Shen Gua's Empiricism by Ya Zuo (review)

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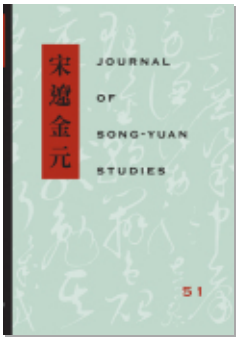

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Shen Gua 沈括 (1031–1095) has often been described as a modern scientist who lived a thousand years too early. The title of this book thus leads readers to anticipate an anachronistic exercise in the philosophy of science. Anyone who expects that is in for a surprise. The next-to-last sentence of this book captures perfectly the goal of its author: "Shen's findings surely shared some commonalities with modern science, but incidental similarities between a historical subject and modern experience demand even more rigorous efforts in reconstructing the historical context and rendering the idea in its own terms" (241). This is indeed a rigorous analysis of an epistemology that can justly be called empiricism, but that fits in the eleventh century.

It is also the deepest account of Shen's life in any language. It emphasizes the despair he felt as a young man after his father died. He was able, without taking the civil service examinations, to enter official life in low, tedious posts that barely supported him. After a decade he took the examinations and qualified for a good career. He was appointed to the imperial library, with ample time to read. Wang Anshi 王安石 (1021–1086), who was launching his "New Policies," knew Shen and made use of his exceptional managerial skills. Shen rose quickly in an atmosphere of political infighting. It was eventually the enmity of Wang and Wang's successor that ruined his career.

The Cheng brothers' *gewu* 格物 illuminated "fundamental orders" in which things "were properly placed," and which oriented the mastery of things. Knowing from seeing and hearing was "a preparatory springboard for the higher form of knowing" (46). The main stream in Shen's time too was system building; but he was a problem solver. Wang, who was obsessed with a system of institutions that would enrich the government and pay for war, demanded of his allies that they follow his plans. Shen, with his exceptional practical skills, was not a system builder. He succeeded at the most diverse projects, from ritual to water control to astronomical reform, because he got the details right, even when Wang's system did not. When Shen rose to be the empire's chief fiscal official, he made practical decisions that Wang interpreted as betrayals.

In 1082 a military siege that Shen co-supervised "turned into a fiasco," killing myriads of Song soldiers. The emperor held Shen responsible, and exiled him to Hebei. After three years there, Shen finished an innovative set

of maps of the empire that brought him his freedom. In 1089 he and his family moved to Dream Brook, the modest estate where he lived the rest of his life as a recluse, blissfully free of the politics that raged on. There he wrote many books, including his celebrated collection of jottings, *Brush Talks from Dream Brook* (*Mengxi bitan* 夢溪筆談).

For most Chinese of Shen's time, "knowing from virtuous nature" *(dexing zhi zhi* 德性之知) was the way to comprehend "deep orders beyond the sensory facade of the phenomenal world." He, on the other hand, was preoccupied with what he could see, hear, and read. His own philosophic thought was laconic, in contrast with his full accounts of how he solved problems (16–17). In contrast to most of his contemporaries, who privileged knowing from seeing and hearing, he concentrated on "concrete praxis" (46–47). He was not seeking to realize a grand vision, but to make others' visions work reliably. His empiricism was a nonsystem. Shen became indispensable because of his successful "trouble-shooting whenever the system faltered" (103).

For most Northern Song thinkers, a thing is "a distinctive object/process with its own properties" but also a reification of a place in a larger order (*dao* 道, number, figure, etc.), which makes its properties insignificant. In that sense it is merely a knot in a net of relations. Shen associated individuation with "the knower's privileged use of hearing and seeing." "[T]he individuated existence of a 'thing' was often captured through its sensory qualities" (76–77). For Shen, a thing was not just a knot in a net, but had its own qualities, which were worth knowing.

Wang's system centered on institutions. By innovative policies he sought to approximate the Way. His initiatives would also transform "morality and customs through educational reforms and economic leveraging." His policies "bordered on being coercive" (145). But Shen frequently revised their details to keep them from failing in specific circumstances. Wang, harassed by real enemies, saw this as disloyalty. By disparaging Shen to the emperor, he encouraged his downfall.

In his *Brush Talks* Shen demonstrated his interest in reliable knowledge and "disinterest in total or absolute truth . . . a practical commitment rather than a propositional theme" (175). He was mainly interested in "investigating local and immediate causes associated with sensory knowing," such as how the dimensions of a musical instrument were responsible for its sound quality (183). "Mathematical representation enabled [an astronomer] to calibrate the vast universe in finite numbers at a manageable scale." Number was reality

and "calendrical systems were infinitely insufficient approximation[s] of the deep [astronomical] reality" (98).

"His impulse to seek accurate matches between 'things' and names bespoke constant attention paid to the sensory content of linguistic conventions and a philosophical insistence that if a concept contained sensory content, this content must be properly grasped to render the concept valid" (196).

"Shen's knower had a new known: 'things' in individuated existences. . . . [T]he knower claimed to be present to his perceptions and thinking." "He turned 'things' into objects and became the 'relational center' of them all. Taken together, a subject-object relationship was thus arising from Shen's epistemological horizon" for the first time in China (217). In philosophy he paid respect to the hierarchic order between the heart-mind and sensory knowing, but in practice the heart-mind worked only in special niches, and sensory knowing was pervasively useful and valid.

Encyclopedists often cited *Brush Talks* because of its reliability, but did not pay much attention to its author. From the Southern Song period on, the number of *biji* 筆記 authors increased, and they appreciated Shen's concern for reliability. The evidential scholars of the Qing period saw him as one of the precursors of their own paradigm. But textual evidence was just one analytical tool Shen used. He and his peers made no rigorous boundary between nature and culture. Both were part of the *dao*. By the twentieth century, Shen had mutated "from a despondent exile to an anachronistic cultural hero" (239).

Since my own exploratory biography of Shen forty-five years ago,[1] I had been worrying about how to produce a book-length one deep enough to do him justice. I am now pleased that the job has been done at least as well as I could have done it.

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1. "Shen Kua (1031–1095)," in *Dictionary of Scientific Biography* (New York: Charles Scribner's Sons, 1975), 12: 369–93; reprinted as "Shen Kua: A Preliminary Assessment of his Scientific Thought and Achievements," *Sung Studies Newsletter* 13 (1977): 331–56. This was updated as Chapter 3 in *Science in Ancient China: Researches and Reflections* (Aldershot: Variorum, 1995).