we discuss this world with him—"let's not discuss poetry." And if we poor mortals think that matters of vast importance are occurring elsewhere, he smiles at us insouciantly, invites us to examine the "jade stamens," and tells us "all other affairs are to be disregarded."

The Development and Decline of Chinese Cosmology *by John B. Henderson.* New York: Columbia University Press, 1984. Pp. xvi+331. $32.50.

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The significant point made in this book is that "the early Ch'ing marked a transformation in at least one aspect of Chinese thought, cosmology . . ." (p. 141). In his final chapter Henderson characterizes the "after" stage of the transition as one in which literati authors emphasized a cosmos manifesting irregularities and anomalies, lacking definite demarcation, and not susceptible of precise knowing by humans. I am in essential agreement with this point and the characterization. Henderson has made an important contribution by indicating a change which is of great consequence for the course of Chinese thinking and which has gone largely unremarked in the historical literature.[1] However, I find difficulties in the explanatory framework Henderson employs to discuss the transformation and in his presentation of evidence for the transformation as a historical phenomenon.

The nine chapters of the book divide into three more or less chronologically defined parts. The first two chapters seek to show the origins and facets of "Chinese Cosmology" in late Chou and Han texts. Chapters 3 and 4 give examples of the continued currency of ideas described in the first two chapters and show they were criticized as well as given further elaboration by writers from late Han through at least Yuan (called the "medieval" period). The third, main part, nearly half of the book and containing its important contribution, considers aspects of the intellectual scene in the

[1] In note 3 on p. 258, Henderson mentions some possible precursors, all in English, but the contributions to which he refers anticipate his point only in a pale way.

sixteenth, seventeenth and eighteenth centuries, presents instances of Ming and Ch'ing commentators' criticisms of "Chinese cosmology," and then sketches what Henderson calls "Ch'ing scholars' anticosmological world view" and what I would refer to as the prevailing literati ideas about heaven-and-earth after the transformation.

Through the book Henderson employs both a broad sense of cosmology—"a view of the world that may be characterized as 'cosmos' " by its "indicating the existence of a certain harmony and proportion in the world"—as well as a narrower sense involving assumptions of correspondence between realms, particularly a "consonance between ourselves and the universe" (p. xiii; cf. p. 54). It is this latter, narrower sense to which Henderson refers when he writes, "Correlative thought is the most basic ingredient of Chinese cosmology," (p. 1) as this applies only for Henderson's focused use of the term. In modern languages we tend to observe this distinction between non-correlative and correlative thinking about the cosmos, as in the distinctions between astronomy and astrology, chemistry and alchemy, mathematics and numerology, but at least until the mid-seventeenth century in Western Europe such a distinction needs to be applied with care to the sources, as their authors' interests and intellectual framework tended to be on both sides of what has come to be regarded as a "clear" boundary. Similarly, we must examine the context in Chinese writings to determine whether the terms used to discuss the cosmos (i.e., *yü chou* 宇宙, both 四方上下 and 往古來今) are to be assigned to the broad or the narrow senses here of cosmology. Not all ideas held by Chinese authors about heaven-and-earth involve a correlative component.

If cosmology in the narrower sense presupposes correlative thought, what is to be understood as "correlative thought"? Not deviating far from Marcel Granet's *La Pensée Chinoise* and volume 2 of Joseph Needham's work, Henderson identifies several basic modes of correlative thinking, including micro-macro correspondences, as between individuals and cosmos and between state and cosmos. Commonly these correspondences involve *wu hsing* 五行, trigrams, numbers, stems and branches, calendrical signs, and other ordering systems. In Henderson's words, "Correlative thinking in general draws systematic correspondences among aspects of

various orders of reality or realms of the cosmos, such as the human body, the body politic, and the heavenly bodies'' (p. 1; cf. p. 54). Henderson separates, by chapter but not categorically, what he calls ''geometrical cosmography'' from correlative thinking (p. 59). However, as he indicates (e.g., pp. 59, 78, 87, 126), the spatial schemata he discusses as cosmography, such as the nine cells in a 3×3 grid of *chiu chou* 九州, *ching t'ien* 井田, *ming t'ang* 明堂, and the *Lo shu* 洛書, are a sub-set of correlative thinking.

Henderson's main variance with much of the secondary literature involves the nature of the correspondences. He attempts to separate ''cosmological resonance,'' which is his rendering of *kan ying* 感應, from correlational thinking. Henderson complains, ''Modern historians of Chinese thought have sometimes written as if almost any two items that could be correlated in Chinese cosmology could also be made to interact at a distance, to affect one another by virtue of a mutual sympathy, if not by any specific mechanism, then at least by virtue of the allegedly 'organic' structure of the traditional Chinese cosmos'' (p. 22). I would respond that this complaint can be handled by *our* distinguishing between an effective mode (in which humans may or may not be able to be actively, intentionally participant) and a descriptive (or metaphoric or verbally conventional) mode of correlative thinking.[2] Henderson asks rhetorically, ''Do the eight trigrams, the ten heavenly stems, and the earthly branches of the *na-chia* [納甲] schema really [!] interact or intercom-

[2] John Major used similar words to make a different distinction. He proposed the label ''descriptive'' for cosmography, as in the architectural plan of the *ming t'ang*, and ''operational'' for an organic conception of cosmic process, including resonant action at a distance. See John S. Major, ''Myth, Cosmography and the Origins of Chinese Science,'' *Journal of Chinese Philosophy* 5 (1978): 9. In an article which adumbrated his book, Henderson associates his terms ''correlative thought'' and ''geometrical cosmography'' with Major's ''operational'' and ''descriptive'' modes. See Henderson, ''Ch'ing Classical Studies and Cosmological Reformation,'' *Tsing Hua Journal of Chinese Studies* 15 (1983): 91. In my view, the assumptions behind the designing of the *ming t'ang* and the ruler's locating himself in it according to the season so as to insure political order involve manipulation of effective correlations. If a circular altar was built without an assumption that the shape would help elicit benefits bestowed by heaven, then the plan of that altar may be ''descriptive'' correlative thinking. I differ from Henderson by granting that any two items that could be correlated also *could* be understood to ''interact at a distance,'' according to the correlator's cosmology, but other observers could accept a correlation without accepting an interaction. One can know that his birthday is correlated to a zodiac sign and planetary positions without being compelled to act on astral considerations in choosing a wedding day, but if one does so, the implication is he accepts a presumption (his own or others), of effective correlations.

municate in the sense implied by the meaning of the term *kan-ying*?'' (p. 22). Leaving aside what ''really'' means, my answer is yes, they can for some authors. Ching Fang, Wei Po-yang and others reified what each of the trigrams stood for, and those ''somethings'' interacted with other somethings. Stems and branches often were simply markers, like the numbers 1 through 9, but they and the numbers also were understood by some as marking ''somethings'' which corresponded, resonated and otherwise interacted with other ''somethings.'' I found it startling that Henderson does not discuss the concept of *t'ung lei* 同類. Again, Henderson complains, ''The *Huai-nan-tzu* does not explain why executions and cruelties should give rise to whirlwinds, or oppressive laws cause plagues of insects. There is, in other words, little apparent logic behind many of these associations'' (p. 26). The ''logic'' is constructible on the basis of *t'ung lei kan ying*, interaction between members of the same category.

Down to the present, the practices of astrology, alchemy and *feng-shui*, not to mention prayers and sacrifices, are disemboweled unless there is a presumption of *kan ying*; correlative thinking does not ''work'' without it. We have to go case by case to determine where an actor or author is adopting a descriptive or metaphoric mode and where he is implying the possibility of effective *kan ying* correlates, and perhaps their manipulation by humans. Henderson dismissively notes, ''Some modern commentators have argued that resonance [i.e., *kan ying*] was an essential ingredient of correlative thought'' (p. 20). I am contending that correlative thinking of the effective mode does demand an assumption of *kan ying* and that the descriptive sort alludes to, without holding, a presumption of correlates which *kan ying*. In Shakespeare's time an effective correlation between stars and humans was commonly accepted; to better appreciate the tragedy of star-crossed lovers, we now may temporarily suspend our disbelief in astral influences, or we may view the correlation as descriptive and metaphoric, but not ''real.'' Henderson's denial of *kan ying*, whether effectively or descriptively, as integral to correlative thinking has consequences for his interpretation of Sung antecedents to the seventeenth-century transformation.

By maintaining the broad sense of cosmology and no requirement of *kan ying*, Henderson includes ''to some extent'' modern scientific models (p. 1), allegories, and more as forms of correlative thinking.

This emboldens him to assert that ". . . correlative thought also influenced almost every field of learning cultivated in premodern China. Even unimpeachably orthodox studies that were generally monopolized by the Confucian elite, such as historiography, literary criticism, moral philosophy, and law, were informed by correlative modes of thinking" (pp. 49–50). This is too vague for me to be confident I understand him, but this sort of statement seems to broaden what is denoted by "correlational thinking" so much as to make it uninteresting if not useless. I could not accept, for example, any claim that we employ "correlative thinking" when in English we use appellations alluding to deities if we speak of the planets or when we label a person a lunatic; they are linguistic conventions which have shed their original correlative referents in ordinary usage. If Henderson accepted such a claim he could not identify a "transformation" of cosmology in the seventeenth century as the language was not transformed.

Henderson's two-fold sense of correlative cosmology (i.e., correlative thinking about heaven-and-earth with and without effective *kan ying* correlates) provides the framework for his discussion in chapter 4 of intellectual developments in Sung and later. He finds the eleventh century to be paradoxical (p. 119). There were Ou-yang Hsiu and Su Hsun, who ". . . directly challenged some of the basic modes of Han correlative cosmology [in the narrow sense of effective correlates?]" (p. 104). There were Ssu-ma Kuang, who condemned *feng-shui* and wrote a numerological masterpiece (pp. 108–109), and Shen Kua, who was critical but did not "repudiate systems of correspondence in general [i.e., the descriptive mode?]." (p. 109) And there were "the great Neo-Confucian cosmologists," Shao Yung, Chou Tun-i, and Chang Tsai, who in Henderson's account "reaffirmed many of the basic tenets of the perennial cosmology" (p. 104), "broadened the scope of cosmological discourse" (p. 119), and overwhelmed the "critics." The paradox apparently is that all of this went on at the same time, a time when "classical purists . . . had reason to denigrate as heterodox the cosmological commentary formulated in the Han . . . [and] systems of correspondence had, in some cases, been extended far enough . . . to be encumbered by the forced fits and arbitrary pairings that arose from efforts to develop simple schemata into world-embracing

cosmological designs'' (p. 104). Leaving aside the problem of whether any of the eleventh century figures named by Henderson was a ''classical purist'' and also the circular argument signaled by the notion of ''far enough,'' I contend that in discussing his selection of Sung writers Henderson must employ ''correlative thinking'' not only in a non-effective sense but also must include non-correlative cosmology of the broad sense—''a certain harmony and proportion in the world.'' His usage creates a confusion for our understanding of what was being criticized and what was being revived.

For all of their criticism of cosmology (especially in the sense involving presumptions of effective correlates), Ou-yang Hsiu and Su Hsun kept an important place in their discourse for hexagrams and the *Book of Change.* On the other hand, Shao Yung is Henderson's strongest example for a revival of cosmology. Although I am not sure of the intentions behind Shao Yung's system, it is not obvious to me and not demonstrated by Henderson that Shao's numerological (*hsiang shu* 象數) cosmology involved systematic correspondences akin to *t'ung lei kan ying* explanations (cf. p. 94). As Shao's readers have continually recognized, his system was based on four rather than the ''perennial'' five. Certainly Shao Yung was well known in his own time, came to be counted among the five Masters of Northern Sung, and was sometimes regarded as a ''founder'' of what later was called *tao hsueh*, but the Ch'eng brothers did not discuss numbers with him, his numerology educed no school of followers, Chu Hsi was suspicious of his use of numbers, and in later anthologies Shao Yung's numbers were at best marginal and often eviscerated. As Henderson acknowledges, ''Shao's philosophical and cosmological ideas exercized only limited influence on the development of Neo-Confucian thought'' (p. 123). Shao Yung does not seem to be a good example for a so-called ''revitalization'' in the eleventh century.

Ts'ai Yuan-ting is Henderson's strongest example from the twelfth century. Ts'ai, who was Chu Hsi's student and colleague, is credited with exerting numerological influence on Chu Hsi, but his main surviving work, the *Lü lü hsin shu* 呂律新書, is at best ambiguously correlative. In Henderson's view, ''In contrast with Shao Yung and his followers [unnamed, but probably referring to his son

and to Ts'ai Yuan-ting], Neo-Confucian thinkers of the Ch'eng-Chu school eschewed the construction of systems of correspondence meant to comprehend the cosmos as a whole. . . . But they also occasionally turned their attention toward natural phenomena. . . . Those who did so, particularly Chang Tsai, Ch'eng I, and Chu Hsi, naturally [?] assumed the existence of a fundamental homology [n.b.: not *t'ung lei*] between the patterns [i.e., *li* 理] of the natural world and those of the human or moral sphere'' (p. 126). To think there is order, pattern, or coherence in the phenomenal world and to use that presumption of coherence to argue for coherence in morality is not an argument based on ''systematic correspondences.''

Henderson writes as if he almost recognizes he is crossing what I am calling the boundary defining the narrowly construed cosmology of effective correlates when he passingly compares ''the major philosophers of the Ch'eng-Chu tradition'' to the major cosmologist of Han. ''For like Tung Chung-shu, they apparently [!] assumed that the principles [i.e., *li*] of one realm of the cosmos could be known by inference from those of a corresponding realm'' (p. 127). To my understanding, this is a profoundly mistaken reading of *ko wu ch'iung li* 格物窮理. Henderson himself may have been uncomfortable with the comparison, for he then writes, ''Tung Chung-shu applied this idea in a much more systematic fashion than did Sung and Ming Neo-Confucianists, correlating, for example, the dimensions and parts of the heavens, the earth, the human body, and the imperial government'' (p. 127). In my words, this refers to the system premised on *t'ung lei kan ying* which circulated under Tung Chung-shu's name from Han times on, a specific system in which Shao Yung and Ts'ai Yuan-ting, not to mention Chang Tsai or Chu Hsi, did *not* participate. Regardless of the difference implied by his words, ''in a much more systematic fashion,'' Henderson reaffirms that Tung Chung-shu ''. . . shared with Sung *li hsueh* thinkers the general belief that various realms were homologous with respect to one another . . .'' (p. 127). First, Tung Chung-shu was not talking about just knowing ''by inference.'' Secondly, Henderson does not offer substantial comparison of the *Ch'un-ch'iu fan lu* with the writings of Chang Tsai, Ch'eng Yi or Chu Hsi to support his assertion (cf. p. 89).

Consider a pronouncement by Hsu Dau-lin: "Phenomenalism [i.e., the effective correlative cosmology associated with Tung Chung-shu] of the 'Wu-hsing chih' tradition was dead by 1060."[3] Hsu was arguing that "the theory of natural catastrophe as the result of misgovernment," (p. 115) enunciated in the *Ch'un-ch'iu fan lu* and established in the "Treatise on the Five Agents" ("Wu hsing chih" 五行志) of the *Han shu*, had remained as "official dogma" in dynastic histories until Ou-yang Hsiu criticized it in his *Hsin T'ang shu* and broke the tradition of connecting natural phenomena with political events (pp. 116–17). Subsequently, the introduction to the "Wu hsing chih" in the *Chin shih* recites formulaic correlates of fives in heaven, earth and humans, and expresses doubt about the tradition of recording instances of *kan ying* between heaven and humans and matching them in terms of *wu hsing*. The compilers declare they are following Chin court historians' records of noteworthy phenomena in heaven-and-earth but not the strict Han dynasty model involving *kan ying*.[4] In the *Yuan shih* the introductory remarks seem to me to be less sceptical, but they stress the importance of human effort and also declare against recording human affairs as responses (*ying*) to portentous phenomena in the heavens.[5] Compiled in the midst of or after the early Ch'ing transformation of cosmology, the *Ming shih* introduction to the "Wu hsing chih" runs the scepticism in the other direction by mentioning the possibility that there may be mutual influence between heaven and humans as well as responses which are a function of *t'ung lei*, but they are not easily evidenced and so are expunged from the treatise.[6] In these three cases the traditional vocabulary of correlative cosmology is acknowledged, but a presumption of effective correlations is denied. Henderson refers approvingly to Hsu's argument, but also judges that "eleventh-century criticism [such as that by Ou-yang Hsiu] did not have a lasting impact on the intellectual world" prior to the late Ming because Neo-Confucianism "reaffirmed many of the basic tenets of the perennial cosmology" (p. 104). This assertion by

[3] Hsu Dau-lin, "Crime and Cosmic Order," *HJAS* 30 (1970): 117. Cf. Henderson, p. 107.

[4] *Chin shih* (Peking: Chung-hua, 1975), 23.533.

[5] *Yuan shih* (Peking: Chung-hua, 1976), 50.1049–1050.

[6] *Ming shih* (Peking: Chung-hua, 1974), 28.425.

Henderson conflicts with Hsu's generalization and my understanding of the major *tao hsueh* thinkers. I am not claiming here that there was no correlative cosmology after the eleventh century; many alchemical texts from the eleventh and twelfth centuries, and later, are still extant, though not included by Henderson. I am saying that Henderson's characterization of post tenth-century thinking, as represented by the celebrated *tao hsueh* authors' views about the relation between phenomena in the realm of heaven-and-earth and those in the human realm, is at least problematic, but it is necessary for the explanatory framework he adopts.

While recognizing differences between Han cosmology and Sung cosmology, as when he writes that Sung and Ming thinkers dealt with "issues which transcend the bounds of 'correlative thought' " (p. 119), Henderson glosses over them (cf. p. 243) to maintain throughout the book that correlative thought "was a mode of thinking quite general and pervasive in both Chinese and Western civilizations from late antiquity to nearly the modern age," which begins in the seventeenth century (p. 42; cf. p. 257 and especially pp. xiv-xv). I believe that Henderson is maintaining there was no significant change in cosmology after the development of effective correlative thinking in historical times, particularly in Ch'in and Western Han (p. 30), and prior to the seventeenth century, in order to sustain his interpretation that there was, in China and in Western Europe, what he calls the "cosmological reformation" in the seventeenth century. Thus he must maintain that ". . . though an empirical basis for a thorough critique of Han cosmology was laid as early as T'ang times [I would say at least as early as Eastern Han; cf. p. 89], not until the seventeenth century was such a critique articulated" (p. 117). And to maintain that, he must also hold that Sung-Ming Neo-Confucianism was of a piece with Han correlative cosmology (pp. xiv-xv). To do that, Henderson must in effect neglect what I regard as a significant boundary between descriptive and effective correlative thinking, and simply assume, for example, that it is not possible to interpret Chu Hsi's system based on *li* as a non-correlative cosmology.[7]

[7] Needham's presentation of Chu Hsi's thinking as "philosophy of organism" might have given Henderson pause.

The developmental framework of pre-correlative, correlative, and modern stages entails an explanation of sorts where Henderson touches on the question of why the transition took place (mainly) in early Ch'ing and (apparently) in seventeenth-century Western Europe as well. He rules out a "simple" cause for both cases (p. 149) and considers five, or perhaps six, factors in chapter 6 to account for the criticisms which induced the "decline of Chinese cosmology." The fifth factor is the only one which I infer functions as an explanatory "cause," and it appears in several guises through the book. "After a certain level of complexity is reached, the correspondences may become emptied of all cosmological content. . . . Having been thus reduced to the absurd, correlative systems become quite vulnerable to criticism, providing they have not been so widely accepted as to restructure common sense. . . . For both Ch'ing Chinese and Renaissance Europeans wearied of the excessively arbitrary character of correlative numerology in its later stages . . ." (p. 94). Or there was an "extravagant development" of correlative thinking (p. 136). "The overextension of correlative cosmology in late-medieval and Renaissance Europe . . . suggests a final [i.e., the fifth] possible inspiration for cosmological criticism in Ch'ing China" (p. 168). Henderson is willing to consider that a cultural tradition may "pass through" a correlative thinking phase in a manner comparable to the "maturation" of a child's thinking, such as Piaget describes (pp. 25–26, 257–58). To me these formulations seem circular, both for China and Europe. Modern science did not "arise" in seventeenth-century Europe "because" correlative thinking (e.g., magic, Hermeticism, Neo-Platonism, astral medicine, occultism) had degenerated to "exhaustion" (p. 168), and we cannot argue we know it was exhausted because science rose. On the contrary, correlative thinking flourished into the seventeenth century and was suppressed or neglected, but it did not evaporate, as Henderson also acknowledges (cf. pp. 149, 172, 256). Another cosmology was generated and it largely displaced correlative thinking of both sorts for the literati in their public roles. If the notion that the prevailing world view must mature by passing from correlative thinking to a "new" cosmology is no explanation, what of the four preceding factors which Henderson considers? He refers to them as "possible inspiration" (p. 168) and "trends"

which "encouraged" (p. 172). To me they are symptomatic of the change rather than either causal or explanatory.

The first factor relating to the origins of early Ch'ing criticisms of previous cosmologies is the "assimilation of . . . classical philology, mathematical astronomy, and historical and physical geography [collectively referred to by Henderson as "science"] into the mainstream of Confucian scholarship" (p. 150). Henderson points out that for Chu Hsi and other Neo-Confucians such studies were subordinated to "moral metaphysics" or otherwise isolated from "the intellectual mainstream." Beginning in the seventeenth century, most of the leading intellectual figures had more than passing familiarity in "technical and empirical studies," especially in astronomy, mathematics and geography (p. 153). The examples Henderson gives illustrate the "liberation" from *li hsueh* of "the sciences," though of course that liberation applied in nearly every realm of early Ch'ing evidential studies as the critique of so-called Sung learning expanded. Much of the secondary literature has noted this phenomenon; Henderson acknowledges that for him, "The Ming origins of the movement are obscure" (p. 150).

The second factor is the application of the exegetical techniques of evidential studies to the classics and other early texts. "Through examining and comparing the earliest extant appearances of these terms [e.g., *t'ien, yin yang, wu hsing*] in such texts as the *Documents* and the *Songs*, they were able to establish that the characters originally lacked the cosmological senses imputed to them by later commentators, especially Han and Sung cosmologists. By stripping terms like *wu-hsing* of their postclassical meanings, Ching [sic][8] commentators seriously undermined [correlative] cosmological thought" (p. 157). Ch'ing philologists may have treated the texts of the classics and other sources more "objectively" than had Chu Hsi, as Henderson contends (p. 157), but not any more seriously or reverently. Henderson seems to think here that a desire to be "classical" was a motivation. "Early Ch'ing scholars' enhanced exegetical expertise and single-minded classicism thus gave them both means and motive for challenging Han and Sung cosmology. But to what extent did these scholars succeed in discrediting this cosmology and recovering the classical [i.e., pre-correlative] world

[8] This is one of the few typographical errors in the entire book.

view?'' (p. 158). The answer to the first part of the question is the major claim of the book—in large measure the previous world views (and I used the plural where Henderson uses the singular) were displaced for the literati in the eighteenth century. The answer to the second part is not possible as Henderson does not establish that ''early Ch'ing scholars'' had such a motive; I am sure they did not.

The third factor, and an aspect of seventeenth-century intellectual developments which Henderson deserves great credit for exposing, is the insistence by seventeenth-century scholars that those aspects of heaven-and-earth ostensibly described by the effective correlations of Han cosmology as well as by geographers' accounts and the tabulations, calculations and associations of the calendar-making tradition concerning the heavens ''. . . had altered appreciably even in historical times'' (p. 162). In the new view, the cycles used by astronomers to predict were continually undergoing small fluctuations which *could not* be anticipated, and the perfect, uncorrectable pitchpipe *could not* be built. *Wu hsing* theories were designed to account for and predict change. Sung thinkers involved in the development of *tao hsueh*, notably Ch'eng Yi and Chu Hsi, had no difficulty accounting for gross and subtle geological and celestial changes as ultimately having coherence (*li* 理). In contrast to this, Henderson rightly argues, especially in chapter 9, that characteristically the world view developing in the seventeenth century insisted on the existence of unintelligible irregularities in the phenomena of heaven-and-earth. The evidence for those irregularities was established by evidential studies of the historical record.

The fourth factor, which conflicts with Henderson's claim that early Ch'ing scholars desired a recovery of ''the classical world view'' (p. 158), is their confidence in the cumulation of knowledge which enabled them to surpass the knowledge of heaven-and-earth held in previous dynasties. ''The science of the moderns was necessarily superior to that of the ancients'' (p. 167). I would go further. Ch'ing literati collectively had confidence that their knowledge exceeded that of past generations at least back to the sages, and that times had changed so much that sages would have to adjust if they were reborn in the present.

As Henderson acknowledges, "None of the intellectual developments discussed in this chapter—the liberation of the sciences from moral philosophy, the intensive cultivation of classical and exegetical studies, the ideas of secular change in nature and progressive development in science, or the extension of correlations to unconventional or unnatural lengths—was wholly unprecedented in the Ch'ing era" (p. 170). They were not unprecedented, and even together they do not tell us why the change took place when it did. Henderson dismisses the possibility of a sixth factor, political and social causes (p. 171; cf. pp. 246, 257), and thus leaves his readers *faute de mieux* with his exhaustion or maturation model, such as it is.

Before I offer a suggestion as to why the transformation occurred when it did, I must comment on a methodological consideration raised by Henderson. I call this the problem of, "If not one, then how many swallows make a summer?" For intellectual history, how many cases (whether individual thinkers, texts or excerpts) constitute a trend? In Henderson's view, "A figure in intellectual history may be highly significant without being either representative or influential. But unless it can be established that he was either one or the other, then it is difficult to credibly use his works to gauge the intellectual climate of the age in which he lived" (p. 141). Deciding when the adjectives significant, representative and influential apply is presumably always going to involve consensus rather than logic, but nevertheless Henderson professes to have ". . . three ways of verifying that we are concerned with a broad intellectual movement of considerable significance" (p. 141).

The first involves "influence," whether ideas were neglected or were echoed continuously in later generations, whether they were "still-born" or "really 'took' " (p. 141). Henderson violates this in many sections by according a major place to the criticisms of Wang T'ing-hsiang. As well as being a major poet, Wang was an active political figure, and Henderson does not consider the possibility that the Chia-ching emperor's conduct may have stimulated Wang to criticize, on an *ad hoc* basis, aspects of effective correlative thinking being practiced in the palace. Moreover, Wang was hardly an "influence" in the sense of being significantly echoed in late Ming or early Ch'ing thought. The same may be said of Wang Fu-chih,

whose writings were largely unpublished until the nineteenth century, but who is used repeatedly by Henderson to provide examples (cf. p. 145).

The "second way . . . is to establish that this movement was the logical [sic] outcome of important trends . . ." (pp. 141–42). Henderson claims to do this with his five factors in chapter 6, which I found unpersuasive as a statement of trends contributing to an "outcome."

The third way is to establish that a set of ideas ". . . was articulated by a wide range, or at least a representative group . . . [although] there is no sure basis for determining who were representative scholars" (p. 142). In other words, Henderson is back to the problem of how many swallows make a summer, and how to identify them. I think Wang T'ing-hsiang is not a swallow and was not making a trend.[9] Henderson arbitrarily decides Ch'ing writers of treatises on medicine, alchemy and *feng-shui* in effect are not swallows and can be excluded (p. 146). In the end Henderson generates a list of some two dozen "important" names which he culls from accounts written by nineteenth and twentieth-century historians (p. 145). There are two difficulties with his list. One is that by drawing examples which were written over a span of four centuries, Henderson dilutes his point about a "transformation" or "reformation" taking place in early Ch'ing. For example, in his discussion of criticisms of *wu hsing* correlations (pp. 180–84), by my count only three figures cited are from early Ch'ing, including the suspect Wang Fu-chih. A second difficulty is the uneven use which he must make of the list. In the case of Ku Yen-wu, presumably a swallow necessarily included in almost any early Ch'ing trend, Henderson notes that Ku ". . . seldom discussed cosmological topics . . . [and] even deliberately avoided cosmological and metaphysical issues . . ." (p. 142). I find that relative neglect on Ku Yen-wu's part to be significant, but Henderson feels constrained to present scattered (and in my view ambiguous or uninforming) examples of Ku's "cosmological criticisms," and thus contributes to the impression that he is often quoting out of context. The deficien-

[9] Henderson does not discuss Wang T'ing-hsiang's contemporary, the influential correlative thinker Lai Chih-te, but does misidentify Lai in the caption on p. 71 and in the bibliography on p. 305.

cies of his evidence and arguments notwithstanding, I agree with Henderson's point that the thinking of leading literati about heaven-and-earth underwent a significant transition in early Ch'ing.

My brief, schematic explanation of why the transformation occurred in early Ch'ing emphasizes two late Ming phenomena to which Henderson gives scant notice.

The first is the increased acceptability among literati circles in the sixteenth century of sets of ideas involving assumptions of effective correlations, outside of the tradition of *tao hsueh*. By the beginning of the seventeenth century more literati were perceiving the growing acceptability as another symptom of and contribution to the corrosion of what they identified as traditional values. This phenomenon is similar to the response of some "authorities" in Western Europe as witchcraft, Neo-Platonism and Hermeticism flourished in the late sixteenth century.

The second late Ming phenomenon to which I refer is the Jesuit missionaries' introduction of the "learning from heaven" (*t'ien hsueh*), which conflated their beliefs about the Lord-in-Heaven (*t'ien chu*) with Western astronomical techniques for depicting and predicting the pattern in the heavens (*t'ien wen*) (cf. p. 150). At first attracting the interest of literati and then through the offices of Hsu Kuang-ch'i among others, the patronage of the court, the appeal for *t'ien hsueh* was its certainty (demonstrated by contests to predict celestial events) and its universality (putatively coming from heaven, it was *not* made by humans of a particular cultural area or tradition). The idea of *t'ien*, variously construed, recurrently had been invested with this two-fold legitimating capacity since Han, if not early Chou. Calendrical systems from outside of China had been accepted, notably in T'ang and Yuan; there was no necessity in the seventeenth century to reject the *Hsi fa* 西法 or *Hsin fa* 新法, as the newly introduced system was called from the middle decades of the seventeenth century on, and both the Ming and the Ch'ing court found the teachings expedient.

A third phenomenon, the importance of which Henderson denies (pp. 171, 246) because he spreads the "decline' over three centuries, is associated with the change of dynasties. The Shun-chih and K'ang-hsi emperors showed a ready acceptance of Schall's and

other missionaries' technical skills, including astrological prognostication premised on effective correlations between the celestial and human realms. Manchu emperors' employment of these ideas heightened literati's reaction to them. As Giulio Aleni had argued in Ming, "all countries in the whole world are covered by the same sky," (p. 214) or as Tycho Brahe put it when he was exiling himself from Denmark, "the heaven is everywhere overhead" (*coelum undique supra est*).[10] Similar propositions had long been voiced in China, but after 1644 the political implications drawn from it were less than tolerable.

In my view, late Ming "cosmological criticisms" directed primarily at expressions involving effective correlations were continued into early Ch'ing and meanwhile belief in such correlations continued to be vital in other than literati segments of society. More importantly, there was a variety of attempts to undermine or disallow ideas or values finding their justification in what "heaven" is or does. The literati who came to constitute a trend were seeking collectively to redefine the grounds on which traditional values were to be justified. In a sentence, my explanation is that the seventeenth-century transformation was a result of the literati's desire to recover control of the "sources" of literati values by relocating them in the written texts of the historical tradition. A negative effect of this effort was the disenfranchisement of heaven and the numbers used to describe it, to which all had equal access.

Calendrical science (*li* 曆, which Henderson translates as "astronomy") had served at least since the time of Mencius (4B/26) as a key example of more or less certain knowledge, although in need of periodic reform. In the 1590s there were major calls for adjustment of the Ming calendar, a calendar basically unchanged for over the three hundred years since it had been formulated under the Yuan. From the first decade of the seventeenth century, Ricci and his successors, particularly helped by Hsu Kuang-ch'i and Li Chih-tsao, published and implemented reforming calendrical knowledge, still with the tacit assumption that more accuracy was desirable and that non-astronomical inferences (whether religious or political) could be drawn from knowledge which is certain. As Henderson

[10] J. L. E. Dreyer, *Tycho Brahe: A Picture of Scientific Life and Work in the Sixteenth Century* (1890; reprint New York: Dover, 1963), p. 217.

observes, Hsu and Li were little concerned with reconciling this "new" knowledge with earlier knowledge (p. 144). By early Ch'ing, literati who were most competent in "mathematical astronomy," such as Wang Hsi-shan, Hsueh Feng-tso and Mei Wen-ting, were historicizing the study of celestial phenomena by recovering largely neglected texts from the past and to some extent assimilating them to current knowledge and vice versa. In the 1720s, with the publication of massive, imperially sponsored compendia on calendrical science which included Western derived texts as well as ones from before the seventeenth century, this process of shifting attention from the sky to the text was largely complete. By this time literati authors were exhibiting the characteristics Henderson identifies: when it suited them, they dismissed phenomena of heaven-and-earth as irregular, anomalous, and lacking definite demarcation, and thus of little consequence for literati knowledge (cf. pp. 246 and 249). Nathan Sivin observes, "The most striking long-range outcome of the Chinese encounter with European science, in fact, was a revival of traditional astronomy, a rediscovery of forgotten methods, that were studied once again in combination with the new ideas and that supported what might be called a new classicism. Rather than replacing traditional values, the new values implicit in the foreign astronomical writings [i.e., *t'ien hsueh*] were used to perpetuate traditional values."[11] I agree with this, except that "outcome" seems to imply this treatment of calendrical science was a result only of the introduction of *t'ien hsueh*.

In the discourse of *tao hsueh* a similar shift occurred. At the beginning of the seventeenth century prominent voices were opposing some of the teachings deriving from Wang Yang-ming; the debate was over the appropriate methods for discovering *li* 理, not over the presumption that there is *li* which has cosmological as well as personal implications. Ch'eng Yi had ostensibly established his moral

[11] Nathan Sivin, "Why the Scientific Revolution Did Not Take Place in China-or Didn't It," in *Explorations in the History of Science and Technology in China: Special Number of the "Collections of Essays on Chinese Literature and History" in Honour of the Eightieth Birthday of Dr. Joseph Needham, FRS, FBA* (Shanghai: Ku-chi, 1982), p. 102. This idea, with some of the same words, was also expressed in Nathan Sivin, "Wang Hsi-shan" in C. C. Gillispie, ed., *Dictionary of Scientific Biography*, vol. 14 (New York: Scribner, 1976), p. 161, where it was credited to Mikami Yoshio in an article published in 1927.

teachings on the grounds that there is a *real* coherence (*li*) in the realm of heaven-and-earth, the core argument which justifies the neo of Neo-Confucianism. Thereafter the term *t'ien li* 天理, although located and construed differently by various authors, was central to the certainty and universality of morality. By the early eighteenth century, this *li* was historicized and relativized, and if it was not treated as merely a mental construct then it could only be found through the study of the texts which were the literati inheritance (cf. p. 138). Those texts from the past could contain effective correlative thinking (cf. p. 178) or the teachings of Chu Hsi based on finding the coherence of heaven-and-earth in the classics, but from early Ch'ing the old assumptions were not granted, even if they were not formally refuted.

This denial of heaven in early Ch'ing had an important repercussion, which Henderson observes. "From the standpoint of the type of scientific development that occurred in early modern Europe, early Ch'ing cosmological critics thus did their work too well. . . . But their critique . . . went so far as to deny that a uniform world order of any kind was accessible to human intelligence or even immanent in the cosmos" (pp. 255–56). This observation is the central contribution of Henderson's book.

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The hidden library of Tun-huang, uncovered almost a century ago, is arguably the single most important find in China's lengthy literary history. "The solid mass of manuscript bundles rising to a height of nearly ten feet, and filling . . . close on 500 cubic feet"[1] that greeted the incredulous gaze of Mark Auriel Stein (later Sir Auriel) in May of 1907 yielded some twenty-five thousand items. The bulk of this treasure eventually was to make its way across the

[1] M. Auriel Stein, *Ruins of Desert Cathay: Personal Narrative of Exploration in Central Asia and Westernmost China*, 2 vols. (London: Macmillan, 1912), 2:172.