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Between universalism and regionalism: universal systematics from imperial Japan

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Abstract. Historiographic discussions of the universality and regionality of science have to date focused on European cases for making regional science universal. This paper presents a new perspective by moving beyond European origins and illuminating a non-European scientist's engagement with the universality and regionality of science. It will examine the case of the Japanese botanist Nakai Takenoshin (1882–1952), an internationally recognized authority on Korean flora based at Tokyo Imperial University. Serving on the International Committee on Botanical Nomenclature in 1926, Nakai endorsed and acted upon European claims of universal science, whilst simultaneously unsettling them with his regionally shaped systematics. Eventually he came to promote his own systematics, built regionally on Korean flora, as the new universal. By analysing his shifting claims in relation to those of other European and non-European botanists, this paper makes two arguments. First, universalism and regionalism were not contradictory foundations of scientific practice but useful tools used by this non-European botanist in maintaining his scientific authority as a representative Japanese systematist. Second, his claims to universality and regionalism were both imperially charged. An imperially monopolized study of Korean plants left a regional imprint on Nakai's systematics. In order to maintain his scientific authority beyond its region of origin he had to assert either the expanding regionalism of 'East Asia' or universalism.

Historians of science have conclusively established that scientific knowledge is always constructed within the social context of particular cultures – and is thus local.[1]

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For the romanization of Korean, I adopt the McCune–Reischauer system except when authors have romanized names already. Korean and Japanese names are in their original order, with the surname first. All translations are mine.

1 For a skilful review on science studies see Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science*, Cambridge: Cambridge University Press, 1998. There are many empirical discussions of the locality of science within Europe, beginning with Roy Porter and Mikuláš Teich, *The Scientific Revolution in National Context*, Cambridge: Cambridge University Press, 1992. In addition, there have been important contributions that questioned the simple 'European' origin of modern science by demonstrating the role of colonial exchange, or the colonial contact zone, or the global network of information, in shaping European modern science. See, for example, Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age*, New Haven: Yale University Press, 2007; Simon Schaffer, 'Newton on the beach: the information order of *Principia Mathematica*', *History of Science* (2009) 47, pp. 243–276; Fa-ti Fan,

However, modern European science has made a rather persuasive claim that it is nonetheless universal, inspiring scholars in science studies to find a historical explanation for this persuasiveness. They have revealed various rationales, strategies and instruments of European science used in establishing its claims. These have included the political philosophy of new social elites, a natural theology concerning the allegedly universal natural world, imperial expansion, laboratories, and 'centres of calculation' based on 'immutable mobiles'.[2] Although such histories succeed in illuminating the European claim of universality, they are explanations of a very specifically European logic and strategy. They have rarely taken into account the perspectives of non-Europeans, those actual targets of European universality, who would have found such a culturally specific logic and strategy as foreign as modern science itself. To fully understand the vitality of the European claim of the universality of its regional science, we have to examine how various non-European practitioners understood this claim too.

In the case of plant systematics, the creation of a universal standard was an elusive goal once one moved beyond the superficial consensus about the Linnaean binomial system. Since Linné, there have been many systematists who criticized the artificial nature of Linnaean classification by claiming a real, 'natural' system, including a quite successful attempt by Antoine-Laurent de Jussieu. Thus even within Europe actual practice varied regionally, with allegiances to different natural systems requiring constant efforts of standardization.[3] Increasing non-European participation in this practice, beginning around the late nineteenth and early twentieth centuries, further threatened the project of universal-

British Naturalists in Qing China, Cambridge, MA: Harvard University Press, 2004; Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650–1900*, New York: Palgrave Macmillan, 2010.

2 Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, the Experimental Life*, Princeton, NJ: Princeton University Press, 1985; Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts*, Princeton, NJ: Princeton University Press, 1986; Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society*, Cambridge, MA: Harvard University Press, 1987; Latour, *We Have Never Been Modern*, Cambridge, MA: Harvard University Press, 1993; Richard H. Drayton, *Nature's Government*, New Haven: Yale University Press, 2000. Staffan Müller-Wille, 'Joining Lapland and the Topinambes in flourishing Holland: center and periphery in Linnaean botany', *Science in Context* (2003) 16(4), pp. 461–488, furthered the thought on 'centres of calculation' by emphasizing its dynamic nature shaped in interaction with the peripheral field.

3 The success of Linnaean taxonomy, whose Euro-centrism and gendered aspect are well discussed by Schiebinger, was made due to Linné's dedication, its relative simplicity, and his globalizing strategy of relying on 'apostles'. Nonetheless, its security was weak and in spite of Britain's longer allegiance to it, it was replaced by constantly redefined 'natural systems'. Lisbet Koerner, *Linnaeus: Nature and Nation*, Cambridge, MA: Harvard University Press, 1999; David E. Allen, *The Naturalist in Britain*, Princeton, NJ: Princeton University Press, 1994; Londa L. Schiebinger, *Plants and Empire*, Cambridge, MA: Harvard University Press, 2004; Peter F. Stevens, *The Development of Biological Systematics: Antoine-Laurent de Jussieu, Nature, and the Natural System*, New York: Columbia University Press, 1994; Nicholas Jardine, James A. Secord and Emma C. Spary (eds.), *Cultures of Natural History*, Cambridge: Cambridge University Press, 1996; Christophe Bonneuil, 'The manufacture of species: Kew Gardens, the empire and the standardisation of taxonomic practices in late 19th century botany', in M.-N. Bourguet, C. Licoppe and O. Sibum, eds., *Instruments, Travel and Science: Itineraries of Precision from the 17th to the 20th Century*, London: Routledge, 2002, pp. 189–215.

ity.[4] However, faith in a universal standard in plant systematics seemed scarcely to have faded away.[5] This paper examines the complex appeal of the universality of science through two sets of 'universal' systematics – one European and one East Asian – simultaneously practised by the Japanese botanist Nakai Takenoshin (中井猛之進, 1882–1952).

The Japanese engagement with the universality of science that is represented by Nakai is particularly illuminating due to the imperial path that the Japanese botanical establishment had taken. Japan, a model student of Western modernity, had become a significant imperial power by the early twentieth century through its consecutive victories in the Sino-Japanese War of 1894–1895 and the Russo-Japanese War of 1904–1905.[6] Owing to these victories it colonized Taiwan in 1895 and Korea in 1910.[7] In conjunction with this expansion, the Japanese botanical establishment consciously chose an imperial path in modernizing Japanese botany. Nakai's systematics, based on Korean plants, was a product of an imperial strategy that secured a Japanese 'centre of calculation' through specimens collected from expanding Japanese colonial peripheries. His pioneering work

4 For the challenges made by Americans see Sharon E. Kingsland, *The Evolution of American Ecology, 1890–2000*, Baltimore: Johns Hopkins University Press, 2005. Scientific globalization occurred only around this time with the participation of non-Europeans, and, to a considerable degree, European latecomers, seeming to acknowledge the universality of modern science for the first time. Regarding Egyptian and Chinese conversion to Western science and technology around this time see Marwa Elshakry, 'When science became Western: historiographical reflections', *Isis* (2010) 101(1), pp. 98–109; Benjamin A. Elman, *On Their Own Terms: Science in China, 1550–1900*, Cambridge, MA: Harvard University Press, 2005, pp. xxi–xxxviii, 396–422; Elman, '"Universal science" versus "Chinese science": the changing identity of natural studies in China, 1850–1930', *Historiography East and West* (2003) 1, pp. 68–116.

5 If Lloyd shows the impossibility of finding a universal way to classify animals and plants, the never-ending concerns by practitioners may confirm this. G.E.R. Lloyd, 'The natural kinds of animals and plants', in Lloyd, *Cognitive Variations*, Oxford: Clarendon Press, 2007, pp. 39–57; G. Perry, 'Nomenclatural stability and the botanical code: a historical review', in D.L. Hawksworth and International Association for Plant Taxonomy, eds., *Improving the Stability of Names: Needs and Options*, Königstein/Taunus: The International Association for Plant Taxonomy, 1991, pp. 79–93. Kohler and Hagen argued that taxonomy, notwithstanding its long tradition, is no less scientific, no less modern and no less insecure than other scientific disciplines. Systematists have made a constant search for a universal standard with new scientific tools as in other disciplines. See e.g. Robert E. Kohler, *Landscapes & Labscapes: Exploring the Lab–Field Border in Biology*, Chicago and London: The University of Chicago Press, 2002; Joel B. Hagen, 'Experimentalists and naturalists in twentieth-century botany: experimental taxonomy, 1920–1950', *Journal of the History of Biology* (1984) 17(2), pp. 249–270; Hagen, 'The statistical frame of mind in systematic biology from quantitative zoology to biometry', *Journal of the History of Biology* (2003) 36(2), pp. 353–384. For the struggles induced by the efforts to incorporate the theory of evolution to systematics see David L. Hull, *Science as a Process*, Chicago: The University of Chicago Press, 1990.

6 Marius B. Jansen, *The Making of Modern Japan*, Cambridge, MA: Belknap Press of Harvard University Press, 2000; Ramon H. Myers and Mark R. Peattie (eds.), *The Japanese Colonial Empire, 1895–1945*, Princeton, NJ: Princeton University Press, 1984.

7 Japan colonized Taiwan in 1895, Karafuto (present-day South Sakhalin) in 1905 and the Kwantung Leased Territory in 1905, and made Korea its protectorate in 1905 before the ultimate annexation in 1910, then went on to occupy the equatorial Pacific Islands known as Nanyo in 1914, and founded Manchukuo in 1931. As Bartholomew and Morris-Suzuki conclusively discuss, these Japanese successes, surely owing to their scientific and technological ascendance, were more of a successful hybridization between Western and Japanese traditions than the alleged mindless copy of Western ways. James R. Bartholomew, *The Formation of Science in Japan*, New Haven: Yale University Press, 1993; Tessa Morris-Suzuki, *The Technological Transformation of Japan: From the Seventeenth to the Twenty-First Century*, Cambridge: Cambridge University Press, 1994.

on Korean flora soon received international recognition, allowing him to serve on the International Committee on Botanical Nomenclature in 1926. While Nakai showed strong support for the European universal at the committee, there were growing concerns that his method was rather singular. In defending his method induced by his effort to distinguish Korean flora from those of closely associated Japan and China, he came to claim a regional nature for his systematics. However, he eventually promoted his own systematics as a new universal, in competition with the European one, thereby supporting Japan's further expansion. The shifting and political nature of Nakai's claims about universality and regionalism sheds new light on European moves towards the universality of science, and on non-European interpretations of them. In particular, Nakai's pragmatic use of imperialistic politics as a scientific tool, and his rejection of the category of 'natural' in anything like the European sense, as we shall see, will make his engagement with universality an important one.

Nakai's scientific practice highlights the importance of colonial interaction in shaping modern botany, including, significantly, its claim of universality.[8] It shaped Nakai's systematics, characterized by attention to small morphological detail, and his pursuit of universal authority. However, this colonial making of modern Japanese botany is rarely discussed by historians of Japanese science.[9] The few historical works that have dealt with modern Japanese biology or natural history have mostly focused on how Japanese scientists acquired 'Western' modern knowledge in order, finally, to make their own contributions to it; Japanese systematics quickly achieved its modernity by copying and modestly modifying the successful Western classification system.[10] The

8 As one commentator puts it, 'It is now clear that science was molded by the European imperial age'. The importance of colonial research in European science does not need much more argumentation. Sujit Sivasundaram, 'Sciences and the global: on methods, questions, and theory', *Isis* (2010) 101, pp. 146–158, 154. Natural history or botany received due attention from historians for its economic and ideological role for colonial expansion and its cultures of imperialism. For example, see Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens*, New York: Academic Press, 1979; Drayton, op. cit. (2); Schiebinger, op. cit. (3); Londa Schiebinger and Claudia Swan (eds.), *Colonial Botany*, Philadelphia: University of Pennsylvania Press, 2005.

9 This historiographical gap reflects the lack of serious historical attention paid to Japanese modern science in general and of the specific attempt to connect its development with Japanese colonial expansion. The idea that 'there was clearly much work to be done on science in the Japanese colonial empire' was widely shared among historians of Japanese science. Gregory Clancey, 'Japanese colonialism and its sciences: a commentary', *East Asian Science, Technology and Society* (2007) 1(2), pp. 205–211, 205; Kawamura Yutaka (河村豊) et al., 'The status and task for war-time science in Japan: the report from the 2003 annual conference' (日本戦時科学史の現状と課題: 2003年度年会報告), *Journal of history of science, Japan. Series II* (科学史研究. 第II期) (2004) 43(229), pp. 45–56; Togo Tsukahara, 'Introduction to feature issue: colonial science in former Japanese imperial universities', *East Asian Science, Technology and Society* (2007) 1(2), pp. 147–152. Bartholomew's (op. cit. (7)) representative work on the making of Japanese modern science did not give much attention to Japanese imperial expansion. From fields like agricultural sciences and medicine, the integration of Japanese colonial experience and its modern science have begun. Works by Fujiwara Tatsushi (藤原辰史), Iijima Wataru (飯島渉), Setoguchi Akihisa (瀬戸口明久) and Shin Chang-Geon (愼蒼健) are notable. In the area of social sciences, more efforts have been made to show the connection between Japanese colonial development and research and the development of Japanese academia. See the Iwanami series The Study and Knowledge of 'Imperial' Japan ('帝国'日本の学知).

10 Suzuki Zenji (鈴木善次), *Biology: The Beginning* (バイオロジ-事始), Tokyo: Yoshikawa Kobunkan, 2005; Ueno Masuzo (上野益三), *A History of Natural History in Japan* (日本博物学史), Tokyo: Heibonsha,

development of modern plant systematics in Japan is a more complicated story. Systematics, instead of the experimental botanies that were booming elsewhere, became the centre of the Japanese modernization of botany.[11] I will demonstrate how a Japanese plant systematics, bearing the imprint of its imperial development, came to symbolize Japanese success in modern science.

Imperial expansion and the making of the Japanese centre of botany

'Escaping Asia towards Europe' (脫亞入歐), Fukuzawa Yukichi's (福澤諭吉, 1835–1901) earnest call for Japanese modernization, was the most influential catchphrase in Meiji Japan.[12] In this appeal, showing Japan's capacity for 'European' science became a matter of the utmost national importance.[13] In botany, the leading role was taken by Tokyo Imperial University, home of the nation's only college-level department in the field between 1877 and 1918.[14] Launching the 'modernization' of Japanese botany, with an obvious awareness that this was in step with the larger national project of Meiji Japan, the department faithfully followed the path of 'Escaping Asia towards Europe', fastidiously copying the European way while denying its own 'Asian' past.[15]

Japan was not an obtuse student in following European ways, as was widely acknowledged after their consecutive victories over Qing China and Russia.[16] These in turn

1973. Even when the role of Japanese imperial expansion in the development of its modern botany was noted, it was presented as a mere expansion of research opportunities for Japanese botanists. History of Science Society of Japan (日本科学史学会) (ed.), *A Compendium of History of Science in Japan* (日本科學技術史大系), vol. 15, Tokyo: Daiichi Hoki Shuppan, 1965, pp. 151–153.

11 Miller discusses the importance of systematics in creating 'ecological modernity' in modern Japan by examining the history of the Ueno Zoo in Tokyo. My work illuminates the ascendance of modern systematics in Japanese academia. Ian J. Miller, *The Nature of the Beasts: Empire and Exhibition at the Tokyo Imperial Zoo*, Berkeley: University of California Press, 2013, pp. 25–60.

12 Fukuzawa Yukichi is, of course, the most influential thinker in Japanese modernization. The phrase was based on Fukuzawa Yukichi's belief in the linear progression of history culminating in the scientific and industrial civilization of Europe. As a self-denial of Japan's Asiatic past, it embraced a serious break from the past and a wholehearted acceptance of European culture. For penetrating analysis on the self-colonizing nature of this Meiji pursuit see Komori Yoichi (小森陽一), *Postcolonial: Colonial Sub-consciousness and Colonial Consciousness* (포스트콜로니얼 : 식민지적 무의식과 식민주의적 의식) (tr. Song Tae-uk), Seoul: Samin, 2002.

13 The founding creed of the first Japanese university says that the university was 'for the cultivation of arts and sciences in compliance with the needs of the state', revealing that achieving academic maturity was a national priority. History of Science Society of Japan, op. cit. (10), p. 55.

14 In 1918, the Kyoto Imperial University established a department of botany. Soon others followed. Tohoku Imperial University opened its botanical department in 1921, Kyusu Imperial University in 1923, Taihoku Imperial University in 1928, Tokyo and Hiroshima University in 1929, Hokkaido Imperial University in 1930. History of Science Society of Japan, op. cit. (10), pp. 265–289.

15 One later commentator ruefully noted that in seeking recognition only from Europeans, Japanese botany answered neither to its own scholarly questions nor to the practical domestic needs of the country. History of Science Society of Japan, op. cit. (10), p. 16.

16 On European responses to Japanese victories see Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance*, Ithaca, NY: Cornell University Press, 1989, pp. 357–364.

secured the colonization of Taiwan and Korea, often cheered as its most astute moves of modernization.[17] As was the case for Europe, Japanese imperial expansion was not only a manoeuvre by politicians and the military, but also a collective social movement involving the participation of entrepreneurs, intellectuals and professionals.[18]

Botanists at the Imperial University were eager participants in the making of the Japanese empire. They gradually placed imperial expansion at the core of their strategy for 'Europeanizing' Japanese botany. Yatabe Ryokichi (矢田部良吉, 1851–1899), the sole Japanese professor amongst an otherwise foreign scientific professoriate at the university's foundation, simply thought that there was no botany in traditional Japan worthy of attention. Thus he taught 'modern botany' in English, exactly as he had learned it at Cornell University.[19] However, he soon found that there was already a 'Europeanized' past in Japanese botany that he could not ignore.

Many of the Japanese plants that Yatabe collected to prove his skills as a botanist had already been classified and named by European botanists, including none other than Carl von Linné (1707–1778). Yatabe learned that three European botanists had already made very fruitful investigations of Japanese flora through the Dutch trading post in Dejima, Nagasaki. Engelbert Kaempfer (1651–1716) had done so between 1690 and 1692, Linné's pupil Carl Peter Thunberg (1743–1828) had done so from 1775 to 1776, and Philipp Franz von Siebold (1796–1866) from 1823 to 1829. All three produced sumptuous works on Japanese flora, not least the thirty volumes of *Flora Japonica* (1835–1870) that resulted from Siebold's final visit. These scholars were mostly confined to the small island of Dejima and thus their works owed less to their authors' skills as collectors or botanists than to the strong Japanese tradition in natural history – of which, through books and able Japanese associates, they made extensive use.[20] Yatabe and his successor, Matsumura Jinzo (松村任三, 1856–1928), were unaware of the contribution of Japanese naturalists to this European science. They still considered the history of Japanese botany to be disappointing, dominated

17 Mark R. Peattie, 'Introduction', in Myers and Peattie, op. cit. (6), p. 8.

18 Bernard Semmel's classic *Imperialism and Social Reform: English Social-Imperial Thought, 1895–1914*, London: G. Allen & Unwin, 1960, discusses the 'social' nature of imperialism in Britain. For an excellent rendition of the Japanese build-up of 'social' and 'total' imperialism, though focused on the years after 1930, see Louise Young, *Japan's Total Empire: Manchuria and the Culture of Wartime Imperialism*, Berkeley: University of California Press, 1999. On the roles of small entrepreneurs see Peter Duus, *The Abacus and the Sword: The Japanese Penetration of Korea, 1895–1910*, Berkeley: University of California Press, 1998; Uchida Jun, *Brokers of Empire: Japanese Settler Colonialism in Korea, 1876–1945*, Cambridge, MA: Harvard University Asia Center, 2011.

19 That Yatabe was educated in the US and could teach in English like foreign professors such as Edward S. Morse (1838–1925) was the biggest reason for his employment. Yatabe was an ardent supporter of Fukuzawa Yukichi's call for the 'Europeanization' of Japan and proposed replacing Japanese with one of the Western languages. Oba Hideaki (大場秀章), *A History of Botanical Research in Japan: 300 Years of Koishikawa Botanical Gardens* (日本植物研究の歴史: 小石川植物園三〇〇年の歩み), Tokyo: Tokyo Daigaku Sogo Kenkyu Hakubutsukan, 1996, pp. 84–89.

20 For more detailed interactions between these botanists and Japanese scholars see Kimura Yojiro (木村陽二郎), 'Siebold in Japanese Botany' (日本植物學におけるシーボルトと), in Omori Minoru (大森實) (ed.), *Siebold and the Modernization of Japan* (PH.FR.VONシーボルトと日本の近代化), Tokyo: Hosei Daigaku, 1992, pp. 275–286, 281–283; Ueno, op. cit. (10), pp. 81–103.

by foreigners, who 'had greedily collected Japanese plants since the eighteenth century'. As a result, when Japanese scholars finally started their own investigations at the end of the nineteenth century, 'descriptions for most Japanese plants were [already] finished'.[21]

This feeling that foreigners had dominated the study of Japanese flora was exacerbated by the sense that the dominance continued. All the type specimens of Japanese plants, against which any new specimens had to be checked, were found not in Japan, but in the European centres of botany. The standard literature on Japanese flora, published in European languages, was not to be found in Japan either. Yatabe found that sending specimens to European centres for the verification of his findings was a frustrating process. He commented,

> [from] some of [those to] whom I sent many valuable specimens, I have been so unfortunate as to have received no answer whatever even after the lapse of several years. Nothing, it will be admitted, is more trying and disappointing than this to an earnest worker.[22]

In 1890 he thus decided to make an official declaration of independence from European botany, in an article written in English. It bore the apparently modest title 'A few words of explanation to European botanists':

> Now I have already collected a large number of specimens and books of reference, though not yet quite sufficient for my purpose, I have decided to begin to give new names to those plants which I consider as new, without attempting in many cases to consult with European specialists.[23]

This cautious declaration of independence was built on the specimens and books on Japanese plants that Yatabe had collected with Matsumura, who had just made himself ready for the professorship by having duly studied abroad in Germany. Upon succeeding Yatabe's professorship in 1890, Matsumura showed a clear determination to make Japan a new centre of modern botany by re-enacting the core European strategy in making its centres: he embarked on serious botanical explorations to Japanese peripheries to collect specimens for the university herbarium, located in the university botanical gardens in Koishikawa, Tokyo. Matsumura himself explored, or sent his associates and students to explore, all of the newly acquired territories of Japan. These included Taiwan (1896), Okinawa (1897), Hokkaido (1899), and Karafuto and the Kwantung Leased Territory (1906); the dates follow in the steps of Japan's imperial expansion. The fruits of these expeditions came to appear in his series on 'East Asian Plants' in the *Botanical Magazine, Tokyo* (植物学雑誌) from 1901 and were compiled in the *Index Plantarum Japonicarum* (帝国植物名鑑, 1904–1912) and *Icones Plantarum Koisikavenses* (新撰植物図編, 1911–1921). These works, based on Japanese-collected specimens in the Koishikawa Botanical Gardens, 'displayed', according to one

21 As retold by one of Matsumura's disciples in this popular biography of him, revealing how common and long-lasting this sense of loss was. Nagakubo Hen'un (長久保片雲), *The Life of the World-Class Botanist Matsumura Jinzo* (世界的植物学者松村任三の生涯), Tokyo: Akatsuki Inshokan, p. 3.

22 Yatabe Ryokichi, 'A few words of explanation to European botanists', *Botanical Magazine, Tokyo* (1890), pp. 355–356, 355. The *Botanical Magazine, Tokyo* (hereafter *BMT*) is the journal of the Tokyo Botanical Society founded by Yatabe in 1882.

23 Yatabe, op. cit. (22), 355.

Japanese assessment, 'the name of Koishikawa to the world as the Japanese centre of botany'.[24] With these works, the creation of a Japanese centre of botany, largely owing to Japanese expansion, seems to have come to fruition.

The making of a Japanese splitter in the Japanese centre

The imperial path that the Japanese botanical establishment took, interacting with Western botanical establishments to create a proper centre of botany within Japan, appears to have been chosen to overcome the colonized status of Japanese botany. However, botanists were not just followers of political and military advancement. Matsumura's move towards Korea was in fact pre-emptive. He sent a botanical collector from Koishikawa to Korea twice, in 1900 and 1902. These visits occurred well before the establishment of the Oriental Development Company for the land and resource development of Korea in 1908 and the annexation of Korea by Japan in 1910.[25] The Korean plant specimens accumulated through these ventures were given in 1906 to Nakai Takenoshin, one of Matsumura's students, so that he could write his thesis on Korean flora without ever having to set foot in Korea.[26] 'It must have been his [Matsumura's] long desire', Nakai reflected, 'that the Korean plants should be studied by Japanese botanists'.[27] Matsumura perceived Korea, a land unknown to the West, as a strategic site on which to build modern Japanese botany. There was little competition with Western botanists in this land, which was expected to become more and more accessible to growing Japanese power.

Becoming the pre-eminent expert on Korean flora was an easy coup for Nakai, as Matsumura predicted. Nakai's thesis, *Flora Koreana* (1909), written entirely in Latin, managed to report 149 families, 661 genera, 1,970 species, and 183 varieties of Korean plant, including about two hundred new species and varieties. It far surpassed the most comprehensive work then extant on Korean flora, written by Russian botanist Ivan Vladimirovich Palibin (1872–1949).[28] Nakai's achievement in such a short time was, of course, due to his access to the systematically collected specimens at the Japanese centre of botany. But it also owed much to his unique classification method,

24 Oba, op. cit. (19), pp. 89–97, 93; Matsumura's explorations were recorded by Nakai. Nakai Takenoshin, 'An outline of Dr. Matsumura Jinzo's achievement' (理學博士松村任三氏 植物學上ノ事績ノ概略), *BMT* (1915) 29(346), pp. 342–348.

25 On the development of Japanese imperialism see notes 7 and 18 above.

26 As no serious history of modern Japanese botany yet exists, most detailed information on Nakai's career can be traced from his obituary and the memorial work for his sixtieth birthday. Hara Hiroshi, 'Takenoshin NAKAI 1882–1952', *BMT* (1953) 66, pp. 1–4; Committee for Commemoration of Dr Nakai's Works (中井博士功績記念事業会, hereafter Nakai Commemoration), *The List of Monographs and Articles by Prof. Nakai and the Index of New Groups, Species and Scientific Names by Him* (中井教授著作論文目録 並に教授の研究発表による 植物新群名, 新植物名 及 新学名總索引), Tokyo: Hokuryukan, 1943. Also see Oba, op. cit. (19), pp. 101–106.

27 Nakai Takenoshin, *A Synoptical Sketch of Korean Flora*, Tokyo: The National Science Museum, 1952, p. 1.

28 Palibin's *Conspectus Florae Koreae* (1898–1901) recorded only 103 families, 393 genera, 635 species and twenty variations. Nakai Takenoshin, *Flora Koreana*, Tokyo: Imperial University of Tokyo, 1909; J. Palibin, *Conspectus Florae Koreae*, Petropoli, 1901.

which in turn was a product of his study of Korean plant specimens in an imperial setting.

This 'armchair botanizing', which had been common for many European botanists, stemmed from the comfort and the power of Nakai's secure setting.[29] By taking on such an immense number of specimens to study in just his junior year at university, he had neither the need nor the opportunity to go out into the field and see plants in their natural habitats. Books and dried specimens were Nakai's major guides in learning how to classify and identify plants and Matsumura's lack of guidance made his reliance on them even heavier.[30] This seems to have resulted in a strong predilection towards morphological descriptions and details in disregard of local contexts, reflecting the general constitution of the standard, European botanical descriptions.[31] Clearly marked by words or fixed on 'representative' dried specimens, these details must also have been quite reliable reference points that he could check back on whenever he felt confused or insecure about his identification.

In his commitment to morphological detail, Nakai had a specific reason as well: he wanted to distinguish Korea's plants from those of its better-known neighbours with similar botanical characteristics. Thus he hoped to make his work on Korean flora more important. Korea was not only underdiscovered botanically, but it had also failed to inspire much interest among botanists because of a general consensus that it was barren or just an in-between place sandwiched by China and Japan, lacking any significant botanical characteristics of its own. After his train trip passing through the peninsula, the world-leading authority Heinrich Gustav Adolf Engler (1844–1930) told Matsumura that 'there would be nothing for botanical research in Korea as it seemed just a barren land with a few willow trees'.[32] Accordingly, Engler did not even register Korea as a separate region but dealt with it partly as an extension of Chinese flora, partly as an extension of Japanese. Similarly, the *Index Kewensis*, the catalogue of

29 On the definition of the 'armchair' botanist and the 'voyaging' one see Schiebinger, op. cit. (3), p. 24.

30 Nakai, op. cit. (27), p. 10, said the following of Matsumura's lack of guidance on taxonomy: 'Prof. Matsumura must have been very cautious person. He neither taught nor consulted on plant taxonomy with his disciples, though as a pioneer of botany in Japan he was great in his knowledge'. On the difficulties of learning to work with specimens and the methodological difference that the heavy reliance on dried specimens could bring see Ann Secord, 'Pressed into service: specimens, space, and seeing in botanical practice', in David N. Livingstone and Charles W.J. Withers (eds.), *Geographies of Nineteenth-Century Science*, Chicago: The University of Chicago Press, 2011, pp. 283–310; Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, Chicago: The University of Chicago Press, 2008.

31 Changing ideas about scientific description or objectivity created this type of botanical description. Brian W. Ogilvie, *The Science of Describing*, Chicago: The University of Chicago Press, 2006; Lorraine Daston and Peter Galison, *Objectivity*, New York: Zone Books, 2007. This predilection towards morphological details also helped botanists exclude local knowledge that had to rely on local expertise. Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe*, Cambridge: Cambridge University Press, 2007, pp. 154–173. That Nakai's knowledge of Western languages other than Latin and English was insufficient could have strengthened his reliance on Latin descriptions as well.

32 Engler told this to Matsumura after his visit to China through the railways installed by Japan. Nakai Takenoshin, 'Research on Korean flora' (朝鮮植物の研究), *Oriental Art and Science Magazine* (東洋學藝雜誌) (1927) 43(534), pp. 561–571, 561.

world plants published by Kew Gardens, registered Korean plants as 'Chinese' from 1895 to 1905.[33]

Thus to talk about 'Korean flora', let alone become an expert in it, one had to prove that this flora was distinct. This was not an easy task because Korean plants were indeed similar to those of neighbouring territories. Nakai had to admit that about two thousand out of the 3,600 species of Korean plant that he recorded by 1926 were identical to Japanese ones. Another 1,100 species were identical to Chinese ones.[34] Nakai's obvious tactic was to note any differences by paying attention to minute details on the specimens, such as the shapes of veins and edges of leaves as well as the shapes of hairs on the backs of the leaves.

This strategy of focusing on botanical differences rather than similarities, and thus splitting genera and species by those differences, was a strategy shared by many botanists, especially by those who came late to the scene and wanted to show their contribution by coining new scientific names. Systematists refer to such people as 'splitters', in contrast to 'lumpers', who tend to combine similar plants into one category.[35] By his painstaking attention to detail, Nakai found enough plants native to Korea to legitimate his classification of plants as 'Korean' in the *Index Kewensis* (1929).[36] It was ironic that this Japanese botanist had to make Korea a botanically independent territory during the same period that Japan annihilated its political existence.

Nakai's eye for detail was not the only reason for his success. The unusual thirty-year sponsorship of his academic work on Korean flora by the Government-General of Korea from 1913 was crucial in reinforcing his success. Nakai took the initiative of making a bold proposal to the governor-general of Korea; he asked for sponsorship for publication of 'academic works for domestic and foreign scholars instead of plain reports' for colonial resource development. 'Understudied yet academically important' Korean plants could bring long-awaited international recognition for Japanese science. The Government-General of Korea was open to this idea. It had already been publishing reports in English with photographs and impressive statistics in an attempt to advertise its scientifically enlightened governance and justify to Western critics its forceful subjugation of Korea.[37] The government readily accepted Nakai's proposal. He was encouraged to 'demonstrate that Japan makes advances in the scholarly fields as well as in the

33 Adolf Engler and Karl Prantl, *Die Natürlichen Pflanzenfamilien*, Leipzig: Wilhelm Engelmann, 1900; Royal Botanic Gardens, Kew, *Index Kewensis*, Oxford: Clarendon Press, 1895–1905.

34 Nakai, op. cit. (32), p. 564.

35 This tension between 'splitters' and 'lumpers' was high, as illustrated in the case of the famous 'imperial' lumper Hooker; it was never resolved because no consensus on the concept of species could be made. Endersby, op. cit. (30), pp. 155–169. For a temporarily successful attempt by European botanists to orchestrate nomenclatural stability in the late nineteenth century see Bonneuil, op. cit. (3). For the conceptual debate on species see Gordon R. McOuat, 'Species, rules and meaning: the politics of language and the ends of definitions in 19th century natural history', *Studies in History and Philosophy of Science Part A* (1996) 27 (4), pp. 473–519; McOuat, 'The origins of "natural kinds": keeping "essentialism" at bay in the age of reform', *Intellectual History Review* (2009) 19(2), pp. 211–30.

36 Nakai, op. cit. (32), pp. 565–7; *Index Kewensis*, Oxford: Clarendon Press, 1929–1933.

37 *The Annual Report on Reforms and Progress in Chosen (1907–1923)*. Nakai's reflection on his negotiation with the colonial government is in Nakai, op. cit. (32), p. 562. Nakai expressed his gratitude to the colonial government's support by naming a couple of flowers after the then governor-general. Nakai

colonial governance' in Korea.[38] By displaying his ability to re-enact European scientific practice for a Western audience, he secured his first job as the government botanist of Korea.

Imperial sponsorship greatly fostered Nakai's success. In particular, the series of works funded by the colonial government made Nakai a world-renowned expert on Korean flora. Twenty-two volumes of *Flora Sylvatica Koreana* (朝鮮森林植物編), written in a mixture of Latin, English and Japanese, with numerous illustrations, were published between 1915 and 1940. Orders from foreign institutions for these volumes arrived. According to Nakai himself, 'extraordinary praise' poured in from around the world for informing botanists of the unknown world of Korean flora.[39] He was elected a member of several botanical societies in Europe and, in 1926, was nominated for the International Committee on Botanical Nomenclature at the International Botanical Congress, although both of these accomplishments may point to the unknown nature of Korean flora and his growing control of the Japanese centre of botany rather than reflecting acknowledgement of Nakai's taxonomic talent.[40] Nakai was the sole non-Western member of the committee, proudly achieving what modern Japanese science had intended: becoming a part of Western authority and thus being able to set the universal rules within it.[41]

From copying to leading the West

Nakai seems to have set out on his path as a standard-bearer for modern botany very early on. From his first major article on Japanese *Aconitum*, written in English in 1908, and before the publication of his thesis, he made it clear that his intention was to lead botany in the right direction. The two-part 1908 article was his answer to what 'the venerable J.D. Hooker', a former director at the Kew Gardens, called 'a task awaiting the labour' of 'a very judicious botanist'. Being a most influential

Takenoshin, 'On naming a new genus of Korean native lilies, Derauchia (Preliminary Report)' (朝鮮産百合科植物ノ一新屬てらうちそう(新稱)ニ就テ (豫報)), *BMT* (1913) 27(322), pp. 441–443.

38 Nakai, op. cit. (32), p. 562.

39 Nakai, op. cit. (32), p. 562. Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 21 (Seoul: The Government-General of Korea, 1936), preface.

40 Other than from Nakai's words, we cannot clearly trace the receptions of his work. His correspondent membership of the Muséum national d'histoire naturelle in Paris in 1925 and of the Société botanique de Genève in 1925 all seem to have been made during his stay in Europe. And for his nomination for the International Interim Committee for the modification of the International Rules in 1926, the two Japanese representatives at the congress, K. Shibata from Tokyo Imperial University and T. Koyama from Kyushu Imperial University, must have had some influence. Nakai Commemoration, op. cit. (26). On the 1926 botanical congress see Benjamin Duggar, *Proceedings of the International Congress of Plant Sciences, Ithaca, New York, August 16–23, 1926*, Menasha, WI: George Banta Pub. Co., 1929, pp. 1777–1782.

41 Nakai was the only non-Westerner in a committee that consisted of twenty-nine members, including four Americans and two Europeans representing Algeria and South Africa. Duggar, op. cit. (40). Japan's scientific achievement was not limited to botany. Japan, through national support and agitation since the mid-nineteenth century, obviously no later than most Western countries, achieved professionalization and institutionalization in most areas of science. Kim Yung Sik, 'Problem of early modern Japan in the history of science in East Asia', *Historia Scientiarum* (2008) 18, pp. 49–57; Hiroshige Tetsu (広重徹), *Social History of Science* (科學の社會史), Tokyo: Iwanamishoten, 2002; first published 1973.

lumper, Hooker's task was 'the reduction of the species and varieties of Aconitum', which he believed had been recklessly increased up to three hundred where thirty would suffice. Nakai, showing his confidence in his self-taught systematics, turned Hooker's task on its head.[42]

Nakai implied that Hooker had misunderstood the origin of the problem. The solution lay in creating more, not fewer, species in Japanese *Aconitum*. Already firm in his splitter's approach, Nakai did not believe that the new scientific names for each small variation had caused the problem. The problem was rather that these small variations were poorly delineated in botanical descriptions: they were blended and overlapping. It was not obvious which species had which characteristics. Nakai did not indulge in idle speculation about the creativity of nature producing such variety. He found no problem in nature; the problem was rather in botanists' inability properly to describe its variety. He said, 'The fault is perhaps due to the indefinite descriptions of it by different authors', which were too 'comprehensible [*sic*] and varied' to yield a useful guide. Nakai decided to provide a clear guideline for those who were 'at a loss how to classify a specimen', clarifying that his task was not about classifying *real* plants. With his specimens as standards, he devised a series of dichotomous keys based on numerous single characteristics such as hood shape, flower colour, stem shape, indentation of leaves, shape of leaves, and carpel numbers. Using this rigorous guideline, Nakai produced descriptions of about thirty distinct Japanese *Aconitum*, with some new species, varieties and forms.[43] This seemingly added to Hooker's concerns, yet challenging Hooker was apparently not Nakai's intention. Nakai was trying to posit an unexpected solution for Hooker by demanding that all other botanists follow this exacting method of describing plants.

Nakai's confidence in his method, and his identification of it as a proper European one, seemed justified for a while. In the preface to his first *Flora Sylvatica Koreana*, Nakai asserted, 'In such places like Germany, England, Russia, Austria, France and Sweden where the botany was most advanced, they now weightily consider small details like vein shapes and edges of leaves, which systematists once thought to do away with.'[44] After thus aligning his extreme splitter method with that of the leading botanists in Europe, he further explained that this renewed concern with small details was due to the new genetic understanding. The new genetics implied that any morphological characteristics, being 'complex mixtures of genetic materials within cells', did not vary by chance and only within a very limited range. Written in Japanese, this preface targeted a domestic audience. While it seems that Nakai needed to explain his focus on such minute details to this audience, he was not at all apologetic, claiming that he had the authority of European systematics on his side.

42 Nakai Takenoshin, "An observation on Japanese Aconitum-I," *BMT* (1908) 22(259), pp. 127–133, 127. For more on Hooker's lumper position see Endersby, op. cit. (30).

43 Nakai, op. cit. (42), p. 128; Nakai Takenoshin, "An observation on Japanese Aconitum-II," *BMT* (1908) 22(260), pp. 133–140.

44 Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 1, Seoul: The Government-General of Korea, 1915. The preface was dated 1913.

However, the authority of European plant systematics upon which Nakai wanted to rely was at the time being challenged. As if the task of considering evolutionary relationships between plants was not difficult enough, the entrance of non-Europeans to the discipline was diversifying opinion regarding established genera and species, creating an abundance of new names for similar plants. Despite Nakai's wish to be part of the solution for botanical progress, new splitters like himself were increasingly seen as a problem.

Reordering performed by splitters on the level of genus especially alarmed some botanists in European centres. When a botanist split a genus, he or she was then able to name all the species in the genera and could replace the European names. It was a process to which Nakai was quite accustomed.[45] The 1926 and 1930 International Congresses of Plant Sciences, with which Nakai was involved, hotly debated the issue. At the Cornell congress in 1926, Marshall A. Howe from the New York Botanical Gardens declared that different conceptions of the limits of genera were 'largely a subjective mental matter concerning which no International Congress can ever hope to legislate successfully'. He predicted that the new four-volume work on the Cactaceae, funded by the Carnegie Institution of Washington – which proposed 124 new genera instead of Engler's current twenty-one – would be accepted as 'the last word on the subject' by majority support.[46]

The Swedish botanist Carl Skottsberg voiced European concerns. He pointed out that recent attempts at splitting were often not as comprehensive or as thoughtful as the former ones proposed by great systematists like Linné. To split a genus without contemplating all considerations about the natural relations of plants could be 'a dangerous thing, even unscientific in some instances'. Skottsberg suggested that if botanists simply wished to show affinities more clearly, there was an alternative to generic splitting that could serve the same purpose, namely the creation of subsections within that genus. He wondered whether 'these latter-day splitters' had not 'a good deal of personal vanity' in claiming the seemingly unnecessary new genera.[47]

European concerns for nomenclatural stability did not easily change the newcomers' minds. At the 1930 congress in Cambridge, H.H. Allan from New Zealand maintained his and his fellow newcomers' rights to name their own flora. He challenged the wide concept of species proclaimed by Hooker, who had explicated his propensity to lump by the dictum that 'species vary in a state of nature more than is usually supposed'. Hooker allowed only one species to all New Zealand *Rubus*, the *Rubus australis*. Yet 'long experience in the field and garden' by New Zealand botanists, claimed Allan, taught them that those characteristics could not be just one-time variations. They

45 Nakai claimed many one-species genera as native Korean plants. He claimed 101 new genera before 1943. Nakai Commemoration, op. cit. (26). See also Lee Jung, 'Contested botanizing in colonial Korea (1910–1945)' (식민지 조선의 식물 연구(1910–1945)), PhD thesis, Seoul National University, Chapter 3.

46 Duggar, op. cit. (40), p. 1561. They were demanding ownership of their local flora back. On the sense of ownership given in the Linnaean system see the discussion of linguistic imperialism in Schiebinger, op. cit. (3), Chapter 5, 'Linguistic imperialism'.

47 Duggar, op. cit. (40), pp. 1553–1554.

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were constant and meaningful characteristics that in fact constituted several different species.[48]

Newcomers did not merely heighten the nomenclatural instability that had been on systematists' agendas since the mid-nineteenth century. They had different solutions to the problem. They knew that the priority rule, proposed by Alphonse Pyramus de Candolle (1806–1893) and adopted at the first, all-European, International Botanical Congress in 1867, was in shambles. European botanists had realized that its simple solution (keeping only first-given scientific names) caused too many familiar names to disappear. They had already unravelled it with various subsidiary measures like the Berlin and Kew codes, which had provisions for such names to be preserved. In 1907, some American botanists decided to make their voices clear as well, proposing an 'American code'. This code suggested having representative type or types within each group whose name would be retained; other names in the group would be modified according to this. Moreover, its demand to scrap Latin as the stipulated language for botanical description jibbed against European dominance in systematics.[49]

Neither the integrity of the allegedly universal standard of botany nor the authority of European centres was safe. What finally produced the much-awaited 'international' consensus over this division was the 1930 congress, to which Nakai was invited. The consensus was, in principle, to accept the American code: revolution indeed. However, Nakai's report sent to the committee in 1926 demonstrates that he neither expected nor wanted European centres to make such compromises.[50] He was ready to fight for the authority and integrity of the Euro-centred standard against this American challenge.

Proclaiming the universality of the European standard was Nakai's first shot:

> The rules now supposed to be in force, seem too general and too susceptible of individual interpretation. To remedy this, the Rules of Nomenclature should be defined more accurately yet practicably in clear scientific terms, so that there should be the least possibility for human arbitrariness or traditional custom to ignore the real meaning of the rules and oblige them to observe them strictly.[51]

Nakai apparently found it problematic for the profession that botanical rules were in essence just voluntary guidelines.[52] For the unity of the profession, any unauthorized

48 A. Seward, *Abstracts of Communications: 5th International Botanical Congress. Cambridge, 16–23 August, 1930*, Cambridge: Cambridge University press, 1930, pp. 59–60.

49 Doubts about the mandatory usage of Latin were raised by some new-generation European botanists as well. For more on various proposals on the nomenclatural issue see Perry, op. cit. (5); for the development of the 'American code' see Kingsland, op. cit. (4), pp. 40–95.

50 Nakai had to satisfy himself by only sending the report because the Japanese government did not provide funding for travel. He strongly protested. Nakai Takenoshin, *Regarding the botanical nomenclature* (植物命名規則に 就いて), Tokyo: Iwanamishoten, 1930. Nakai's report was a typed manuscript. The only extant copy is in the New York Botanical Garden.

51 Nakai Takenoshin, 'Suggestions for an amendment to be made to the rules of botanical nomenclature', Tokyo, 1926, p. 1.

52 Article 1 of the International Rules of Botanical Nomenclature in 1930 read, 'Botany cannot make satisfactory progress without a precise system of nomenclature, which is used by the great majority of botanists in all countries'. The rules that it was hoped would be used by many were divided into principles, rules and recommendations, showing its flexible nature. International Botanical Congress, *International*

interpretation of the rules should not be allowed and the rules should be enforced universally. He argued that the much-maligned Priority Rule would be perfect for such unambiguous application, so long as no exceptions were condoned. He added that '[t]he family name when not written in Latin should not be accepted under any circumstances, even if its description is given accurately'.[53] His attempt to distance himself from the troublemaking newcomers was clear.

Nakai's proposition about colour terminology displays his strategy to perfect the rules to render them more enforceable. It was remarkably in line with the efforts being made in other soft sciences at the time in their pursuit of exactness and standardization.[54] He proposed, 'The terminology of shades should be standardized and uniformed, otherwise we may never be able to know the exactness of the natural colours described or defined by our colleagues'. One of his references for a uniform colour terminology thus offered names for distinguishing 1,115 colour shades. And, he added, when these suggestions were not heeded and descriptions were still ambiguous and confusing, it should be clear that the standard specimens were to have the last word.[55] He was a keeper of the Euro-centric status quo, seeking to maintain and strengthen the standard, to make it truly universal.

Localizing the universal? 'East Asian' plant systematics

There can be no doubt that Nakai's allegiance was with the European standard in this international debate. Nonetheless, he himself could not accept the authority of that universal standard without exception. The problem was that in spite of the European blueprint for Nakai's systematics, the imprint left by not-so-distinctive Korean plants was too strong. His care for details, unusual by European standards, was too extreme to go unnoticed by his colleagues and competitors.[56] Nakai refused to change his criteria for classification to be more in tune with the Euro-centred majority; it would threaten the status of many native Korean plants and in turn undermine his authority as a representative Japanese systematist. Instead, Nakai took the approach of other newcomers in claiming regional specificity for his work.[57]

Rules of Botanical Nomenclature Adopted by the Fifth International Botanical Congress, Cambridge, 1930, London: Taylor and Francis, 1934.

53 Nakai, op. cit. (51), p. 3.

54 Similar concerns for exactness and standardization existed in other sciences, like anthropological biometrics and pedology. For the case of pedology see Bruno Latour, *Pandora's Hope*, Cambridge, MA: Harvard University Press, 1999, pp. 24–79.

55 Nakai, op. cit. (51), p. 4.

56 On Nakai's extreme splitter taste see Chang Chin Sung (장진성), 'A reconsideration of nomenclatural problems on Korean plants and the Korean woody plant list' (韓國樹木의 目錄과 學名에 대한 再考), *Korean Journal of Plant Taxonomy* (식물 분류학회지) (1994) 24(2), pp. 95–124. For Nakai's disagreement with contemporary Japanese systematists see this defence he made: Nakai Takenoshin, 'Reexamination of questioned scientific names of plants' (問題にされた学名の再検討), *Journal of Japanese Botany* (植物研究雑誌) (1951) 26(11), pp. 321–328.

57 Growing Hispanic concerns about local colour could be one example also. Daniela Bleichmar, *Visible Empire: Botanical Expeditions & Visual Culture in the Hispanic Enlightenment*, Chicago: The University of Chicago Press, 2012.

However, Nakai's claims for the regionality of his systematics struck a very different chord from those of other newcomers. It seems that he neither could nor wanted to follow their ways. He could not use the non-European splitters' favourite tools in his challenge against the botanical establishment. As shown, these splitters often emphasized their familiarity with the local habitats and life cycles of plants to justify their splitting. Nakai, however, was too much of an armchair botanist to be able to do that. Although he made eighteen field trips to Korea during his thirty years of service, they were all short trips during his summer vacations from the university. Most of the specimens for his investigation were sent from naturalists in Korea.[58] He presided over an international centre of botany, in a network of exchange (using a growing number of specimens from Japanese colonial peripheries) with centres like Kew and the Arnold Arboretum.[59]

What most set Nakai apart from the other newcomers was his self-positioning in relation to the European establishment. Other newcomers set themselves against Europe by denying the power of the plant collections at its centres. Those specimens alone, they argued, could not give European botany the right to classify and name peripheral flora. Basing peripheral taxonomy on central collections was nothing more than remote armchair classification. In sum, theirs were the voices from the peripheries criticizing a centre to which they felt little sense of belonging.

From his imperial centre, Nakai's tone was different. His sense of responsibility as a standard-bearer of botany – shown from his earliest works – never faltered. He always sought to align his Japanese centre with other imperial centres in Europe. Even when he adopted the regionality claim of newcomers in protecting his classification, he did not play the role of outsider to the European establishment. Instead of loosening his allegiance with the European universal, he tried to excel alongside European botanists. He did so by playing the imperial scientist, and by assuming the regionalism of an imperial centre rather than that of a defiant periphery.

Nakai's main tactic was claiming distinction and authority for his systematics beyond its regional origin, in close association with expansionist imperial rhetoric. It is important to note that it was not only in botany that Japanese scientists took pride in their imperial presence in the world.[60] Under the influence of mass media whipped up into a

58 Natural history was 'the field that represented scientific research of Korea, and moreover of Korean people', in part due to Japanese restrictions to Korean access to other scientific fields and partly due to so-called 'cultural nationalism'. For the research environment of a few prominent Korean naturalists see Moon Manyong (문만용), 'Butterfly-taxonomy of "the Korean biologist", Seok Joo myung', *Journal of the Korean History of Science Society* (한국과학사학회지) (1999) 21, pp. 157–193, 158; Kim Sungwon (김성원), 'The context of a Korean naturalist's career-building in colonial Korea: Cho Pok Sung as an example of colonial entomologist' (식민지시기 조선인 박물학자 성장의 맥락: 곤충학자 조복성의 사례), *Journal of the Korean History of Science Society* (2008) 30, pp. 353–382.

59 See Hara, op. cit. (26).

60 For prevalent nationalistic rhetoric in the Japanese modernization of science see Gregory K. Clancey, *Earthquake Nation: The Cultural Politics of Japanese Seismicity, 1868–1930*, Berkeley: University of California Press, 2006; Mizuno Hiromi, *Science for the Empire*, Stanford: Stanford University Press, 2009; Kim Boumsoung (金凡性), *Meiji and Daisho Seismology: Beyond Local Science* (明治·大正の日本の地震学: ローカル·サイエンスを超えて), Tokyo: Tokyo Daigaku Shuppankai, 2007; Miyagawa Takuya, 'The meteorological observation system and colonial meteorology in early 20th-century Korea', *Historia Scientiarum* (2008) 18, pp. 140–150.

frenzy over Japan's two imperial wars, modern Japan had lived in a kind of nationalistic fervour even before its more totalitarian transformation of the 1930s. The Japanese seemed 'obsessed with nation by saying "nation," "nation" from morning to night'.[61] Nakai, who equated his first collection trip to Korea with General Kato Kiyomasa's valorized military expedition to Korea in the sixteenth century, was most responsive to such nationalistic rhetoric.[62]

In echoing such rhetoric, Nakai associated his systematics not just with one but with several different regions from 1914 to 1935. Fairly early on in his career, in 1914, when he made his first attempt to associate his methodology with a certain region, Nakai evoked the 'Orient':

> It was the age-old custom to classify oriental (東洋) plants in the great western (泰西) classification method, but as plants living in the east and the west of the great ocean largely differ in their species, the classification for oriental plants must be the one that was proper to them. That is why I dare to use my original method.[63]

Although his attempt to divide the Orient and the West through the unnamed great ocean seems confusing at best, it was obvious that this regional claim was made to position himself as belonging to some region defined specifically by its separation from the 'Great West'. Yet only three years later, he adjusted this ambitious vision and now aligned his project simply within Asia, by saying that his method was proper to 'Asiatic species'. Then in 1927 he renamed his method 'East Asian plant systematics', apparently shrinking his boundary even further.[64]

If Nakai's method could be this freely associated with several different regions, could it really be said to be about any region? His morphing regions, however, did not lack a certain consistency; all these regions variously justified his extreme splitter's approach based on rootless, dried specimens. In claiming the 'oriental' method in 1914, he said that because 'there were many plants extremely similar to each other in such adjacent lands like Korea, Japan, and China', he could not use the usual characteristics as identifiers and instead relied on 'extremely detailed differences between plants'.[65] His 1917 claim for the Asiatic nature of his systematics was a more direct defence of his classification of *Aconitum*, so confidently proposed in 1908. Nakai's attempt was not appreciated and many European botanists supported measures that successfully combined the many recent species with more established ones. European botany accordingly recombined many of the Japanese *Aconitum* that Nakai had split. Nakai protested that characteristics that European botanists thought 'too trivial for the European species' made for a

61 Quoted from the critique on nationalism by Natsume Soseki, the unique yet representative novelist of modern Japan. Natsume Soseki, *My Individualism, etc.* (나의 개인주의외) (tr. Kim Jŏnghun), Seoul: Ch'aeksesang, 2004, p. 72. On the build-up of Japanese nationalism see Young, op. cit. (18).

62 Nakai came to Korea not through Pusan, the nearest port city to Japan, but through Wonsan, a northern port, to 'mimic Kato Kiyomasa' (加藤清正, 1562–1611). Nakai, op. cit. (32), p. 562.

63 Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 2, Seoul: The Government-General of Korea, 1915. The preface is dated 1914.

64 Nakai Takenoshin, 'Aconitum of Yeso, Saghaline and the Kuriles', *BMT* (1917) 31(368), pp. 219–231, 219; Nakai, op. cit. (32).

65 Nakai, op. cit. (63), preface.

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'good and precise [distinction] for the Asiatic species'.[66] Finally, in 1927, he contended that his 'East Asian plant systematics' was necessary because the differences between East Asian and 'Euro-American' (歐美) plants were 'so subtle as to be often overlooked'. In order not to overlook these subtle differences, he had to rely upon carefully observed details to set them apart, he explained.[67]

This 1927 claim for 'East Asian plant systematics', made in front of a Japanese audience honouring his research on Korean flora with the prestigious Imperial Academy Award, seems most revealing of what his regional systematics was about. First of all, though it became much smaller and possibly more concrete than 'the Orient', East Asia was again defined by Nakai only in terms of its being set against another region, 'Euro-America'. This category of 'Euro-America', although commonly used in the Japanese empire, was not a common category for botany, as it combined two large and separate regions. Euro-America made sense as a botanical region only if one considered what were, for Nakai, the most familiar forms of plants – the dried specimens. Euro-America was the region where numerous dried specimens were stored at its authoritative centres.[68]

Similarly, the choice of 'East Asia' (東亜, *To-a*) seems to have been political. The term was originally coined in the fields of history and the arts to replace the then usual 'Chinese' (中華, 中國) epithet for describing 'Japanese' things. Thus the new term answered the needs of the expansionists to claim the primacy of Japan, not China, within East Asia. It became more common in the 1930s, in response to Japan's more direct competition with the West. It helped transform Japanese imperial ideology, which had previously rested mostly on Japan's earlier acquisition of Western modernity, by stressing Japan's commonality with its *To-a* brothers. The claim that Japan had the unique ability to combine *To-a* traditions with good things from the West was the key. In supporting this new imperial ideology, this term became 'a geo-political concept with strong political implications in the 1930s and 1940s' in every discipline, in line with the Japanese claim for the Greater East Asia Co-prosperity Sphere (大東亜共栄圏).[69] Nakai astutely adopted this newly circulating term *To-a* to explain the value of his research on Korean flora. He explained that his imperial research on Korean plants allowed him to learn the 'East Asian' characteristics of Korean and Japanese plants and thereby to establish his distinctive systematics.

Neither the Orient nor Asia nor East Asia was a definite geographical entity; they were all political concepts set against 'Great Western' or 'European' or 'Euro-American'

66 Nakai, op. cit. (64), pp. 219, 222.

67 Nakai, op. cit. (32), pp. 569–570.

68 He visited major botanical gardens and herbariums in the US, France, England, Sweden and the Netherlands from 9 May 1923 to 28 September 1925. Nakai Commemoration, op. cit. (26).

69 Japan's attempt to re-evaluate Japanese civilization while emphasizing China's deterioration had begun in the nineteenth century. The rhetoric was especially strong when Japan competed with China over Korea. The earliest usage of *To-a* was the translation for Ernest Francisco Fenollosa's *The Epoch of Chinese and Japanese Art* (1911). For the book that gave 'national pride and understanding for the Japanese arts' they chose the Japanese title of 東亞美術史綱 (Outline of To-a Art History, 1921). Koyasu Nobukuni (子安宣邦), *East Asia · Great East Asia · East Asia: Orientalism in Modern Japan* (동아·대동아·동아시아: 근대 일본의 오리엔탈리즘) (tr. Yi Sŭngyŏn), Seoul, Yŏkbi, 2005, p. 151.

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centres. Although Nakai claimed familiarity with plants from the Orient, Asia and East Asia, this familiarity meant, at most, his contact with dried specimens accessible at his imperial centre. Even the modest 'East Asia' was not a concrete region reflecting his regional botanizing experience, given his limited field trips.[70] Yet if he needed a territory to assert his authority for his 'original method', it could be a plausible choice. Nakai came to make his most serious attempt to define East Asia as a viable botanical region, testifying to his belief in its potential.

Nakai's first attempt was his effort to overcome the problem of incorporating Japan's island flora into an otherwise continental 'East Asia'. To resolve this problem, Nakai literally tried to connect Japan to the rest of the continent, inspired by a geological argument about the ancient continent between Korea and Japan.[71] He argued that the flora on the volcanic island of Ullŭng – which lay between the two lands – made it a place to 'imagine the forest in the lost continent'. The evidence for this was that it contained many native Japanese plants such as hemlock spruce, Japanese white pine and beech, whose seeds were too heavy to be transplanted without a land connection. Moreover, the beech was a fossil tree, showing the antiquity of the island.[72] Nakai's attempt to connect Japan to the rest of the continent received political but not scientific support. The most convincing counterevidence was suggested by Japanese scientists in Korea, including Ishidoya Tsutomu (石戸谷勉, 1891–1958), Nakai's closest associate for his colonial investigation. Ishidoya, by pointing out the island's distinctive fauna – the lack of land animals, insects and freshwater fishes – was able to strongly suggest its isolated emergence.[73]

70 Nakai's travel was quite limited. During his longest exploration to regions outside Japan, in Europe and America from 1923 to 1925, he hardly left the herbariums of those big centres in Boston, Leiden, Paris and London, as he proudly reported. He worked day and night to see more specimens. Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 16, Seoul: The Government-General of Korea, 1927.

71 See Tateiwa Iwao (立岩巖), *The Early History of Geological Research in Korea* (韓半島 地質學의 初期研究史) (tr. Yang Sŭngyŏng), Taegu: Kyŏngbuk University Press, 1996, p. 589.

72 Nakai Takenoshin, 'The vegetation of Dagelet Island: its formation and floral relationship with Korea and Japan', in *Proceedings of the Third Pan-Pacific Science Congress, Tokyo, Oct. 30th–Nov. 11th, 1926*, Tokyo, Maruzen, 1928, pp. 911–914, 913.

73 It had no mammals except for rats, no reptiles or amphibians and few insects. Chung mentioned this, quoting Ishidoya, when he criticized Nakai's theory of a Japanese sea continent. Geologists like Terata Torahiko (寺田寅彦, 1878–1935) at the Earthquake Research Institute in the Imperial University and Tateiwa Iwao (1894–1982) at the geological survey team in the colonial government pointed out that it was quite unlikely that such a small land mass (72.99 km^2) would be left while the whole of the rest of the continent sank. However, Nakai's advocacy of the ancient Japanese sea continent appealed to some colonial officers to provide him extra funding for another investigation for other islands around Korea. Terata, 'On the bathymetric features of Japan Sea', *Bulletin of the Earthquake Research Institute* (1934) 12(4), pp. 650–655. Nakai Takenoshin, 'The comparison of floras of the isolated islands of the east and west part of the Korean peninsula' (朝鮮半嶋ノ東西ニ孤立スル鬱陵島ト大黒山島トノ植物帶ノ比較), *Oriental Art and Science Magazine* (1927) 43(4), pp. 214–227, 220–221, 214. Ishidoya was in fact the most vocal and articulate critic of Nakai's armchair botanizing. He was influenced by Korean culture in his interaction with his Korean subordinates and by the local soil, and decided to give up his fifteen-year career as a forester. He became a researcher in traditional herbal medicine. For more on his 'transculturation' see Lee, op. cit. (45), Chapter 4.

Nakai did not give up on demarcating East Asia so easily. When he made his second attempt to define East Asia in 1935, he chose a completely different tactic. If his previous attempt had relied on nature, his new definition was critical of naturalistic approaches, now identified as characteristic of most Western attempts at plant geography.[74] He singled out for criticism the approach of the then authority on plant geography, Engler. Though this first direct charge against a Western authority was intended only for a Japanese audience (it was written in Japanese), Nakai's criticism targeted the fundamental assumption underlying Engler's approach: 'although this division looks sophisticated at a glance, the method of division and union has many seriously unnatural elements. It is absolutely impossible to consent to for a scholar who actually contacts the East Asian flora all the time'.[75]

'Unnatural' might mean something more like 'strange' than 'not natural' here. Engler's was, in fact, a seriously naturalistic approach. It was the result of an exclusive utilization of elements of nature, such as climate and geography, based on numbers obtained through well-standardized instruments such as the thermometer, barometer, altimeter and so on. As discussed in historiographies of European science, these 'natural' elements adopted by European scientists became tools to demarcate the natural world as separate from the social one, allowing them to establish their autonomous authority for all things in 'nature'.[76]

Nakai found this exclusively naturalistic demarcation unnatural, although he did not specify why he thought so. Instead he just provided his alternative 'natural' division. His East Asia was demarcated simply by the governmental borders of China, Korea, Taiwan, and Japan, each of which in turn was composed of separate botanical regions. For example, the botanical region of Japan was further divided into several regions in chronological order of each entity's inclusion within Japanese territory. The botanical region of Korea was likewise divided into five regions – the northern, middle, and southern regions within the peninsula, plus the Ullŭng and Chechu islands.[77] One might say that Nakai considered 'natural' categories like latitude in deciding northern and southern regions and used geographical entities like an island as a category of division. However, the guiding factor for Nakai's natural division seems to be his consideration of political dominance. If Engler's linkage of the Russian Maritime Territory to the adjacent Chinese Heilongjiang Province was unnatural to Nakai, what made it so seems to be that the domain was divided by different political authorities. Hence the Ullŭng and Chechu islands, under the rule of the colonial Korean government, could not be

74 For a discussion on such naturalistic biogeography, especially since Humboldt, see Michael Dettelbach, 'Humboldtian science', in Jardine, Secord and Spary, op. cit. (3), pp. 287–304; Janet Browne, *The Secular Ark: Studies in the History of Biogeography*, New Haven: Yale University Press, 1983.

75 Notably, it was quite an exaggeration to say that he had constant contact with East Asian flora, given that up to this time he had only made one trip to China, in 1933. Nakai Takenoshin, *East Asian Plants* (東亞植物), Tokyo: Iwanamishoten, 1935, pp. 2–3.

76 As discussed in the following works, Shapin and Schaffer, op. cit. (2); Latour, *We Have Never Been Modern*, op. cit. (2).

77 Nakai, op. cit. (75), pp. 3–4.

combined with any part of Japan in spite of Nakai's own claim of their botanical affinities with the Japanese archipelago.

Nakai's labelling of European scientists' careful exclusion of cultural categories as 'unnatural' is significant. It suggests that the European attempt to impose a separation between nature and culture, and its concomitant claims of universality, may not have been clear to non-European botanists. Nakai was not impressed; neither the global interconnectedness of nature, nor these scientists' concern to define nature solely based on 'nature', left a strong impression on him. Needless to say, he could not see that European scientists had the naturally endowed right to apply their science everywhere, by virtue of having successfully 'identified' this one grand natural world first.

Nakai found separating science from politics unnatural. He did not buy into Western claims that its scientific authority could stem from nature alone, or that nature was separable from society. Instead of feigning political aloofness, Nakai had connected his botanical vision with the political possibilities offered by Japanese imperial expansion. 'East Asia' was a promising territory where the political dominance of the growing Japanese empire could be linked to the growing authority of Japanese scientists.

Universalizing the local? Expanding 'East Asia' to the world

Upon assuming the task of achieving botanical authority for the Japanese empire, Nakai seems to have been unable to stop even with his expanding boundaries of East Asia. This imperial botanist took away the modest title of 'East Asia' from his systematics around the late 1930s, and named it simply 'new'. He applied this new method to all the plants of the world, in place of the former European one.

Just ahead of Japan's deeper invasion of China in 1937, Nakai made his first attempt at applying his classification to the plants of the entire world. In his Japanese preface for volume 21 of *Flora Sylvatica Koreana*, published in 1936, he said that he decided to 'try not just the *Flora Sylvatica* of Korea but comprehensive monographs on the seven families of plants'. He was, he wrote, 'inspired by extraordinary praises from botanists, dendrologists, foresters from all over the world' for his previous volumes.[78] It was ambitious of him to attempt to fit monographs on seven families with hundreds of genera and thousands of species into a single volume.

Nakai soon found a more plausible strategy. He came to focus on families and genera known to be particularly thriving in 'East Asia', such as tea trees and honeysuckle families. This strategy was timely because he could now obtain many specimens from mainland China, a fact about which he did not hide his satisfaction. 'The natural world of China was open only to Euro-American scholars for a long time to keep Japanese, even scholars, in the dark about its secret'. Owing to the war, 'this artificial and unnatural situation disappeared'. He promised to work day and night to 'enlighten our knowledge on the Chinese natural world' and thus to hasten the arrival of the day 'when all

78 The seven families discussed are *Aristolochiaceae*, *Lardizabalaceae*, *Berberidacea*, *Pittosporacece*, *Malvaceas*, *Ericaceae*, and *Urticaceae*. Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 21, Seoul: The Government-General of Korea, 1936.

people in East Asia could be truly happy'. The aim of this civilizing work was to 'place the research originating from East Asia on the legitimate lineage of study'.[79] His classification, not the European universal, would be the legitimate classification for all plants related to East Asia.

Nakai's new classification of the genus *Lonicera*, the honeysuckles, and *Camellia*, the tea tree family, revealed that there was nothing new in his classification itself. Showing an amazing consistency, he displayed his preference for minute details in dried specimens, although by then he could provide a somewhat more developed rationale for his splitter tendency. He said that 'East Asian plants, particularly those from the Japanese archipelago, manifested a uniquely wide variation'. Applying the 'Great Western' method based on 'Euro-American or South Pacific plants' was impossible.[80] He had to split genera and species more minutely to fully express the rich variation; he created eight new sections in *Lonicera*.[81] His new classification of the genus *Camellia* revived the once-discarded genus *Thea* first proposed by Linné, and added some subsections. His new classification for *Thea* certainly failed to undo the international consensus made in 1887 to combine the genus with *Camellia*, and most of the new names that he proposed were not even adopted by his contemporary Japanese scholars.[82] Neither East Asian nor new, his systematics could not go beyond the confines that the Japanese imperial centre created with dried Korean plant specimens in the beginning. Nonetheless, the confined centre was sufficiently universal to sustain his international authority on Korean flora even to the present day.[83]

Conclusion: universal systematics from the Japanese Kew

Nakai's claim for the universality of his systematics may sound grandiose and even preposterous to most people. That he was at the same time hardly hesitant to claim the Oriental, Asian, or East Asian nature of his systematics would not seem to increase his credibility. But was there really anything unusual about Nakai's alternating evocation of both universality and regionality in his systematics? The similar claim that modern science was pan-European or Western yet at the same time universal is a familiar one.[84]

79 Nakai Takenoshin, *Flora Sylvatica Koreana*, vol. 22, Seoul: The Government-General of Korea, 1940.

80 Nakai Takenoshin, 'A new classification of the genus *Lonicera* in the Japanese Empire, together with the diagnoses of new species and new varieties', *Journal of Japanese Botany* (1938) 14(6), pp. 359–376, 359. That all his new classification was not published in *BMT*, the official journal of the Japanese botanical society, seems significant.

81 Nakai, op. cit. (80). Currently, only one of his eight sections, *Monanthae*, has survived as valid in the family. Nina Theis, Michael J. Donoghue and Jianhua Li, 'Phylogenetics of the *Caprifolieae* and *Lonicera* (*Dipsacales*) based on nuclear and chloroplast DNA sequences', *Systematic Botany* (2008) 33, pp. 776–783.

82 Nakai Takenoshin, 'A new classification of the Sino-Japanese genera and species which belong to the tribe Camellieae (I)', *Journal of Japanese Botany* (1940) 16(11), pp. 659–667; Nakai, 'A new classification of the Sino-Japanese genera and species which belong to the tribe Camellieae(II)', *Journal of Japanese Botany* (1940) 16(12), pp. 691–708. For his Japanese critics see note 56 above.

83 His control of the Japanese botanical society from the Imperial University was tight and his international authority on Korean flora was secure even though a new postcolonial generation of Korean scholars came to see the problems of the extreme splitter method. Chang, op. cit. (56).

84 See notes 1 and 2 above.

However, this European claim has not seemed preposterous. Rather it has provoked historical inquiry as to why it could have come to sound so true. Historians have been thinking hard about what unique qualities 'modern science' had, and what institutions and strategies Europeans mobilized to obtain those qualities.[85] Nakai's story strongly suggests that these qualities could be perceived as political, not just by historians but by historical actors. It was not the innate, universal qualities of European science that led him to adopt it. His re-enactment of European science and his committed advocacy for the universalism of European systematics was much more political and pragmatic. Nakai was not making any logical evaluation of the universality of botanical classification, the vulnerability of which had been made all too manifest on the global botanical scene. And on the political and pragmatic level, his advocacy of universalism was in perfect harmony with his concurrent claims of the regional specificities of his classification.

This political and pragmatic nature seems to reflect an important aspect of the non-European re-enactment of European knowledge practices. It was, at least in this instance, crucially associated with nation building. Among newcomers, Japanese botanists at the Imperial University were special in taking the imperial initiative after complaining that it was too difficult to modernize Japanese botany merely by applying European methods to their own flora. In competition with other more pressing demands for building modern Japan, their path towards an imperial botanical centre worked as an easy way to secure social support for their research. The eminent mobility and reproducibility that European scientists had built into modern scientific practice functioned well for them, too. The standardized references and dried specimens, exchanged with and duplicated from European centres, easily symbolized the new Japanese centre's place within the powerful world of science. Without providing much in the way of a practical tool or onerous demand for nation building, the Japanese botanical discipline could establish itself by a fastidious re-enactment of European ways.

Nakai inherited and benefited from this successful strategy. However, his laborious struggle to distinguish Korean plant specimens from very similar Japanese ones at his lab left indelible marks on his systematics. In safeguarding his rewarding method, Nakai was always careful not to alienate European centres, which conferred substantial authority upon his classification. However, as he could not simply assert that his systematics was identical to the European universal, he needed to create a botanical authority of his own. The fervent nationalism that cheered on his international success was his ally here. From his imperial botanical centre, as imposing as any European one, Nakai developed a regional systematics fitting his imperial position. He never called his method 'Korean'. He instead asserted the oriental, Asian, and East Asian nature of his systematics, eventually claiming a new universal in lieu of the European one, a universal that resonated with the most expansionist voice of Japanese nationalism. If there was any fundamental understanding of the universalism of science to Nakai, it was this expectation that the political power exercised over the region would allow his systematics to be accepted there.

85 See note 2 above.

In this non-European theatre, universalism and regionalism were not philosophical creeds but useful tools that lent necessary authority to non-European practitioners. Furthermore, for an imperial scientist like Nakai, imposing one's standard beyond its regional origin – an act well rehearsed by his European predecessors – became a natural choice inscribed in Japan's imperialistic modernization.