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Symposium on the History of Applied Biology

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The symposium “From Cameralism and Natural Philosophy to Applied Biology: Agriculture and Science in the 19th–20th Centuries” formed part of the 2012 International Conference of the European Society for the History of Science (November 1–3, Athens), and was organised by **Anastasia Fedotova**, **Marina Loskutova** (St. Petersburg Branch of the Institute for the History of Science and Technology, Russian Federation) and **Staffan Müller-Wille** (University of Exeter, UK) and included academics from Russia, Europe and the United States.

The history of the life sciences has until recently been written predominantly in terms of fundamental or ‘pure’ research with an accent being placed on the origin and development of individual disciplines and sub-disciplinary areas. It is certainly the case that the pursuit of fundamental academic research via disciplinary specialisation has been a dominant feature of scientific development during the last 150 hundred years or so. At the same time, such development has also been influenced greatly by a range of contextual factors such as the need for fledging specialisations to establish themselves within the framework of national university and academy frameworks in order to ensure long-term growth and sustainability. The place and role of applied research within the broader development of the life sciences has received relatively limited critical discussion, with the greatest emphasis being placed on the emergence and consolidation of fundamental research during the course of the late 19th and 20th centuries. At the same time, there have been recent efforts to reposition applied science as a key force driving the research agenda across a whole swathe of scientific endeavours during the late 20th and early 21st centuries. A key aim of the symposium was to challenge such generalisations in order to highlight the far more complex role of applied research with respect to the emergence and development of the life sciences. With a specific focus on the relationship between science and agricultural practice during the long 19th century, the various papers explored the often fluid boundary between applied and fundamental science

characterised by the generation and movement of knowledge amongst scientists, state institutions as well as broader civic initiatives. In addition, they drew attention to the associated shaping influence of differing socio-cultural contexts acting at a range of scales and helping to facilitate the advancement of applied research in particular instances.

The seminar began with a presentation by **Staffan Müller-Wille** “Revisiting the History of the Life Sciences in the Long 19th Century”, which reflected on the methodology underpinning the study of natural history and biology. In particular, the paper assessed the development of biology from the 19th century as a particular ‘way of seeing’ the world, drawing inspiration from a range of disciplines linked to the natural sciences, medical sciences as well as agro-industry; an approach in marked contrast to the more common and rigid disciplinary-led orientation noted above. Furthermore, such an approach drew attention to the relatively long history of interdisciplinary and applied research within the biological sciences.

The paper by **Marina Loskutova** focussed on the earliest studies of the impact of harmful insects on forest resources by the Russian state agricultural department during the early-mid 19th century. It was shown that the science underpinning this work corresponded to similar initiatives elsewhere in Europe, although with activity centred on provincial European Russia. The paper’s detailed analysis of the interrelations between ministerial structures, academic institutions and local collectors enabled Loskutova to demonstrate the process of ‘translating’ local proto-scientific knowledge into the language of natural science, which up until the present time has not attracted the attention of historians of science.

Polish historian **Jiří Sekerák** (Moravian Museum) considered the work of Gregory Mendel (1822–1884) in connection with the activities of the Association for the Improvement of Agriculture, Natural Science and Knowledge of the Country which directed its energies towards the improvement of agricultural production in Moravia as well broader concerns related to the region’s natural characteristics. It was argued that the scope of the Association’s activities provided broad support for Mendel’s specific work on particulate inheritance.

Denis Diagre (National Botanic Garden of Belgium) in his presentation “From ‘Pure’ Science to Practical Science: the Difficult Journey of the Belgian State Botanic Garden (1870–1914),” reflected on the creation of the State Botanic Garden of Belgium and its shift from an early focus on ‘pure’ research to more applied activities. The causes of this shift included changing state concerns in addition to the influence of the Catholic church which placed an emphasis on practical instruction. Furthermore, over time ‘pure’ research was

focussed increasingly on highly politicised issues such as explorations of the floristic composition of the Congo.

The paper by **Anastasia Fedotova** — “The “Special Expedition” and the Making of Experimental Forestry in Southern Russia in the 1890s” — explored the early history of experimental forestry in Russia following the drought of 1891 in the European steppe region of Russia. The influential soil scientist V.V. Dokuchaev headed a ‘Special Expedition’ to the region in order to explore improved techniques for water and soil management. Importantly, these scientific activities were able to build on earlier, less-systematic efforts initiated during the mid–19th century, which aimed to generate greater understanding of afforestation and related processes. More specifically, Fedotova examined efforts to organise experimental work in the Veliko-Anadol forestry district dating back to the early 1840s, which included the introduction of regular meteorological observation.

Jonathan Oldfield’s (University of Glasgow) paper “Conceptualisations of Natural Physical Systems and Natural Resources Amongst Russian Geographers During the Late Tsarist Period” explored the situated nature of geographical thought as it developed and unfolded over time within a specific socio-cultural context, namely that of Russia. Its emphasis was on the origins of a particular strand of Russia’s geographical tradition, which was advanced primarily through the work of Lev Semenovich Berg [1876–1950] in the early part of the 20th century, and would emerge to play a significant, albeit contested, role in the subsequent development of geography during the Soviet period. It was argued that Berg’s particular formulation internalised longstanding concerns of Russian natural scientists related to natural (physical-geographical) complexes and associated regional understandings.

The presentation by **Kevin Armitage** (Miami University), entitled “The Real Solution to the Agricultural Problem: Nature as Culture in Land Grant University Outreach Programs, 1887–1915,” focussed on efforts in the rural parts of the United States during the late 19th century and early 20th century to ensure the continuity of rural communities by addressing the outmigration of young people. One of the responses was a concerted programme directed towards the teaching of natural science and agronomy in American schools. It was believed that this type of education would both help to improve rural productivity as well as provide rural populations with the necessary means to evaluate their life favourably in contrast to the temptations of rapidly growing urban areas.

The main theme of the paper by **Anna Samokish** (St. Petersburg Branch of the Institute for the History of Science and Technology, “Natural and Agro-biology in Soviet Middle School [1918–1933]”) reflected on the emergence of experimentation in Soviet

teaching and pedagogy during the early post-revolutionary period which resulted in greater emphasis being placed on applied understanding, fieldwork experience and associated skills rather than disciplinary-based science. More specifically, Samokish demonstrated how agronomical knowledge penetrated the school curriculum in order to form the basis of those courses dealing with natural science simultaneously undermining the role of theoretical teaching.

The paper by **Eduard Kolchinsky** (St. Petersburg Branch of the Institute for the History of Science and Technology) - "Nikolai Vavilov: Unity of Theory, Practice and Politics," - was based on new materials from the archive in St Petersburg. He noted the recent mini-revival of work linked to the ideas of Lysenko which simultaneously criticised Vavilov's role in opposing Lysenko's emphasis on applied work. The paper provided a detailed examination of Vavilov's role in debates concerning Russian biology from the 1920s onwards and at the same time shed new light on the social and political realities in which Vavilov and his colleagues collided during the years of the Cultural Revolution.

Denis Shaw (University of Birmingham) focused on the 'Great Stalin Plan for the Transformation of Nature', which was a grandiose, Communist Party and Soviet government-sponsored scheme for the amelioration of climatic conditions across the forest-steppe and steppe vegetation zones of the European USSR. The paper aimed to make a contribution to our understanding of the role of Soviet geographers in the development and implementation of the plan. More specifically, the paper considered some of the scientific, political and practical problems which geographers faced in their attempts to realise the Stalin Plan. It also highlighted the different ways in which the plan was discussed in the secondary literature, ranging from the propagandistic through to detailed scientific discussion concerning associated technical issues.

Finally, the paper by **Hanne De Winter** (University of Leuven) — "The Birth of Rational Fertilization: the Establishment of the Soil Service of Belgium (SSB) in 1946" - discussed the historical background of the institutionalisation of agronomic soil science in Belgium. Beginning with the establishment of the first chair of soil science in 1935 at the Catholic University of Louvain, De Winter noted the way in which colonial experience was utilised in order to advance understanding of soil science in Belgium. Such activities were strengthened by the establishment of the Soil Service of Belgium in 1946 and associated activities to advance understanding of fertility issues within the country.