

BOOK REVIEW

Jung Lee 이정, *Technoscience of Tak and Artisans: Resourceful Evolution of Chosŏn Papermaking* 장인과 닥나무가 함께 만든 역사, 조선의 과학기술사 (Seoul: Purunoksa, 2023), 403 pp.

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Jung Lee's *Technoscience of Tak and Artisans: Resourceful Evolution of Chosŏn Papermaking* (hereafter, *Tak and Artisans*) is a trailblazing work on the history of papermaking technology and industry in Joseon Korea (1392–1910).¹ Engaging with the literature of the history of science and technology in Korea, the global history of early modern sciences, and early modern and modern Korean history, it illuminates what science and technology in early modern Korea looked like and how Joseon artisans may help us envision a form of technology that would alleviate today's Anthropocene crisis. In terms of these questions, historians of science would find the first three of the five chapters especially revealing. In the final two chapters, Lee also speaks to Korean history specialists, showing how a history of science, or more generally an approach which is attentive to materiality, could revise conventional understandings of political, economic, and social life in Joseon.

To begin, *Tak and Artisans* is the first scholarly book to document the details of Korean papermaking technology. This technology has remained inscrutable partly because early modern Korean papermakers left no written sources. Along with examining the chemical analysis of remaining paper and paper-made artifacts, Lee carefully reads between the lines of official documents and scholarly treatises produced by elites in the Joseon period and contemporary China and Japan who were not necessarily knowledgeable about the artisanal practices. She finds that unlike the artisans who made paper in late imperial China and Tokugawa Japan who mostly used bamboo, hemp, or "Japanese Dak" (*Wikstroemia trichotoma*) as their main raw

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¹ In accordance with the editorial guidelines of the *Korean Journal for the History of Science*, I follow the Revised Romanization of Korean system proclaimed by South Korea's Ministry of Culture and Tourism. I also would like to note that the English book title here is Lee's own translation.

materials, Joseon papermaking artisans chose a Korean native tree called “Dak” (*Broussonetia kazinoki*) to turn it into the different types of “Korean paper” that became renowned across East Asia.²

Korean papermaking was distinctive not only in the selection of raw material but also in its technical process; the former was responsible for the latter. Whereas bamboo and hemp required Chinese papermakers to pulverize the plants’ fiber, Korean artisans conditioned Dak’s inner bark or unfinished paper by pounding them with sticks. This peculiar processing method called “chu” (추; 碄) or “dochim” (도침; 搗砧) resulted in extraordinarily durable paper that artisans could rid of ink and reprocess. In doing so, they could construct a recycling circle of “hyuji” (휴지; 休紙), meaning “resting paper,” and “hwanji” (환지; 還紙), or “returned paper.” According to Lee, unlike recycling in China and Japan which was limited to saving scraps or making toilet paper, Korea’s returned paper went far beyond that. Joseon craftsmen produced and widely circulated jars, bowls, and even military coats out of reclaimed paper, especially discarded state examination paper whose quality was outstanding.

This description of the uniqueness of Korean papermaking technology might sound like nationalistic hyperbole. At worst, one could read *Tak and Artisans* as a book that showcases the superiority of Korean technoscience over its counterparts in China and Japan. However, rather than hinging on ahistorical cultural essentialism of Korea or self-evident superiority of Korean papermakers, Lee attributes the particularity of the Joseon papermaking craft to a contingent connectedness among humans, things, and environments in the Korean peninsula. In other words, the distinctive quality of Korean paper derived from the artisans’ ability to carefully remake the “physical conditions of things” (사물의 이치; 物理 或 物議) while deeply respecting them. Lee calls this gift of the artisan “giji” (기지; 機智).

The remaining paper and the efforts to restore them reveal that the *giji* and skillfulness of Korean artisans who achieved whiteness, luster, strength, and durability was designed for the peninsula’s Dak trees and therefore unique. From the preparation of the materials and the breakdown of the fibers through processing to the netting, drying, and finishing of paper, the *giji* of Korean craftsmen was evident in every step. It epitomized the endeavor to integrate Dak, the main material, with other auxiliary ingredients to create the most optimized combination. (65).

“Giji,” the key concept in *Tak and Artisans*, merits more explanation. Lee herself translated this term as “being resourceful,” implying that the gist of “giji” was the skillfulness in rearranging material sources. “Giji,” therefore, was a set of improvising ingenuity and tacit and embodied knowledge of Korean papermaking artisans,

² When it comes to the tree’s name, “Dak” (Revised Romanization) in this book review is identical to “Tak” (McCune–Reischauer) in the English book title.

which allied with Dak trees and other natural and artificial materials. In this vein, Lee builds upon Steven Shapin and Pamela Smith to argue that “giji” could not be fully comprehended by the simple dichotomies of human versus nonhuman; and science and abstract ideas versus technology and bodily practices.³ Echoing David Edgerton, she adds that the perspective which prioritizes exceptional invention over everyday maintenance could not do justice to the Korean papermaking technology, given that the artisans primarily sought the quality of durability for long-term use and reuse.⁴

Most importantly, Lee conceptualizes “giji” as neither traditional nor modern. She posits that artisanal “giji” does not necessarily represent an “egalitarian, decolonial, and eco-friendly ideal with respect to different peoples, societies, and artifacts” (316). Rather, tracing the “resourceful evolution” of early modern Korean papermaking from the fifteenth to the late nineteenth centuries, she shows that this “traditional” technology was not particularly against and came to accommodate “modern” features such as the economy of scale, mass production system, and diversification of products. Nevertheless, the “modern” could not account for Joseon papermaking either as it was an arguably non-modern “method in which most participants including Dak and artisans were able to make a circular [economy]” (317). Even though such a circulation of materials could not “cover the entire ecology and society, Dak trees were not exhausted; papermaking artisans could continue flourishing and developing; and the wastes were mostly regenerated by various participants” in this material loop (317). Hence, Lee cautiously suggests learning from the early modern Korean papermaking and imagining what can be called “technologies for the post-Anthropocene era,” which would help us contemplate alternatives to the unsustainable, vicious cycle of mass production, mass consumption, and mass disposal and dissipation.

In addition to articulating how the early Korean papermaking technology worked and what it means for the present readers, Lee foregrounds the artisans’ perspective to boldly reappraise the history of Joseon Korea. She is especially original in re-narrating the intellectual reform movement in the eighteenth century that twentieth century historians called the emergence of “Silhak” (실학; 實學). Literally meaning “practical learning,” the literati posthumously categorized as the Silhak group have long been seen as harbingers of autonomous modernity in Korea. After the death of reform-minded King Jeongjo who supported this group, however, more conservative, idealist factions of neo-Confucian scholars who downplayed technology and commerce pushed back. The decline of the kingdom in the nineteenth century, and colonization in 1910, as the conventional narrative goes, was therefore inevitable. Lee

³ Steven Shapin, *The Scientific Revolution* (Chicago: University of Chicago Press, 1996); Pamela Smith, *From Lived Experience to the Written Word: Reconstructing Practical Knowledge in the Early Modern World* (Chicago: University of Chicago Press, 2022).

⁴ David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (Oxford: Oxford University Press, 2007).

reconceptualizes the Silhak movement not as a short-lived reform bound in Korea, but rather as a part of the global phenomenon in which the proliferation of multitudinous exotic, “superfluous” things prompted observers and intellectuals to depart from the limited worldview circumscribed by classical texts and pursue empiricism.⁵ The young Silhak literati were indeed swept up in this broader tide in cosmopolitan Beijing. They then endeavored to disseminate it in Joseon to renew their motherland’s intellectual landscape and challenge senior scholars.

Upon this point, however, Lee further asks how empirical the Silhak empiricism was, highlighting that their “practical learning” still ironically prioritized book learning over bodily knowledge. “Acquiring, pondering, and digesting reliable texts and then ‘checking it with their own eyes’ (驗之於目) was the essence of their ‘actual trial for knowing’ (徵驗) or empirical work” (225). Lee demonstrates how the literati’s records on Korean papermaking were indeed based more on authoritative Chinese written sources of information than on artisans’ labor and practices. If so, the true bearers of practicality and empiricism in the late Joseon period were its artisans who could exert “giji” at their pleasure. Beneath the purview and prejudice of literate elites, as Chapter Five meticulously investigates, was the thriving material culture led by the “resourceful” craftsmen. In this, joining historian of technology Hyeok Hweon Kang, Jung Lee urges us to revisit the idea that early modern Korea was a polity where the “modern” material was suffocated by the “Confucian” metaphysical.⁶

Tak and Artisans is an invaluable addition to the short list of monographs in the field of the history of science and technology in early modern Korea. Its insights go far beyond it: The framework of “giji” contributes to the studies on science and technology beyond the “West” and the “modern.”⁷ The book’s close attention to the

⁵ Here Lee was informed by Harold Cook and Craig Clunas. Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven: Yale University Press, 2007); Craig Clunas, *Superfluous Things: Material Culture and Social Status in Early Modern China* (Honolulu: University of Hawai’i Press, 1991).

⁶ Hyeok Hweon Kang, “Crafting Knowledge: Artisan, Officer, and the Culture of Making in Chosŏn Korea, 1392–1910,” (Ph. D. dissertation, Harvard University, 2020).

⁷ In this sense, Lee’s book could be read along with other groundbreaking works examining artisanship and science in early modern and modern East Asia. To name a few, Dagmar Schäfer, *The Crafting of the 10,000 Things: Knowledge and Technology in Seventeenth-Century China* (Chicago: University of Chicago Press, 2011); Dorothy Ko, *The Social Life of Inkstones: Artisans and Scholars in Early Qing China* (Seattle: University of Washington Press, 2017); Yulian Wu, *Luxurious Networks Salt Merchants, Status, and Statecraft in Eighteenth-Century China* (Stanford: Stanford University Press, 2017); Christine M. E. Guth, *Craft Culture in Early Modern Japan: Materials, Makers, and Mastery* (Oakland, Calif.: University of California Press, 2021); Kai Jun Chen, *Porcelain for the Emperor: Manufacture and Technocracy in Qing China* (Seattle: University of Washington Press, 2023); Jacob Eyferth, *Eating Rice from Bamboo Roots: The Social History of a Community of Handicraft Papermakers in Rural Sichuan, 1920–2000* (Cambridge, Mass.: Harvard University Asia Center, 2009).

materiality of (re)making things opens the possibility to reconsider some widely accepted ideas about the nature of the Silhak movement and material culture in Joseon society. For Anglophone academia seeking a Korean studies monograph written in Korean that deserves translation into English, this is it.