. 77-103),

⁸ Both editors, Carolina Valenzuela Matus and Carlos Sanhueza Cerda, are members of the network “Laboratorio de Historia de la Ciencia, Tecnología y Sociedad”, which includes many of the authors represented here. The members usually meet once a month. Lectures are given or texts are presented, which are discussed afterwards. External guests from the history of knowledge and science are also welcome as speakers. See <https://labhcts.org/>.

starts here and addresses the foundation of the Natural History Museums of Santiago, Valparaíso and Concepción. From an actor-oriented perspective, it asks about the role of the most significant natural scientists working in Chile and their collaborations and global networks. The fourth contribution of the volume, “Historia de Vida de los instrumentos astronómicos en Chile. Circulaciones, adaptaciones y apropiaciones (1855-1886)”, by Lorena B. Valderrama and Carlos Sanhueza Cerda (pp. 105-121), analyzes the biographies of the instruments of the National Astronomical Observatory between 1855 and 1886. Various circumstances, such as a change of location, affected the ‘life’ of the instruments, which was significantly influenced by global scientific discourses. The U.S. and the German-speaking territories –the German Empire was founded in 1871– played a prominent role in this context. The fifth article by Martín Lara Ortega (pp. 123-145), “Ciencias y letras. Discursos de transición sobre la comprensión científica en torno a los mapuche (1900-1910)”, deals with the ideas of Tomás Guevara and Nicolás Palacios about the Mapuche. He examines the scientific discourses in the first decade of the twentieth century, which were significantly influenced by Darwinian evolutionism, Hegelian historicism and positivism. The following contribution, “Tecnologías de la energía solar en la industria de los nitratos (1872-2012). Exploraciones en los archivos de una historia fragmentada”, written by Nelson Arellano Escudero (pp. 147-172), ferries the reader from the nineteenth to the twenty-first century, focusing on the use of solar thermal energy for water desalination processes and to produce saltpeter by products, presenting the Atacama Desert as an example. This analysis combines elements of economic and environmental history and highlights the projection of science and technology. It explores the extent to which the processes studied have been shaped by continuity vs. innovation over time. Finally, Alejandro Vega-Muñoz reviews in “La cultura de la medición científica documentada en Chile. La herencia de Kiev y Yale” (pp. 173-200) the origins of the culture of science measurement in the context of the Russian Nauka movement and the academic competition between Kiev and Yale in the interwar and postwar periods, to define better methods for measuring scientific results. This paper takes a systemic as well as thematic and disciplinary look at a hitherto little historically researched field in order to understand, in the current context of Chile, the research challenges and demands Chilean universities face today.

Comparing these two anthologies, published in Santiago de Chile in 2018 and 2019, it is striking that both claim to also relate to ‘Latin America’ in general. However, most of the contributions deal primarily with the Chilean context –although the volume by Carlos Sanhueza Cerda also includes contributions on Peru (Stefanie Gänger) and Argentina (Irina Podgorny, Sandra Carreras, and Kathrin Reinert), the focus on Chile clearly dominates. Carolina Valenzuela Matus explores the latest trends and perspectives in scientific culture “in Chile and Latin America”, with six of seven contributions dealing with Chile. This selection is legitimate, but it should be communicated more transparently to the reader at the beginning. Even though both works aim to overcome the center-periphery dichotomy, most of the contributions are

about institutions or actors that can be located in big centers like Santiago de Chile or Buenos Aires. Decidedly regional or global references are rather rare in both books (for example, Gänger, Correa Gómez, Arellano Escudero).

Apart from this conspicuousness, both anthologies are well conceptualized, making an important contribution to the history of knowledge and science—at least to Chilean history. It is particularly noteworthy that Carolina Valenzuela Matus conceived the idea for the book during a seminar at university, and that she did not shy away from giving young historians an opportunity to publish their work. The fact that young historians of science in Chile are well-networked and can really contribute to the research discourse with their publications is undoubtedly positive.

Last but not least, a book will be presented which was published by Böhlau editorial in 2020 and submitted by Alexander van Wickeren as a dissertation at the University of Cologne. *Wissensräume im Wandel. Eine Geschichte der deutsch-französischen Tabakforschung (1780-1870)* is a monograph in German, and is part of the series *Peripherien. Beiträge zur Europäischen und Globalgeschichte*. Contrary to what the title might suggest at first glance, this study is not a comparison of German and French tobacco research. Rather, the hyphen between *deutsch-französisch* implies instances of collaboration. Using tobacco research as an example, van Wickeren's book is concerned with regional, national, and global contexts of agricultural knowledge production in the Franco-German context of a broader *Sattelzeit* (1780-1870) (p. 7). The starting point is the assumption that the tobacco plant was increasingly no longer classified as a remedy but as a stimulant during the period under study (p. 10). Among researchers, there is a consensus that the development of modern science in the transitional phase between the early modern and modern periods cannot be told without considering the importance of the Atlantic. Thus, the author notes that a history of knowledge on tobacco cultivation cannot be written without looking to the Atlantic, because of new steam-powered infrastructures, growing transatlantic trade, and migration flows (p. 13). From a knowledge and spatial history perspective, van Wickeren intends to problematize the nationalization, internationalization, and globalization of tobacco cultivation, which is often portrayed as linear. First, this spatial knowledge history of tobacco cultivation takes a look at knowledge spaces from a connection perspective, following Bruno Latour's network sociology (*Netzwerke und Verbindungen*). Second, it asks about asymmetrical relations in tobacco research (*Zentrum und Peripherien*) and, third, it examines the spatial fragmentation and specific validity of the knowledge stocks constructed in the reform projects on tobacco cultivation (*Geltung und Fragmentierung*) (p. 18). The challenge of the study is certainly to conceptualize the issue correctly at a regional as well as a national and global level, while not underestimating the dynamic relationships between these levels. Thus, this work is actually a reconstruction of Franco-German tobacco research—that is, at the national level. However, Alexander van Wickeren does not understand the nation as a stable starting point of historical research but adds a translocal level by focusing on the French-German border region, Alsace, which is important for tobacco research, as

well as on Baden and Paris. The global level complements this focus and highlights the importance of apparent peripheries for the emergence of modern sciences, which are ultimately tied back to the national level, through institutionalization processes or the founding of academies (p. 18-29).

In order to meet this challenge, the author introduces the different levels of analysis in a very successful introduction by discussing the potentials and risks of these levels of consideration in the light of current research on the history of knowledge. Even though Latin America is not decidedly the focus of this work, it has nevertheless been integrated into this collective review because it is a successful example of the interlocking of these spatial levels of analysis. While chapter 2 (pp. 35-82) and chapter 3 (pp. 83-118) deal with the emergence of a 'rhenish' tobacco research and the integration of practical knowledge in the course of an economic botany, the following chapters are more dedicated to global developments. Chapter 4 (pp. 119-154) is devoted to the question of a growing world market and a global cigar economy in the context of the revolutions of 1848/49. Chapter 5 (pp. 155-198) focuses on the agricultural projects of the Paris central administration that began in 1860 and were intended to bring French tobacco cultivation closer to Cuba. The Cuban cigar had become a status symbol in bourgeois circles in the second half of the nineteenth century, partly due to its successful presentation on international expositions, and the Parisian tobacco administration therefore tried to improve the production of luxury cigars in France (pp. 156-159; p. 168), also by exploiting knowledge and research exchanges with Cuban and Atlantic experts (pp. 186-198). Even though the myth of a cigar production purely concerned with quality and authenticity persisted in Europe for a long time, the image of a private cigar production of Cuba, where impurities in the production or the processing of tobacco leaves of other origins increasingly occurred, became more solid. Thus, in the 1840s and 1850s, Parisian tobacco officials sent agents to Havana, Paraguay, Brazil, Hungary, and the United States to explore the possibilities of alternative tobacco purchases. Paraguay in particular thus came to the attention of the Paris administration as a possible 'second Cuba' (pp. 175-177). Latin America should also play a role with regard to quality assurance in tobacco cultivation: Guano, for example, which was removed from the coasts of Peru and exported worldwide, became a common fertilizer in tobacco production (p. 184; pp. 223-233). Even though Alexander van Wickeren devotes the last part of Chapter 5 to an Atlantic culture of experts, Paris remains his 'fulcrum', as Cuban reformers became sought-after experts in tobacco cultivation with their stays in Paris. Thus, the author notes that Paris had become a center for innovation and scientific education while also becoming a refuge for political exiles. He concludes by emphasizing that the knowledge of Cuban researchers (p. 198), actors (p. 192), and reformers (p. 189) in particular was perceived in France and located as "bodies of knowledge that circulated in the Atlantic world" (p. 198). It should be noted critically here that van Wickeren missed the opportunity to highlight the importance of the 'hub' Paris (pp. 188-189) as the "capital of Latin America", as Jens Streckert had already formulated based on Walter Benjamin's de-

scription of Paris as the capital of the nineteenth century.⁹ In the course of his work, van Wickeren often mentions the world exhibitions (pp. 156-157; 174; 176; 245), but only looks at the exhibition of 1855, although the exhibition of 1867 in Paris –which was still within the period under study– was far larger and more important. World exhibitions in particular can be interpreted as platforms for sciences, where scientific congresses took place and museums, academies and institutions as well as nationalities presented themselves to a global public. Cuba, which as a Spanish colony was also represented in the context of the Spanish exhibitions, ‘met’ Baden and France in the course of this major event. The global level, the importance of which the author emphasized so strongly at the beginning of his book, could have been developed more concisely here, especially since diplomats and consuls also used the world exhibitions to expand their networks. Another point of criticism is the very general presentation of Cuban researchers, actors and reformers, especially since the “Spanish scholar Ramón de la Sagra”, who moved to Cuba at the age of 23, remains the main reference in this part of the work as a “Cuban” (pp. 174-198). The globalization process in the Upper Rhine border region and the appropriation of the Paris reform policy is the subject of Chapter 6 (pp. 199-233), before Chapter 7 discusses why attempts at nationalization and isolation by the Parisian tobacco engineers ultimately led participatory tobacco research to fail in France (pp. 235-265). Finally, the levels of observation presented in the introduction –regional, national, global– and the three perspectives –networks and connections, center and periphery, validity and fragmentation– are skillfully tied back in the conclusions. Van Wickeren concludes with the thesis that the ‘atlanticization’ of Franco-German tobacco research towards the middle of the nineteenth century was embedded in older, changing processes of regionalization of knowledge production and represented an ultimately less intensive nationalization of tobacco research, which even failed in France (pp. 269-270).

Even though the work claims to question hierarchical center/periphery relations (p. 22) and, contrary to older research, to valorize global interconnections, the starting point remains a regional historical one, for example, when the conclusion states “that the knowledge cultures emerging in Paris and the Rhineland were tied to the knowledge of subaltern actors in the ‘peripheries’ of the Atlantic world” (p. 275). These actors in the ‘peripheries’ and other nodes in a global network are mentioned in many places (e.g., imitation cigars from Belgium, Greece, Holland, Paraguay, Prussia, or Sweden p. 157; Asian workers on the island of Cuba pp. 196-197; references to China, Venezuela, or Indonesia p. 233) but are not further integrated into the analysis. However, since it is not an actor-centered study, this limitation is legitimate. It is one of the strengths of the work that Alexander von Wickeren ultimately manages to show the interconnections of a border region with other spatial units and thus convincingly emphasizes the potential of a spatially oriented history of knowledge. Even though

⁹ See Streckert, Jens. 2013. *Die Hauptstadt Lateinamerikas: Eine Geschichte der Lateinamerikaner im Paris der Dritten Republik (1870-1940)*. Wien/Köln/Weimar: Böhlau Verlag.

Latin America is not the focus of this study, this book is well worth reading for historians interested in Latin America.

The studies presented here on the history of knowledge and science related to Latin America offer a broad panorama of tools for conceiving such a history. Scientific discourses, actors, objects, practices, and spaces targeted in the selected studies offer just a few of many possible approaches. It is precisely this diversity which shows that the history of knowledge and science are not short-lived fashions. Following Marian Füssel, the history of knowledge is rather to be understood as a heuristic approach to almost any possible object.¹⁰ Nor can it be ruled out that the field of research will develop further into an overarching paradigm, similar to the new cultural history. In addition, global history poses another challenge, as recently formulated by Stefanie Gänger: “The field is at present said to be in the midst of a fundamental turn toward global approaches that straddle traditional spatial boundaries but, as some of its most prominent advocates have cautioned, practitioners have hardly begun to understand the consequences of that shift for the field’s most basic values and principles, especially its emphasis on locality.”¹¹

In connection with the turn to global history, the term ‘circulation’ is appearing increasingly often, especially in the history of knowledge and science. Here it seems important, firstly, to ask about the limits of knowledge and, secondly, to look for the motors of these flows. Also, actors and their confidentiality should be questioned more frequently. As the reviewed books show, in many works, the male, scientifically active elites still dominate. Indigenous groups, women, traders, settlers, or Afro-Latin Americans are unfortunately still too infrequently in focus as carriers and mediators of knowledge. Likewise, the history of knowledge and science would do well to focus more on non-human entities such as plant-based remedies, water, artifacts or technical devices. The studies of Stefanie Gänger, María José Correa Gómez, Miruna Achim, Nelson Arellano Escudero, Lorena Valderrama and Carlos Sanhueza Cerda are some innovative examples.

Last but not least, I appeal for stronger networking within Latin America, both in terms of the topics dealt with and in terms of scholarly exchange. Thus, after reading *Crafting a Republic for the World*, the question remains how the Colombian case compares to other Latin American examples. Also, contributions from countries and regions such as Uruguay, Paraguay, Bolivia or Central America have so far received too little attention in the history of knowledge and science. The same is true for Brazil, where historians of knowledge and science are represented mainly in journals.¹² In

¹⁰ See Füssel, Marian. 2019. “Wissensgeschichten der Frühen Neuzeit: Begriffe – Themen – Probleme”. In: *Wissensgeschichte*, edited by Marian Füssel, 7-39. Stuttgart: Franz Steiner Verlag, 8.

¹¹ Gänger, Stefanie. 2021. *A Singular Remedy. Cinchona Across the Atlantic World, 1751-1820*. Cambridge: Cambridge University Press, 2. See also Fan, Fa-ti. 2012. “The Global Turn in the History of Science”. In: *East Asian Science, Technology and Society: An International Journal* 6, 249-258.

¹² See, for instance, the journal *História, Ciências, Saúde – Manguinhos* published by the *Fundação Oswaldo Cruz* as one of the most important journals in Latin America in the field of history of science.

any case, authors who are ambitious to write relevant histories of knowledge and/or science with reference to Latin America will have neither a lack of sources nor a lack of opportunities.

REVIEWED TITLES

- Achim, Miruna. 2017. *From Idols to Antiquity: Forging the National Museum of Mexico*. Lincoln/London: University of Nebraska Press. 348 pages.
- Del Castillo, Lina. 2018. *Crafting a Republic for the World: Scientific, Geographic, and Historiographic Inventions of Colombia*. Lincoln/London: University of Nebraska Press. 402 pages.
- Sanhueza Cerda, Carlos (ed.). 2018. *La movilidad del saber científico en América Latina: objetos, prácticas e instituciones (siglos XVIII al XX)*. Santiago de Chile: Editorial Universitaria. 200 pages.
- Valenzuela Matus, Carolina (ed.). 2019. *Tendencias y perspectivas de la cultura científica en Chile y América Latina, siglos XIX-XXI*. Santiago de Chile: RiL Editores. 208 pages.
- Van Wickeren, Alexander. 2020. *Wissensräume im Wandel: Eine Geschichte der deutsch-französischen Tabakforschung (1780-1870)*. Wien/Köln/Weimar: Böhlau Verlag. 329 pages.

| **Christiane Hoth de Olano** is assistant professor for Latin American History at the Catholic University of Eichstätt-Ingolstadt. Currently, she is writing her dissertation titled “Frontier Medicine: Practices, Knowledge and Science in Southern Chile (1883-1939)”. This research project makes inquiries into the practices and dynamics of knowledge in the field of healing and medicine. Her research interests range from the history of science, especially the history of medicine, psychology, psychiatry, and anthropology, as well as environmental history, to the cultures of museums and exhibitions. Her focus is on Latin America within the context of global history.