Natural History Collections and Empire

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Abstract: Next to providing a more general overview of the field, this chapter encourages readers to take natural history collections as analytical starting point for their inquiry into the field of natural history and empire. In particular large-scale digitization and the digital enrichment of collections and archives in the field of natural history, provide historians with new means to understand how and with which implications millions of objects have been transferred from the Global South to the Global North over the last three hundred years. Moreover, such new digital efforts will allow historians to deepen our understanding of the daily practices and polycentric networks of collection and natural historical knowledge production in former colonial areas. Taken together this chapter argues that natural history collections and archives should not only be read as "biodiversity heritage" but rather as the historical product of a process in which local expertise about nature, natural history, global trade, and often violent forms of colonialism got inextricably entangled

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Natural history museums and herbaria in the Global North owe much of their authority to plants, animals, and minerals collected Global South. Naturalis Biodiversity Centre in Leiden, which is one of the largest natural history museums in Europe, houses for instances one of the world's largest collection of plants and animals from Indonesia, a former Dutch colony in insular Southeast Asia.[1] Recent estimates assume that a large majority of natural objects in repositories in Europe and the US stem from former colonial areas in South America, Asia and Africa.[2] This unequal distribution of the planet's natural heritage is the historical result of intimate and often invisible linkages between natural history repositories and evolving schemes of colonial exploitation, violence, and commerce.[3] However, in institutional discussions about future research on natural historical collections the colonial provenance of such collections is usually not acknowledged.[4] This is truly astonishing, since in particular the large scale digitization of

specimen collections and accompanying archival holdings offers researchers access to a wealth of new source material which has the potential to shed fresh light on how natural history and empire co-produces each other from the sixteenth century to the present.[5] This new type of source material allows historians to deepen our understanding of the daily practices and polycentric networks of collecting and natural historical knowledge production in former colonial areas.[6] Moreover, it will allow for studies on how *and* with what implications natural objects have travelled to affluent individuals and natural historical institutions across the globe.[7] By acknowledging the geographical imbalance of natural historical collections in the Global North, this essay argues that natural historical archives and specimen collections are an underused starting point for historical inquiries into the colonial roots of our present day understanding of nature and its diversity.

Since the antiquity, the term natural history has been used to denote attempts to collect, classify, name and systematically understand plants, animals, and minerals. Although most historians of natural history have taken secluded spaces of cabinets, laboratories, and museums as starting point for their historical analyses, the impact of the transfer of a myriad of natural objects and related knowledges within colonial areas and to natural historical institutions in the West has not remained unnoticed.[8] Since the inception of the wider research field of Science and Empire by George Basalla in the 1960s, historians of natural history have studied local conditions of natural historical knowledge production in South America, the Caribbean, the Cape in South Africa, India, China, Japan, Sri Lanka, Southeast Asia, and the Pacific Islands.[9] What emerges from these studies is a rich picture of complex local encounters which make it often difficult to draw clear boundaries between local *and* European agency. Instead of considering European naturalists and their institutional patrons in the West as main motor of scientific development, authors in this field have carefully examined how and under which political and socio-economic circumstances natural historical knowledge and collections were produced. Often concepts such as “contact zones,” “middle ground,” or “borderlands” have

helped to render hybrid forms of local agency visible.[10] What has become clear from many of these studies is that until a natural object and related visual or handwritten material reached museums and repositories in the West, it had often travelled within extensive regional networks of exchange. Military men, specimen traders, merchants, enslaved people, naval personal, and medical practitioners with highly heterogeneous socio-economic backgrounds played a pivotal role in these networks.[11] A detailed reconstruction and analysis of such regional and global itineraries of natural historical objects allows historians of natural history and empire to enrich available studies on centres and peripheries with a new analytical framework.

Regional networks of exchange existed long before Europeans set out to inventorise nature and natural resources for learned and economic purposes in the sixteenth century. A good example in this respect is the trade of birds of paradise from the islands of Eastern Indonesia and New Guinea in Southeast Asia. Prior to the colonization of the island by Europeans in the sixteenth century, the birds were traded within insular Southeast Asia for centuries.[12] Next to a decorative function, in particular the birds' plumes were locally used as bride price. Owing to such a rich history, it is therefore not surprising that the Portuguese were offered birds of paradise skins as valuable diplomatic gifts when they arrived in the area. In the centuries to come, not only the skins and feathers, but also living specimens and knowledge in the form of stories and myths about birds of paradise circulated to courts and empires across the globe. In 1912 and 1913 alone, more than 100,000 skins of birds of paradise left New Guinea to be auctioned, among other places, in London.[13] British hat makers depended on the bird's feathers in order to be able to satisfy their wealthy customers.[14] Since birds of paradise could be relatively easily transported on ships, living specimens found their ways into Western public zoos and private aviaries.[15] The increased interest in exotic living and dead animals from New Guinea and other biodiverse areas of the world also triggered resistance, which sought to ban illegal trade and consumption. Since the mid-1920s, the trade of birds of paradise and other exotic birds from insular Southeast Asia for commercial purposes is officially prohibited.[16]

However, until the present day, scientific institutions and museums are exempt from these rules, and all over the world, natural history museums house thousands of bird of paradise skins, feathers, and specimens. The largest scientific collection of birds of paradise can today be found at the American Museum of Natural History in New York.

[add illustration 1, http://hdl.handle.net/10934/RM0001.COLLECT.23168, the illustration is rights free, Public Domain, CC0 1.0 Universal]

Image caption: *Hat feather probably composed of a prepared head of a bird of paradise, feathers of a Colibri and other tropical birds, anonymous, early twentieth century, collection Rijksmuseum Amsterdam, BK-1967-56.]*

This brief excursion into the history of birds of paradise serves as an important reminder that the historical itinerary of a group of specimens can be a fruitful starting point for historians of natural history and empire. Instead of separating the world in European centres and colonial peripheries, the historical journeys of birds of paradise and other natural objects rather require us to work towards an "entangled" history of natural history *and* empire.[17] Guiding in this respect can be a study by Nicholas Thomas who in the early 1990s used the term "entanglement" to analyse different modalities of cultural interactions in the context of museum

objects. Seen from his perspective the collection as well as the movement of natural objects can be best studied as historically open-ended, networked, and polycentric process.[18] While an entangled history of birds of paradise is well underway, new studies on, for instance, plants (e.g. orchids) and animals (e.g. amphibians, insects, monkeys, rhinoceroses) a have the potential to deepen our understanding and long-term impact of encounters and exchanges at mutually dependent colonial localities all over the world.[19] Next to already available digital resources such as the Biodiversity Heritage Library (BHL), new digital portals of natural history museums, and new large-scale infrastructures aimed at interconnecting available geographical information on specimens can be of invaluable help to carry out such research.[20]

The birds of paradise episode also reminds us that every transfer of natural objects was a complex procedure in which asymmetries of power played a pivotal role. First objects needed to be collected. This often required a close collaboration with colonial administrations, collectors, adventurers, private landowners, and local rulers. Like birds of paradise, many natural objects were collected in areas in which military violence was common. Not only in New Guinea and other parts of Asia, but also in South America practicing natural history remained closely linked to violent forms of colonialism and exploitation. An interesting example in this respect are probably the collecting activities of the Prussian traveller and naturalist Alexander von Humboldt (1763–1859) and Aimé Bonpland (1773–1858) in Spanish South America. During their five years stay in South America, both travellers visited various part of the Spanish empire and gathered a large number of natural objects, took extensive measurements, and recorded numerous observations. Today hailed by some scholars as the most important naturalists of the nineteenth century, an analysis of his fieldwork and natural historical collections in the area cannot be disconnected from the economic and political interests of the Spanish crown in the area.[21] As Jorge Cañizeras-Esguerra has shown, Humboldt and his companion Aimé Bonpland drew extensively upon colonial infrastructure and local expertise during their travels in South America.[22] Following this line of analysis, historians

have started to probe why Humboldt's travel narrative remained silent about the often violent political context in which his collections—now stored in natural history museums in France and Germany—were gathered.[23]

Next to collecting specimens in the field, naturalists were also challenged to prepare specimens for the shipping to Europe or other parts of the world. In the context of natural historical inquiry in the Dutch colonies in insular Southeast Asia, we know that colonial institutions such as the botanical garden in Buitenzorg (now Bogor) played an important role.[24] Situated in the hinterland of Batavia, the administrative seat and main harbour of the Dutch in the area, the garden and its facilities served naturalists as a site at which natural objects could be gathered, dissected, prepared, described, compared, and prepared for shipping to gardens and museums in, among others, Vienna, Leiden, Berlin, London, Philadelphia, Kolkata, Ceylon, and Guangdong.[25] In the early 1820s, the garden in Bogor was, for instance, used to dissect and describe the anatomy of a female elephant (*Elephas indicus*). The notes and drawings which were made during the dissection were later shipped to Europe. In the decades before and after 1900, the garden and its botanical laboratories witnessed the rise of plant embryology.[26] In the 1940s, Kees van Steenis capitalized on the botanical garden and its infrastructure when he was preparing his Flora Malesiana, a large-scale and still ongoing attempt to map the flora Indonesia, Malaysia, Singapore, Brunei, the Philippines and Papua New Guinea in the form of a series of books and conferences.[27] Although originally designed as repository of economically viable plants, botanical gardens such as the one in Bogor also played an important role in the study of animals in the nineteenth and twentieth centuries.

[add illustration 2,
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Image caption: *An unopened package of botanical field notes by Pieter Willem Korthals (1807-1892), photograph taken in the archives of the former National Herbarium of the Netherlands (now Naturalis Biodiversity Center) by Andreas Weber, 2010.*

Writing and publishing in the field of natural history heavily depended on the availability of a large number of natural objects. However, in particular in times of long-distance travel on ships, many plants and animals reached natural historical institutions in the Europe and North America in a poor shape.[28] In order to compensate for humidity on ships, shipwreck, vermin, theft, and other threats of long-distance transfer, naturalists made sure that specimens were accompanied with detailed handwritten field notes, lists, and drawings.[29] Owing to the often intricate recording practices which naturalists used to note their observations, historians of science have started to examine such natural historical paper heritage as "paper technologies."[30] Such "paper technologies," which were often inextricably entangled with daily practices of global commerce and colonial governance, helped naturalists in Europe and other parts of the world to understand and reconstruct observations made en route.[31] In particular for a new generation of historians of natural history and empire, the growing digital availability of such unpublished handwritten and hand-drawn material can be a real treasure

trove. Initiatives such as the *Smithsonian Digital Volunteers: Transcription Center* as well as the rise of automated handwriting recognition and semantic in the context of handwritten natural historical archives will likely in the future enable historians to intensify and deepen their study of natural objects on the move.[32] However, this will only be successful if interdisciplinary teams of historians, computer scientists *and* biologists find ways to link specimen labels, handwritten field notes, travel diaries, illustrations, and publications in new ways, laying the valuable groundwork for a new historical contextualization of natural historical collections and their mobile imperial past.[33]

Taken together this chapter has made three interrelated points: first, it argues that historians of natural history and empire are looking into a bright future. In particular the fast growing digitization of plants and animals, as well as related handwritten field notes and illustrations, offers historians and other scholars a fascinating range of new textual and visual source material. Such new sources allow historians of natural history to intensify their reconstructions of the provenance and global mobility of natural objects. Second, over the last four hundred years, millions of plants and animals have received a new home in natural history institutions in the Western world. While they serve today mainly as archive of nature, used by biologists to map and understand shifts in global biodiversity, they are also a shared heritage of a mobile imperial past. And third, as historians of natural history and empire we can help reading natural historical collections and related textual and visual material as the product of a process of entanglement in which local expertise about flora and fauna, natural history, and often violent forms of colonialism played a pivotal role. This should prod natural museums, which are investing heavily in the development of digital infrastructures to enrich and link collections and archives across institutions, to realize that the authority of "biodiversity heritage" in the Western world is rooted in histories of empires which from the eighteenth to the twentieth century shaped the political reality in large parts the world.

[1] According to the database BioPortal, almost 900,000 specimens of the museum's specimens stem from Indonesia. This excludes specimens which are not registered in the database. See also https://bioportal.naturalis.nl/.

[2] Joshua Drew, Corrie Mureau, and Melanie Stiassny, "Digitization of Museum Collections Holds the Potential to Enhance Researcher Diversity," *Nature Ecology & Evolution* (2017): 1789–90, doi.org/10.1038/s41559-017-0401-6

[3] John M. MacKenzie, *Museums and Empire: Natural History, Human Culture and Colonial Identities* (Manchester: Manchester University Press, 2009).

[4] Christopher A. Norris, "The Future of Natural History Collections," in *The Future of Natural History Museums,* ed. Eric Dorfman (London: Routledge, 2017), 13-28; Freek T. Bakker, et al. "The Global Museum: natural history collections and the future of evolutionary biology and public education," (2020), doi.org/10.7717/peerj.8225.

[5] B.P. Hedrick, et al. "Digitization and the Future of Natural History Collections," *BioScience* 70, no. 3 (2020): 243–51, doi.org/10.1093/biosci/biz163; Maarten Heerlien, J. van Leusen, S. Schnörr, S. De Jong-Kole, N. Raes, and K. Van Hulsen, "The Natural History Production Line: An Industrial Approach to the Digitization of Scientific Collections," *Journal on Computing and Cultural Heritage* 8, no. 3 (2015).

[6] Paula Findlen and Anna Toledano, "The Materials of Natural History," in *Worlds of Natural History*, ed. Helen A. Curry, Nicholas Jardine, Jim Secord, Emma Spary (Cambridge: Cambridge University Press, 2018), 151–69.

[7] James Secord, "Knowledge in Transit," *Isis* 95, no. 4 (2004): 654–72; Neil Safier, "Global Knowledge on the Move: Itineraries, Amerindian Narratives, and Deep Histories of Science," *Isis* 101, no. 1 (2010): 133–45.

[8] For three excellent more general introductions to the field see: Arthur MacGregor, *Naturalists in the Field* (Leiden: Brill 2018); Curry, Jardine, Secord, Spary, *Worlds of Natural History*; N. Jardine, J. Secord, E.C. Spary, eds., *Cultures of Natural History* (Cambridge: Cambridge University Press, 1996).

[9] Fa-Ti Fan, *British Naturalists in Qing China: Science, Empire and Cultural Encounter* (Cambridge, MA.: Harvard University Press, 2004); Harold Cook, *Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age* (New Haven: Yale University Press, 2007); Juan Pimentel, "Green Treasures and Paper Floras: the Business of Mutis in New Granada (1783–1808), *History of Science* 52, no. 3 (2014): 277–96; Bernhard Schär, *Tropenliebe. Schweizer Naturforscher und niederländischer Imperialismus in Südostasien um 1900* (Frankfurt am Main: Campus, 2015); Londa Schiebinger, *Plants and Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004); Andrew Goss, *The Floracrats: State Sponsored Science and the Failure of Enlightenment in Indonesia* (Madison: University of Wisconsin Press, 2011).

[10] Lissa Roberts, "Situating Science in Global History: Local Exchanges and Networks of Circulation," *Itinerario* 33 (2009): 9–30; Fa-ti Fan, "Science in Cultural Borderlands: Methodological Reflections on the Study of Science, European Imperialism, and Cultural Encounter," *East Asian Science, Technology and Society* 1 (2007): 213–31.

[11] Genie Hoo, "Wars and Wonders: The Inter-Island Information Networks of Georg Everhard Rumphius," *The British Journal for the History of Science* 51, no. 4 (2018): 559–84; Dorit Brixius, "From Ethnobotany to Emancipation: Slaves, Plant Knowledge, and Gardens on Eighteenth-Century Isle de France," *History of Science* 58, no. 1 (2019): 51–75; Simon Schaffer, Lissa Roberts, Kapil Raj, James Delbourgo, *The Brokered World: Go-Betweens and Global Intelligence, 1770–1820* (Sagamore Beach: Science History Publications, 2009).

[12] Leonard Y. Andaya, "Flights of Fancy: The Bird of Paradise and its Cultural Impact," *Journal of Southeast Asian Studies* 4, no. 3 (2017): 372–89; Pamela Swadling, *Plumes from Paradise: Trade Cycles in outer Southeast Asia and Their Impact on New Guinea and Nearby Islands until 1920* (Boroko: Papua New Guinea National Museum, 1996).

[13] In the early twentieth century, the Missiemuseum in Steijl, the Netherlands, was an important nodal point for the import of plumes from birds of paradise to Europe. Justin J.F.J. Jansen, "Missiemuseum, Steijl, the Netherlands – The History of a Little-Known Collection," *Bulletin British Ornithologists' Club* 132, no. 3 (2012): 212–14.

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[15] Anne Coote, Alison Heynes, Jude Philp, and Simon Ville, "When Commerce, Science, and Leisure Collaborate: The Nineteenth-Century Global Trade Boom in Natural History Collections," *Journal of Global History* 12 (2017): 319–39.

[16] Clifford B. Frith and Bruce M. Beehler, *The Birds of Paradise* (Oxford: Oxford University Press, 1998), chaps. 1 and 2.

[17] Nicholas Thomas, *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific* (Cambridge, MA: Harvard University Press, 2009).

[18] Ralph Bauer and Marcy Norton, "Introduction: Entangled Trajectories: Indigenous and European Histories," *Colonial Latin American Review* 26, no. 1 (2017): 1–17; Sebestian Kroupa, Stephanie J. Mawson, and Dorit Brixius, "Science and Islands in the Indo-Pacific Worlds," *The British Journal for the History of Science* 51, no. 4 (2018): 541–58.

[19] See for instance Marco Masseti, 'New World and Other Exotic Animals in the Italian Renaissance: the Menageries of Lorenzo Il Magnifico and his Son, Pope Leo X," in *Naturalists in the Field: Collecting, Recording and Preserving the Natural World from the Fifteenth to the Twentieth-First Century,* ed. Arthur MacGregor (Leiden: Brill publishers, 2018), 40–75; Jim Endersby, *Orchid: A Cultural History* (Chicago: Chicago University Press, 2016).

[20] See for instance https://data.nhm.ac.uk/ and the project website of the project "Distributed System of Scientific Collections (DISCCo)," https://www.dissco.eu/.

[21] For a very positive view on Humboldt, see Sandra Rebok, "Humboldt's Exploration at a Distance," in Curry, Jardine, Secord and Spary, *Worlds of Natural History*, 319–34.

[22] Jorge Cañizares-Esguerra, "How Derivate Was Humboldt? Microcosmic Nature Narratives in Early Modern Spanish America and the (Other) Origins of Humboldt's Ecological Sensitivities," in *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*, ed. Londa Schiebinger and Claudia Swan (Philadelphia: University of Pennsylvania Press, 2007), 148–65.

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[24] Andreas Weber, "Collecting Colonial Nature: European Naturalists and the Netherlands Indies in the Early Nineteenth Century," *BMGN—Low Countries Historical Review* 134, no. 3 (2019): 72–95.

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[31] The entangled character of "paper technologies" is highlighted in Volker Hess and J. Andrew Mendelsohn, "Case and Series: Medical Knowledge and Paper Technology, 1600–1900," *History of Science* 48 (2010): 287–314.

[32] "Smithsonian Digital Volunteers: Transcription Center," https://transcription.si.edu/; L. Stork, et al., "Semantic Annotation of Natural History Collections," *Journal of Web Semantics* 59 (2019), 100462; L. Schomaker, "Lifelong Learning for Text Retrieval and Recognition in Historical Handwritten Document Collections," in *Handwritten Historical Document Analysis, Recognition, and Retrieval—State of the Art and Future Trends*, ed. Andreas Fischer, Marcus Liwicki, Rolf Ingold (World Scientific Publisher, 2020), https://arxiv.org/abs/1912.05156.

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