

NEW TERMS OF ACCOMMODATION:  
BENJAMIN ELMAN'S *ON THEIR OWN TERMS* AND EARLY MODERN GLOBAL  
NETWORK OF KNOWLEDGE

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*Science in China, 1550-1850*, the subtitle of Benjamin Elman's *On Their Terms*, hardly captures the depth of the historiographic revision that the main title suggests and the magisterial monograph begins to delineate. It is not merely a revision of the particular way in which science developed in China until the eve of the 20<sup>th</sup> century. Our stories on the coming to being of modernity in Orient and Occident are so intricately related and reserve such a central role to science, that the very idea that Chinese developed science 'on their own terms'—indeed that they had such 'terms'—requires fundamental rethinking of the cultural history of early modernity around the globe, which indeed comes to look significantly smaller.

There is no assumption held deeper by historians of modern science and its early modern progenitors than its quintessential European origin and character. The so-called 'scientific revolution' of the 16<sup>th</sup> and 17<sup>th</sup> century, they unwaveringly declare, was "a phase in *European* history"<sup>1</sup> and "the most important event in *Western* history"<sup>2</sup>. This Europeaness is such an essential assumption it is upheld against all historical facts: the first words of Hall's classical *The Scientific Revolution*, are "European Civilization at the beginning of the sixteenth century was isolated"<sup>3</sup> and he proceeds to argue for this isolation against extremely strong evidence to the contrary that he himself furnishes. This conviction survived all major methodological and historiographic turns. When 'science' was synonymous with true knowledge, it was supposed to be founded a new, correct method whose discovery in

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<sup>1</sup> Butterfield, H., *The Origins of Modern Science* (rev. ed.). New York: The Free Press (1957), 8.

<sup>2</sup> Westfall, "The Scientific Revolution," In S. Goldberg (ed.), *Teaching in the History of Science: Resources and Strategies*. Philadelphia: History of Science Society Publication (1989), 7.

<sup>3</sup> Hall, A.R., *The Scientific Revolution 1500-1800: The Formation of the Modern Scientific Attitude* (2nd ed.). London: Longman (1962), 1.

Europe reflected “a specific kind of ‘rationalism’ in Occidental culture”<sup>4</sup> and secured its superiority. The emergence of this method was thus accounted for by unique instances in European culture and history, from the rise of capitalism, through reformation and counter-reformation, to secularization and imperialism<sup>5</sup>. From the 1970s on, the view of science as fundamentally universal and uniform has gradually given place to a stress on the local origin and the historical-cultural embeddedness of all knowledge claims and with it to the study of science as a social-cultural phenomenon. This development, however, has only furthered the belief in “the fact that modern science arose only in the West”<sup>6</sup>. The crucial philosophical insight that all knowledge claims are locally produced came to mean that science was rooted in local European cultures and traditions, and the assumption of the essential-Europeaness of science now came to be supported by studies of its roots in local European cultures and traditions<sup>7</sup>.

Nor did the recent attention to travel and discovery provide much challenge to this belief. Marine technology and oceanic navigation are studied as driving forces for the development of astronomy and geography and through them of mathematics<sup>8</sup> as well as sources for new natural and artificial objects that challenged old categories and ancient authorities.<sup>9</sup> Yet these studies only enhance the same picture: both the old categories and the strive to expand and collect are conceived as particularly European, as are the institutions that establish Europe as a world center of knowledge.<sup>10</sup> Similarly, the search in the East for origins of early modern achievements, mainly technological, which were essential for the advancement of ‘Science’, such as the movable press or the mechanical clock,<sup>11</sup> does not suggest any steady exchange or cooperation. This search hypothesizes clearly separated

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<sup>4</sup> Weber, *Religionsoziologie*, 11.

<sup>5</sup> For a survey of these approaches see Floris Cohen, *The Scientific Revolution*.

<sup>6</sup> Huff, *The Rise of Early Modern Science*, 2.

<sup>7</sup> This is true of text books (Cf. Henry, J., *The Scientific Revolution and the Origins of Modern Science*. New York: St. Martin's Press (1997); Dear, P., *Revolutionizing the Sciences: European Knowledge and Ambitions, 1500-1700*. Princeton: Princeton University Press (2001)) and grand historical cultural narratives (Cf. Shapin, S., *A Social History of Truth: Gentility, Civility and Science in Seventeenth-Century England*. Chicago: University of Chicago Press (1994); Gaukroger, S., *The Emergence of a Scientific Culture: Science and the Shaping of Modernity, 1210-1685*. Oxford: Oxford University Press (2006)).

<sup>8</sup> Cf. Cormack, *Charting an Empire and Alexander, Geometrical Landscapes*.

<sup>9</sup> Cf. Daston & Park, *Wonders and the Order of Nature*, 146-159; Bowen, *Empiricism and Geographical Thought*, 36.

<sup>10</sup> Cf. Harris, “Long-Distance Corporations.”

<sup>11</sup> Cf. Landes, *Revolution in Time* and Needham and Solla Price, *Heavenly Clockwork*.

cultures, where fragments of the one may be acquired by the other, which in turn re-asserts the question what it is that distinguishes “the West from the Rest”<sup>12</sup>.

Perhaps more immediately relevant as a background to Elman’s thesis is the fact that the European uniqueness of science has been just as self evident and just as fundamental for scholars of Chinese modernity. They inherited this presumption from the very subjects of their study—the Late Imperial and Early Republican writers who defined for the Chinese cultural and political elite what Chinese modernity might be and argued over what it should.<sup>13</sup> For the ‘reformers’ in that self-reflective genealogy, modern science stood for the foundation of European power; China’s failure to adopt it or develop its own led to its failure to modernize at critical historical moments and therewith to its traumatic modern fate.<sup>14</sup> For the ‘conservatives’ in this story, it was the foreign values and aspirations embedded in science which furthered China’s loss of authenticity and age-old tradition, a loss that was the real culprit of this trauma.<sup>15</sup> Even the literature on ‘Science in China’, especially in the context of Chinese-European relations, retained the same perspective. The grand project of Joseph Needham and his successors<sup>16</sup>, which one may be tempted to think of as a counter example, concentrated on establishing an authentic ancient Chinese science and technology, essentially separate and distinguishable from the *Science* that developed in Europe from the 17<sup>th</sup> century. More recently, historians have turned their attention to the introduction of Western thought into China by the Jesuit missionaries in the late Ming-early Qing period, yet in this scholarship has even less interest in the Chinese “own terms;” science, in it, is just as fundamentally European as Christianity, and the Jesuits offer the former to demonstrate the value of the latter.<sup>17</sup> Similarly, in the current surge in topical studies of Chinese science and of European science in China, the European and the Chinese remain essentially separate categories.<sup>18</sup>

*On Their Own Terms* offers a radically new perspective on these triangular relations—

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<sup>12</sup> Landes, 25.

<sup>13</sup> Cf. Levenson, *Confucian China and Its Modern Fate*.

<sup>14</sup> Cf. Feng, *A History of Chinese Philosophy*; Li, *Zhongguo Jindai Sixiang Shilun*.

<sup>15</sup> Cf. Liang S., *Dongxi wenhua ji qi zhexue*.

<sup>16</sup> Needham, *Science and civilisation in China*.

<sup>17</sup> Cf. Udías, *Searching the Heavens*; Han, “The Role of the French Jesuits.”

<sup>18</sup> Cf., Fan, *British Naturalists in Qing China*; Sun, “The Diffusion and Impact of Western Optical Knowledge in Late Ming and Early Qing;” Ning, “Theories of the Movement;” Furth, *et. al.*, *Thinking with Cases*.

China, Europe and Science. Such a revision has been long in the waiting, as scholarship in a range of different disciplines made it obvious that the cultures and economies in which early modern sciences emerged were far too entangled across oceans and landmasses to allow for the image of a clash between two reified “civilizations.” By the middle of the 16<sup>th</sup> century commerce, conquest and exploration across political and geographical borders have created a global economic and cultural network. For example: a significant portion of the Chinese-Indian spice was carried by Dutch vessels; Peruvian silver, brought by the Spanish, monetised the Chinese economy; Portuguese merchant ships mediated silk trade between China and Japan and took over internal exchange in the Indian Ocean; Porcelain production in Europe rose and fell with Chinese internal political and military situations, while the style of high-end Chinese porcelain manufactured in Jingdezhen was modified to suit European taste. Asia, Europe and the “New World” became inextricably bound.<sup>19</sup>

Elman, however, provides a somewhat different, if not altogether unrelated reason why it is a wrong to ask “Why the Scientific Revolution Did Not Take Place in China”<sup>20</sup>. In his careful rendition, Chinese scholars indeed received science from the West, but they did not do so passively. Rather, they had “their own terms” in which to understand the European offering and into which to translate and negotiate them as intellectual options.

These ‘terms’ originated in the long tradition of *gewu zhibizhi* (investigating things and extending knowledge), which Elman, belying the still-prevalent conception of the Chinese intellectual tradition as text-bound and conservative, presents as a thriving dialectics of re-interpretation and innovation that stresses empirical study of the principles in the natural and human world. Originating as a core interpretative principle of Song Classicism, *gewu zhibizhi* developed into an epistemological orthodoxy that allowed the Ming literati to understand, translate and assimilate the ideas they were presented by the Jesuit missionaries, and served as the basis of later developments as the Protestant translation project and Qing Self-Strengthening Movement.

Elman’s story is not symmetrical. The Europeans reached China during a unique age

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<sup>19</sup> Cf., Fan, F., *British Naturalists in Qing China: Science, Empire, and Cultural Encounter*. Cambridge, Mass.: Harvard University Press (2004); Sun C., “The Diffusion and Impact of Western Optical Knowledge in Late Ming and Early Qing: A Study of Sun Yunqiu’s Jingshi.” *Studies in the History of Natural Sciences (Ziran Kexueshi Yanjiu)*, 26:3 (2007); 363-376; Ning, X., “Theories of the Movement of the Moon in Xinfu Suanshu.” *Studies in the History of Natural Science (Ziran Kexueshi Yanjiu)*, 26.3 (2007); 352-362; Furth, C. et. al. (eds.), *Thinking with Cases: Specialist Knowledge in Chinese Cultural History*. Honolulu: University of Hawai’i Press (2007).

<sup>20</sup> As is the name of a seminal paper by Nathan Sivin.

of their own history, marked with an unprecedented strive to explore and expand. Yet their “‘science’ as such (synonymous with accurate and systematized knowledge ... )” (xxiv) was not yet an achievement as it was an urgent need and an on-going venture. What the Jesuits of the late Ming and to a large degree the Protestant missionaries of the early Qing (17<sup>th</sup>-18<sup>th</sup> centuries) brought to China, “*Scientia*, the highest learning of their men of culture” Elman stresses, “did not connote natural science ... but Aristotelian moral and natural philosophy” (xxiv). On the other hand, on the eve of the European arrival, “like contemporary European and Islamic scholars, late imperial Chinese also prioritised mathematical studies for their premodern exact sciences, which informed Chinese astronomy, geography, cartography, and alchemy in different ways. Literati also applied the naturalistic concepts of yin and yang and the five evolutive phases (*wuxing*) to elucidate the spontaneous (*ziran*) changes in the ‘stuff of the world’ (*qi*)” (xxv).

In Elman’s story the Europeans are still leading with their fast-developing science, but their cross-cultural engagements with the Chinese can no longer be characterized as a progressive influence on a static and antiquated tradition. Rather, the process of encounter and exchange was that of mutual accommodation (and rejection) between two (or more) evolving systems of knowledge. Moreover, these encounters were crucially significant events for *both* traditions as they dealt with dramatic world historical changes. Elman’s primary interest is Chinese history, but from this perspective the revision he offers is not less radical. Though Elman never lets his language veer that far from the accepted story of the origin and development of Science the west and in China, his account suggests that the Jesuits and the Protestants did not so much *introduce* science to China, as they but played a part in ongoing Late Imperial Chinese cultural and intellectual sea changes, which lead to the development of *Chinese* science.

It is therefore chapters in an evolving Chinese intellectual history that Elman recounts. Its foundations lie in the innovative Confucian commentaries of the Song Dynasty (960-1276 *CE*), and in particular those of Cheng Yi (1032-1085) and Zhu Xi (1130-1200), which “presupposed that there was a ‘principle for all things’ (*wanwu zhi li*) in a real, not illusory, world” (5). For Ming (1368-1644 *CE*) literati, in search for a reaction to the growing influence of the imported Mahayana Buddhist, Cheng and Zhu provided an authentic alternative, based on a “search in the Classics for universal principles of all things, events, and phenomena (*qiongli*)” (5). Against the Buddhist fundamental assumption that all

things were ephemeral and thus empty of abiding reality (*kong*), this Classical version of “Learning of the Way (*Daoxue*)” stressed a worldly interest in the natural as well as the human world.

Elman stress on this strong empiricist strand in what he terms “literati theory of knowledge” (5) is uncompromising. In fact, Zhu Xi’s version of ‘the investigation of things’, he claims, contested an even more naturalistic epistemology, to be found in Shao Yong’s (1011-1077) cosmological speculation, that favored apprehending unmediated principles directly in things. This line of analysis is revelatory not only in presenting Confucian thought as a lively tradition, open and responsive to internal and external intellectual challenges, but in allowing these challenges to arrive from non-intellectual origins. Cheng and Zhu’s ‘investigation of things’, Elman points out, was highly controversial for their Song contemporaries, and its ascend into an intellectual orthodoxy for the Ming literati—becoming the dominant interpretive mode for the study of Classics and a standard topic for the civil service examination—can only be understood as driven by the deep economic changes with their related upheavals in class structure and political prowess which China was undergoing at the eve of modernity. As early as 1400, the Ming tax system was already becoming increasingly obsolete because of population growth and because “regional markets gradually turned to a silver currency for larger transactions out of the direct control of the government and for payment of land and labor taxes” (9). This was only a prelude to a true “agrarian revolution in which cotton displaced rice production in southern coastal provinces and the influx of Japanese and New World silver monetarized the sixteenth-century economy in unprecedented ways” (10).

Ming China, in Elman’s presentation, was closely tied to global markets, albeit unwittingly, expanding on the much-discussed regional and maritime development of the Song, rather than retreating from them. The economic transformation and new prosperity brought about deep changes in economical and social relations, including a significant population growth between 1450 and 1600, causing the decline of the reach of the relatively static imperial bureaucracy. These changes deeply affected the status and orientation of the cultural elite, which responded with a concerted epistemological reflection. The consolidation of Cheng-Zhu reorganization of knowledge by Ming literati, in Elman’s analysis, was an intellectual means to accommodate not only social, political and economic upheavals, but, more fundamentally, the very proliferation of ‘things’—objects, events,

natural as well as human phenomena:

the quantity and exchange velocity of goods in the marketplace had multiplied exponentially. Ming elites were living through a decisive shift away from the traditional ideals of sagehood, morality, and frugality. Within an interregional market economy of exceptional scope and magnitude, gentry and merchants elites transmuted the impartial investigation of things for moral cultivation into the consumption of objects for emotional health and satisfaction (10).

By the time the new empiricism of Galileo and Bacon was beginning to take shape in Europe, then, Chinese scholarly elite was undergoing their own empiricist revolution, for their own reasons, “on their own terms.” It was a re-orientation of their conceptual grid, necessitated both in order to benefit from and in order to counter the destabilizing effect of the new excess of things, and it applied not only to the literati but also to other social and cultural players, including the more and more economically important and social-culturally visible classes of merchants and artisans. And it was a reorientation comprising both new and old things, from the unknown to the familiar, for even the latter could no longer be taken for granted.

This does not mean that the empiricist move in Chinese met with less resistance than its European counterpart. For writers like Wang Yangming (1472-1528) it represented a submission of the search for “true principles” to “the vulgar connoisseur’s world of objects and wealth” (12), to which they refused to subscribe. The so-called ‘Yangming revisionism’ is almost universally regarded as a philosophical turn inward, away from the worldly phenomena, reflecting the propensity for enclosure of both the Ming intellectual and social-political world. From Elman perspective Wang and his followers appear, in diametric opposition, as actively responding to the ways “economy, commodities, and objects and their significance were changing.” Far from indifference to the outside world, their reach to the transcendental was an epistemological attempt to reconcile the ideal of unified principles in the pursuit of knowledge with the threats of his times, what Timothy Brook called “the confusion of pleasures.” Wang Yangming’s and his followers rejected of the Song Cheng-Zhu theory of knowledge because, faced with the proliferation of new objects, foreign in appearance and meaning yet convertible with the domestic, familiar and venerable through the mediation of imported silver—the new, undistinguishing mode of gauging value and amassing wealth—they no longer believed that “universal principles of knowledge” (10) could be found in the things themselves.

The meeting with ‘The West’ was thus presenting itself to Chinese literati as an acute

epistemological challenge long before “the Jesuits, Augustinians, Dominicans, and Franciscans arrived in South China” (111), and in much more pervasive and fundamental ways than abstract discussions with foreign missionaries could do. By the time of the meeting with the Jesuits, the challenge of new objects and new “pleasures,” demanding new categories and principles, immediately relevant and couched in the Chinese “own terms.” This does not diminish from the importance of the encounter, but it re-draws it as a meeting of mutual accommodation: the Jesuits were offering those parts of their curriculum they expected would draw the Ming literati’s attention and rendering them in terms the literati chose; the Chinese were choosing what they found interesting and translating it to their own evolving and contested terminology.

They were interested, for example, in Giulio Aleni’s *Summary of Western Learning* (1623) which presented a classification of the ‘sciences’ of the sixteenth century Europe, and which attributed an important place to mathematics and technology, “equated *philosophia* with exhaustively mastering principles (*qiongli*) and the investigation of things” (110). Aleni and his Chinese collaborators represented *physica* as “a subset of *philosophia* equivalent to the ‘investigation of the principles of the nature of things’” (110). Matteo Ricci’s translation of Clavius’ *Elementorum* (1607), a constitutive work in the Jesuit translation project because of Clavius’ eminence (the head of the Jesuit university at the Collegium Romanum and one of the most important astronomers at the turn of the 17<sup>th</sup> century), followed a similar pattern. In his *Notes on the Principles of Things* (*Wuli xiaozhi*) Fang Yizhi’s (1611-1671) employed a complementary strategy: faithfully keeping to the form of late Ming literati encyclopedic jottings, he injected into them European explanations of natural phenomena, “such as a spherical earth, Tyconic cosmology, and human physiology” (111). Fang did not do so uncritically, however, and did not abandon his fundamental aim to comprehend the seminal forces underlying the patterns of natural change in terms of ‘investigating the principles’ of *things*, careful not to veer from his collection of findings and observations. He keenly recognized the Jesuit enterprise and criticized it on strict empiricist grounds: in final analysis, the Jesuits leave concrete investigations behind and end with unverified religious beliefs. Fang, writes Elman, “infused the investigation of things with a new view of the accumulation of knowledge.” Like many of his fellow literati he was neither naïvely accepting nor dogmatically rejecting European knowledge: they were engaging in reforming their own tradition, “depart[ing] significantly from the moralist focus of Zhu Xi and the



idealist bend of Wang Yangming to lean heavily on a descriptive knowledge of the natural world” (111). Jesuit *scientia*, which would play a crucial role in the establishment what will come to be generally regarded as *science*, was adopted or rejected in as much as it could be assimilated into this project, rooted back in Song classical learning.

If the project of accommodation explains why the Jesuits in the China mission during the eighteenth century stressed and relied on their technical competence, ranging from surveying methods to cannon making, as well as introducing European pulley systems, sundials, telescopes, water pumps, musical instruments, clocks, and other mechanical devices, in general “making themselves useful to local rulers, . . .” (xxxii), it demonstrates more importantly the mutual commensurability between two intellectual traditions. “Classical Chinese terms were used by literati and Jesuits to accommodate both European and Chinese views of practical studies, which included the emerging sciences of mathematics and astronomy in Europe and China” (112). This seemingly-modest claim is one of Elman’s most fundamental insights: it presents the development of early modern sciences in Europe and China as concurrent and intertwined. For literati mathematicians such as Mei Wending (1633-1721) of Emperor Kangxi’s court the intertwining was self evident: the adoption of the new Jesuit calendar followed the reform initiated by Xu Guangqi (in 1629), and was an episode in an on-going progressive history of Chinese astronomy, improving from generation to generation, from coarseness to accuracy—cumulative improvement was a shared historical pattern.

With Elman, the project of translation of texts and accommodation of practices becomes one of cooperation, both in hindsight and in from the agents’ own perspective, rather than impact and response. Yet this intellectual and cultural accommodation was nonetheless full of tension: the appropriation on each side by the other seemed always reductionist. “Ricci and the Jesuits tried to efface the classical content of the investigation of things with western European natural studies, which would then enable the Chinese to know heaven and accept the Church. Chinese effaced Western learning with native traditions of investigating things and extending knowledge, which would allow them to assert that European learning originated in China and thus was assimilable” (113). For the Ming-Qing literati, framing ‘Western learning’ with the debate between Zhu Xi and Wang Yangming over the investigation of things to master principles was to domesticate it, and this domestication came at a price in real mutual understanding.

The stress on the process of active domestication, with the fertile opening it created and the unassailable limitations it set, allows Elman a particularly revealing analysis of the development of Chinese geography. For obvious reasons, geography serves an emblematic role in the narratives of early modernity in both Orient and Occident, capturing ‘the age of discovery’ and early imperialism as well as Ming’s closure of its coastal borders and its (in-)famous destruction of the knowledge gathered with the Song grand oceanic explorations. Even, or perhaps in particular, in this well-studied subject, Elman’s approach leads to surprising insights: the literati’s inward turn to focus on ‘native’ geography, he demonstrates did not mean ignoring, but domesticating the new knowledge of world geography. Gu Yanwu, a leading late Ming and early Qing scholar of precise studies, provides a case in point. His influential geographical treatise *The Strategic Advantages and Weaknesses of Each Province in the Empire* (*Tianxia jinguo libing shu*, 1639-1662), was very ‘modern’—concerned as much with maps as with texts, yet it does not as much as mention Ricci’s famous *mappa mundi*. Gu’s claims are empirical, based on his wide travels and firsthand observations as well as studies of written materials, but his interests in topography are directed towards their effects on politics and economics within China. For him and his Qing disciples, the lessons to be learned by the overlaps between classicism, geography, and mathematical astronomy which were discernable legacies of the Sino-Jesuit accommodation, were methodological: “Within the academic community that promoted evidential research, historical and physical geography took precedence over the application of the idealized geopolitical paradigms popular” in the classical cosmography of the previous dynasties (195).

In general, Elman teaches, the literati’s ‘inward turn’ of the 18<sup>th</sup> century was not a mere rejection of the new knowledge which the new opening world has made available, but an attempt to find anchors for development in the classics, reminiscent of the European turn to Greek science in the 12<sup>th</sup> and the 16<sup>th</sup> centuries. In many respects it was an efficient move, allowing steady accumulation of knowledge in fields were amenable to such close local attention, geography and natural history being the prime examples: “evidential scholars, building on the efforts of their predecessors, stressed an empirical epistemology and focused on research topics that allowed for continuity in geographical research. As a result, geography emerged as an exacting discipline during the Ming-Qing transition period” (199). Nor was this knowledge a sterile literati engagement: achievements like the mapping of Manchuria had important military applications.

Elman does not veer from the “on their own terms” narrative even when the times are changing, the Jesuits mediators are replaced by Protestant missionaries and the encounter becomes steeped in a full-frontal world-wide Western imperialist expansion. This uniformity, in which crucial events such as the Opium Wars and the Taiping rebellion become a mere backdrop for transmission of “Great Britain’s scientific ethos based on Newtonian mechanics and machine-driven industry” by “enlightened missionaries and church evangelicals” (xxxv), is not without its difficulties, but it allows for some more surprising insights. Not the least of them is the reconsideration of the Chinese traumatic defeat in the hands of Meiji Japan in 1894-5. This is a pivotal episode because it anchors the narrative of failure in which the story of science in China is usually embedded. It is the assumption that the Japanese victory was due to Japan’s quicker adoption of the benefits of Western modernity, and scientific technology in particular, from which stems the common question: ‘why did China not produce its own science and technology?’; which is tied with the other questions about failure: ‘why no democracy?’; ‘why no capitalism?’; or in general: ‘why was China so late to modernize?’

Elman dwells little on the obvious historiographical shortcomings of these questions<sup>21</sup>: the historical facts themselves, he shows, do not support them. At least with regards to war technology—war ships and munitions—China was clearly ahead of Japan from the 1860s and until the war. It was importing this technology ‘on its own terms’: its arsenals and docks were designed and managed by European experts and their machinery imported from England, France and Germany; it made a concerted effort to develop the appropriately skilled workforce by educating engineers both home and abroad; and it supported this venture with a project of translating scientific literature from the European languages. China actually did not fair badly in the war against the French a decade earlier, but the reasons for its inability to defeat the French—declining political authority, poor military organization, corrupted officialdom—were exasperated in the war against the Japanese. Importantly, however, these reasons had little to do with the alleged failure to adopt science modernize and to adopt ‘Western Science’, whatever one’s view about the relations between science and technology. If anything, Japan’s growing military and technological advantage in the following decades was the outcome, rather than the cause of

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<sup>21</sup> See Sivin above.

the outcome of the war, which dramatically changed the real and imagined economic and political balance between the two empires, one clearly on the rise, the other declining (383-4).

The deep revision that Elman's thesis forces on the historiography of modern China is undeniable. As we pointed out at the beginning, the idea that China's modern plight is the outcome of its attitude towards Science—understood as the quintessential product of Western culture and the harbinger of European-shaped modernity—is fundamental to academic sinology as much as it to political and cultural discourse. Where it leaves the historian of science somewhat frustrated is in leaving untouched the possibility “of larger, yet unwritten global narrative of science on the planet” (420). Can, and should we now, attempt to completely eschew the narrative of Science, invented in the West and ‘transmitted’ to the East? Elman does not take this next step. For him, the fundamental story is still the one that leads to Newton's physics and from it, a story essentially European, which “the Rest” is late to join, even if “early modern Europe ... borrowed much from Asia and Islam before its own scientific revolutions” (420). But *On Their Own Terms* suggests that the “global narrative” is a very viable option, though it may not be exactly a “narrative of *science* on the planet.” Such narrative will, for sure, approach science not as a self-evident, monolithic entity, but as a heterogeneous set of practices, epistemological values, criteria and procedures. Following Elman, it will look at exchange, rather than transmission; it will take unprecedented global economic and cultural network, developing during the 16<sup>th</sup>-17<sup>th</sup> centuries, as the grounds from which the new culture of knowledge emerged in both early modern China and Europe, and will read the transformations that defined the European *New Science* and the epistemological upheavals in the Chinese *Investigation of Things* as inter-related facets of a changing world of knowledge; intellectual corollaries of this early modern globalization. Elman stops a step short of sketching such, but his grand book makes it this the inevitable next step.