

ХРОНИКА НАУЧНОЙ ЖИЗНИ

From Natural History to Ecology: Towards a Comparative History of Life Sciences in the Long Nineteenth Century

VICTORIA LEE

Princeton University, Princeton, USA; toril@princeton.edu

The symposium “From Natural History to Ecology: Towards a Comparative History of Life Sciences in the Long Nineteenth Century” took place as part of the 24 International Congress of History of Science, Technology and Medicine held in July in Manchester, UK (21–28 July, 2013). It was organized by **Eduard Kolchinsky**, **Anastasia Fedotova**, **Marina Loskutova** (Russian Academy of Sciences, St. Petersburg) and **Staffan Müller-Wille** (University of Exeter). The symposium included scholars from Britain, Germany, Denmark, Russia and the United States.

Until recently, the historiography of life sciences in the long nineteenth century has tended to privilege the history of evolutionary theory, while neglecting other important research agendas. At the same time its narrative framework has been traditionally structured along disciplinary divisions as they emerged within the university system, implicitly privileging fundamental over applied research. The symposium attempted to redress the balance by examining reciprocal relations between academic research — from natural history and natural philosophy to early twentieth-century biology — on the one hand, and pragmatic concerns of states and societies managing their natural resources on the other. More specifically, the symposium focused on a gradual “scientization” of nature management with the parallel emergence of ecology as a distinct area of research. While in the last two decades the history of ecology has attracted considerable scholarly attention, the account still remains patchy and concentrates on Northwestern Europe and North America, or on the colonies of European oceanic empires. The symposium sought to contribute to a wider cross-national comparative study of early ecological research by examining the emergence of proto-ecological and early ecological theories and concepts in different national contexts. In particular, the symposium addressed such issues as the relationships between the life sciences and various agencies directly engaged in nature management, the changing nature of expertise and role of “amateur naturalists” and “professional scientists”, the changing boundaries between “fundamental” and “applied” research and the role of non-

university institutional environments in the advancement of proto-ecological and early ecological ideas, the role of material infrastructures of research, and the distinctive national styles in early ecological theories and how they were impacted by the circulation of people and concepts across national boundaries.

Brigitte Hoppe (Ludwig-Maximilians-University of Munich) began with a paper on “Early Ecological Observations: Theoretical Basis and Empiricism in Natural History.” Her paper explored a contradiction in the history of ecology, that while for some scholars a scientific ecology did not arise before the nineteenth century, other historians of botany and zoology describe numerous ecological observations in the early modern period. Hoppe confirmed evidence for the latter upon examining original natural history texts of the sixteenth and seventeenth centuries. In addition, she underlined an increase of ecological observations published by seventeenth-century European explorers of overseas countries in South India, East Asia and South America, including H. A. van Rheede tot Drakestein in South India, E. Kaempfer in Japan and G. Markgraave and W. Piso in Brazil. Moreover, she emphasized the theoretical basis of the empirical research carried out by learned physicians. Their fieldwork in foreign countries was based on traditional methodology relating to Aristotelian categories. As a result, they needed to search not only for the structure and parts of plants and animals, but also for their environment and living conditions, in order to fulfil the categories of *locus* and *tempus*.

Eduard Kolchinsky’s paper, “Exploratory Voyages in the Russian Empire and Their Role in the Formation of Animal Ecology,” examined how exploratory voyages in the Russian empire in the eighteenth to nineteenth centuries formed the basis for accumulating data on the relations between animals and their environment and on their behavior in animal communities. It was a process, which led to the making of a new discipline. Russian territory provided scholars and travelers with the opportunity to study animal species in different geographic zones and ecosystems, as well as to analyze their migrations and their population dynamics, their adaptability to abiotic factors, the specificities of their biological niches, and the impact exercised by these niches on such factors as nutrition, geographic and seasonal variability, and distribution area.¹

In his paper, “Botanical Arithmetic: Cataloguing and Quantifying Living Nature around 1800”, **Staffan Mueller-Wille** focused on the work of Karl Ludwig Willdenow, who was Alexander von Humboldt’s botanical mentor in the 1780s, and Karl Sigismund Kunth, a merchant’s clerk who served as Humboldt’s personal assistant in Paris from 1813 to 1820. Both Willdenow and Kunth engaged in the exploration of domestic and exotic resources for the promotion of Prussia’s economy, and both had particular skills in designing paper technologies to record and process information. These technologies allowed for a form of observation that was at once detailed and bound by strict, Linnaean convention, a combination that suggested quantitative approaches to natural history.²

Nils Güttler (University of Erfurt) presented a paper, “Mapping Heimat: The Observation and Conservation of Regional Environments in Germany by 1900”, which focused on the roots of “Heimat” (homeland) in the observational practice of late nineteenth-century life science,

¹ Kolchinsky E.I., Sytin A.K., Smagina G.I. Natural History in Russia (Papers on development of Natural History in Russia in XVIII). Saint-Petersburg: Nestor-Historia, 2004. 242 p.

² Mueller-Wille S., Böhme K. In der Jungfernheide hinterm Pulvermagazin frequens. Das Handexemplar des Florae Berolinensis Prodromus (1787) von Karl Ludwig Willdenow // NTM Zeitschrift für Geschichte der Wissenschaften, Technik und Medizin. 2013. Vol. 21 (4). P. 93–106.

with a particular emphasis on botanical surveying. He argued that “Heimat” was a conjoint playground for scientists that were interested in the ecology of regional environments and for conservationists from outside academe. Botanical surveying was part of broader trends in mapping and observing local natural history, which included disciplines such as zoology, geology, and anthropology, among others.³

Marina Loskutova’s paper, “Early Research on Insect Pests in Russia: Local Knowledge, Academic Scholarship, Public Initiative and the Russian Civil Service in the 1830s–1870s,”⁴ focused on early research on insect pests in Russia in the 1840s and the initiative of the Ministry of State Domains in this field. She explored the relations between a small group of trained naturalists, Russian civil service and local observers in the provinces. She also questioned the established understanding of popularization of science as a disinterested, one-way communication between “professional” scholars and “amateur” audiences, by showing instead how a popularization project worked as a means to reach out for potential sources of field data.

Anastasia Fedotova, in her presentation “Towards the Professionalization of Applied Entomology,” discussed the Regional Entomological Congresses in South Russia in the 1880s. These congresses were unusual events both in the scientific and public life of Tsarist Russia. Their active participants included a number of prominent naturalists such as Iliia Mechnikoff and Alexander Kovalevsky. The congresses played a key role in stimulating the development of applied entomology and agricultural experimentation, although until recently they have attracted remarkably little attention from historians.

Ida Stambhuis (Vrije Universiteit Amsterdam/Aarhus University) spoke on “Snapdragons and Grains, Mice and Chickens: The Two Faces of the First German Genetics Institute (1914–1930).” In 1914 the Institute for Heredity Research in Germany was founded in Berlin as part of the Agricultural College. As director Erwin Baur decided to occupy the niche of Mendelian and Morganian genetics. The experiments conducted at his institute were carried out on agriculturally interesting plants and animals, like grains and chickens, or scientifically relevant organisms, like snapdragons and mice. The institute had the characteristics both of a farm and of a scientific institute. Stambhuis pointed the importance of these features of the institute, which became the vehicle through which the discipline of genetics emerged and became established in Germany.

The paper by **Victoria Lee** (Princeton University), “Mold Cultures: Traditional Industry and Microbial Studies in Early Twentieth-Century Japan,” looked at the relationship between the modernization of the traditional brewing industries and the institutionalization of microbiology in Japan. She argued that skilled workers in the brewing industry — especially the *tanekōji* makers who specialized in selling dried spore preparations for making the mold starter *kōji* — shared concerns with academic scientists for studying and collecting microbial strains, and the expansion of microbiological research relied on the close exchange between the two. She

³ *Güttler N.* Das Kosmoskop. Karten und ihre Benutzer in der Pflanzengeographie des 19. Jahrhunderts, Göttingen: Wallstein Verlag, 2014. In print.

⁴ *Loskutova M.V.* Early research on insect pests in Russia: local knowledge, academic scholarship and Russian civil service in the 1830s–1840s // *Centaurus*, 2014 (forthcoming); *Loskutova M.V., Fedotova A.A.* The rise of applied entomology in the Russian Empire: governmental, public and academic responses to insect pest outbreaks from 1840 to 1894 // *Life Sciences, Agriculture and the Environment: New Perspectives* / ed. by Denise Phillips and Sharon Kingsland (Archimedes Series). Dordrecht: Springer, 2014. In print.

further suggested that local industry helped to shape a relatively autonomous tradition of seeing microbes as living workers as much as pathogens in Japan.⁵

Jonathan Oldfield (University of Glasgow) presented a paper on “Russian Geography and the Commission for the Study of the Natural Productive Forces of Russia (KEPS)”, which explored the relationship between the activities of KEPS, established in 1915, and the development of Russia’s geographical sciences during the late tsarist and early Soviet periods. The natural philosopher Vladimir Ivanovich Vernadskii was a key figure behind the establishment of the Commission, which was broadly concerned with establishing the extent of Russia’s natural resources via extensive expeditionary activities and an assessment of existing knowledge. Oldfield focused on the foundation of the Industrial-Geographical Department within KEPS in 1918, following the proposal of the geographer A.A. Grigor’ev. Grigor’ev’s rationale for promoting this specialisation was predicated on his belief that for the “correct and rationale organisation of the economy, it was necessary to create not only a clear picture of the natural, domestic and economic conditions of the country but also to explain the causal dependencies between them.” Such concerns echoed debates at the time over the nature and focus of geography within Russia. Grigor’ev’s initiative would lay the foundations for the later establishment of the Institute of Geography, Academy of Sciences USSR, in the 1930s. The paper highlighted the main activities of the IGD during its early years, which included work concerning monetary reform in Russia as well as the organization of complex physical-geographical expeditions to regions of Russia hitherto little explored.

The presentation by **Denis Shaw** (University of Birmingham) on “The Science Behind the Great Stalin Plan (1948-1953): Nineteenth- and Early Twentieth-Century Precedents,” explored the grandiose scheme for the amelioration of climatic conditions across the forest-steppe and steppe vegetation zones of the European USSR — the region’s breadbasket — to increase agricultural production. Proponents claimed that the Great Stalin Plan was based on the long experience of a series of scientific research institutes and of “progressive” collective and state farms, as well as that the scientific basis of the plan lay in the research of earlier scholars. Examining the achievements of such nineteenth-century scholars as V.V. Dokuchaev and associated field research stations, as well as materials produced by the scientists during the period of the Stalin Plan, Shaw argued that the plan’s cancellation after Stalin’s death in 1953 stemmed not merely from problems in implementation, but also from inadequacies in the scientific basis for understanding the region’s environmental complexities and in forecasting the environmental effects of specific measures.

⁵ Lee V. *Mold Cultures: Traditional industry and microbial studies in early twentieth-century Japan // Life Sciences, Agriculture and the Environment: New Perspectives* / ed. by Denise Phillips and Sharon Kingsland (Archimedes Series). Dordrecht: Springer, 2014. In print.