Chapter 1

PRELIMINARY CONSIDERATIONS

The two centuries or so spanning the late Warring States and the early Western Han periods were a time of astonishing intellectual fertility and creativity in China. Philosophers of every school were engaged in a great reexamination of the traditions that they had received from their ancestors, and the reformulation of those traditions—with the inclusion of many new insights and ideas—into a new synthesis. By the early Han, the "hundred schools" had been reduced to a handful.

The emerging philosophical synthesis of the early Han blended many strands of thought. From the Daoism of Laozi and Zhuangzi came the ideas of the primacy of the Dao and the existence of an ancient condition of primitive harmony before human schemes and contrivances brought disorder to the world. The astronomers, astrologers, and natural philosophers of the Naturalist School used their star maps and almanacs and observations of the natural world to develop an elaborate system of correlative and categorical reasoning, so that sense could be made, philosophically, of the organic, cyclical, self-created universe in which we live. At the same time, a school of statesmen sometimes known as the Technocrats blended the ideas of Laozi and others about sage government achieved through oneness with the Dao with Legalist ideas about how to organize an army and a bureaucracy and make them serve the purposes of the state. Added to the mixture were the theories of astrologers, especially those of the "Yin-yang Militarist School," who observed configurations of the celestial bodies to predict military success or failure. From these various strands of thought was produced a theory of statecraft according to which the enlightened ruler could align his own actions with those of the universe, and rule in accord with natural rhythms and harmonies. This synthesis was subscribed to by a growing number of thinkers, and came to be called the

Huang-Lao School—joining as it did the political, cosmological, and magical arts of Huangdi (the Yellow Thearch)[1] and the sage rulership of Laozi.

Among the key figures in this period of intellectual creativity were philosophers, astrologers, and magicians in the northeastern states of Qi and Yan and in the south-central state of Chu (which, by the late Warring States period, had shifted its center of gravity eastwards from its ancient heartland in the Han River Valley to the lower Yangtse and its hinterland, encompassing parts of the defunct states of Wu and Yue). These states, which represented regional variants of early Chinese civilization, had much in common not only in religion and intellectual life but also in material culture, perhaps in consequence of having been for a long time on the eastern periphery of the Chinese Zhongyuan cultural heartland, as well as being linked by maritime trade around the Shandong Peninsula. I refer to the shared cultural values of these states as the "coastal-riverine style" of early Chinese culture, and see that style as having contributed importantly to the development of Huang-Lao thought.[2] The fourth-century B.C.E. Jixia Academy of Qi, in which the notable Naturalist thinker Zou Yan was to play an important role several decades after its founding, was a center of cosmological speculation and other philosophical activity. A century or so after the lifetime of Zou Yan, an academy at Huainan (in the northeastern part of the former state of Chu) under the patronage of Liu An, king of Huainan, maintained and extended the Jixia tradition. The most famous product of this academy was the book now known as the *Huainanzi.*

The present work consists of a full translation of and commentary on three chapters of the *Huainanzi* that deal with cosmological issues: astronomy and astrology, topography, and the ritual/astrological calendar. Portions of these chapters have been translated and analyzed in the past by a number of scholars who have used them as examples of specific topics in early Chinese natural philosophy. They have not previously been studied in their entirety and as a unit; they deserve to be. Taken together, they present a remarkably clear and coherent account of a worldview that was shared by perhaps the majority of early Han intellectuals and that was to remain influential for centuries beyond the Han.

At the outset, it seems appropriate to give a brief account of the *Huainanzi,* its nominal author, and the textual tradition to which it belongs, and to discuss the conventions that I shall employ in this book. Readers well-versed in Han intellectual history may wish simply to skim the following sections of this chapter and proceed to the more detailed discussion of Han cosmology to be found in Chapter 2.

The *Huainanzi* has long been known as an important text of Chinese philosophy, although as a "miscellaneous" or "eclectic Daoist" work it never achieved the status accorded to the classics and other works in the Confucian tradition.[3] It is included in the Daoist Patrology (*Daozang*) and has been published in numerous noncanonical edi-

tions as well. It has been the subject of several commentaries and subcommentaries written over the course of many centuries. Both the work and its nominal author are known, in a general way at least, to most students of Chinese intellectual history.

Nevertheless, until a couple of decades ago the *Huainanzi* suffered from a certain neglect in comparison with other texts of the same general period. It seemed peripheral to the Confucian "high tradition" that occupied the attention of most scholars, and it tended to be mentioned only in passing in standard works on Chinese intellectual history.

Recently, however, many scholars have taken a fresh look at the *Huainanzi.* There has been, in fact, almost a boom in *Huainanzi* studies in the West, and to some extent in China and Japan as well. This renewed interest has occurred as part of a larger re-evaluation of the early Daoist tradition, and has benefited particularly from the general reassessment of early Han intellectual life prompted by the astonishing funerary library found in Tomb 3 at Mawangdui and by the discovery of long lost books in other tombs as well. Many scholars now see the *Huainanzi* as a seminal compendium: an attempt—largely successful in its own time—to define the dominant currents of thought in the early Han. Including, as it does, chapters on cosmology, politics, military affairs, and social philosophy (among other things), it was at the very least intended to address the principal concerns of rulers at the formative period of imperial Chinese history.

Recent books by Roger Ames[4] and Charles Le Blanc[5] have included excellent introductions to the *Huainanzi,* as well as discussions of its intellectual and textual background and of the remarkable growth of *Huainanzi* studies in the West. A new book by Hal Roth presents a detailed textual history of the *Huainanzi* and its commentaries.[6] It would be superfluous to repeat here information that is readily available in those works, or to provide more than a brief introduction to Liu An and the *Huainanzi.*

LIU AN AND THE *HUAINANZI*

Liu An (ca. 180–122 B.C.E.), king of Huainan, is known as the author of the work that bears his name, though nowadays we would be more likely to use the term general editor. He was a grandson of Liu Bang, known to history as Han Gaozu, founder of the Han Dynasty; Liu An's father was Liu Zhang, the first king of Huainan. Liu Zhang fell from imperial grace and died on the road to exile in 172 (some sources say 174) B.C.E. The ruler at the time, Zhang's half-brother Emperor Wen, regretted Zhang's death and enfeoffed his sons as an act of contrition. Thus Liu An, as the eldest son, succeeded to his father's title in 164, after some years of enfeoffment with the lesser title of marquis. During the reign of Emperor Wu, successor to Emperor Wen, Liu An seems increasingly to have harbored imperial ambitions; in particular, he was accused

of *lèse-majesté* for having usurped certain imperial emblems. Ordered to present himself at the imperial court to face prosecution, he committed suicide in 122. According to a later legend, recorded in the Tang Daoist hagiographical collection called the *Shenxianzhuan*, at the moment of his death Liu An and the members of his household, including even his domestic animals, were transformed into immortals and rose bodily into the heavens in broad daylight.

In addition to whatever imperial ambitions he might have had, Liu An was an enthusiastic participant in the scholarly debates of his time; his interests ranged from administrative matters to cosmology, from natural philosophy to the occult. He attracted to his court a large number of men of learning and supported them with his patronage. One product of the scholarly atmosphere at the court of Huainan was the collection of essays now known as the *Huainanzi*. Liu An paid his respects at the court of Emperor Wu in 139 B.C.E., a year after the latter's enthronement. On that occasion, he presented a book to the emperor, which was duly added to the imperial library. It seems probable that that book was the first edition of the *Huainanzi*. Some scholars have argued that while portions of the work as it now exists date from the period between 164 and 139 B.C.E., work on the compendium continued until Liu An's death seventeen years later. Liu An's books and papers were confiscated by Emperor Wu's officials after his suicide, so any works written by Liu An or at his direction between the years 139 and 122 could easily have been incorporated into (or used to replace) the copy of the *Huainanzi* already in the imperial library. Elaborate arguments have been made on both sides of the issue of whether the *Huainanzi* is a work of 139 or 122 B.C.E.; the upshot of those arguments is that we really cannot know for sure.[7] The *Huainanzi* in its present form undoubtedly reflects the work of later redactors and editors as well. Overall, however, it seems that the *Huainanzi* is more likely to be a work of the middle, rather than near the end, of the second century B.C.E.; this general assessment is important for reasons that will be discussed below.

The early commentator Gao You, in his preface to the *Huainanzi* (ca. 212 C.E.), says that the book is the product of a formal symposium held in Liu An's court, and gives the names of eight of the participants.[8] It is impossible to say, however, whether or not the men named by Gao You are really the authors of any of the essays. Likewise, Liu An's exact role in compiling the book is unclear. It is possible that he is the author of some of the essays; Wallacker suggests that he may have posed topics or prepared outlines for his scholars to work on.[9] It is at least probable that he exercised some sort of editorial supervision and approved the essays in their final form. Even a casual reading of several chapters is enough to suggest that not all of the essays are by the same hand, although the book as a whole does manage to achieve a certain thematic coherence. The type of detailed stylistic study and statistical analysis of word use frequency that would enable us to assign the different chapters to authorship groups, as well as

the phrase-by-phrase comparison of early Chinese texts (until recently a matter of arduous hand labor), will surely become much easier within the next few years with the development of new computer-based techniques. Pending the completion of such studies, one can only repeat the already well-known fact that the *Huainanzi* as a whole is the product of a group of scholars working under the supervision, and with the patronage, of Liu An.

THE PLACE OF THE *HUAINANZI* IN EARLY HAN INTELLECTUAL HISTORY

The Integrity of the Work

The uncertainty about the *Huainanzi*'s authorship, together with lingering doubts about its exact date, are not unusual problems; the same doubts can be raised about most early Chinese books. More important to the *Huainanzi*'s long-term historical reputation was the fact that it was catalogued as a "miscellaneous" (*za*) book in the Han imperial library. This designation reflects the fact that the *Huainanzi* did not conform ideologically to the Confucian syncretist doctrine established as the state orthodoxy of the Han by Emperor Wu's court intellectual and high official, Dong Zhongshu, around the turn of the first century B.C.E. Paradoxically, however, the *Huainanzi*'s status as a work that immediately predates the formulation of the Han Confucian synthesis is one of the things that now makes it seem of particular interest to students of early Han intellectual history.

Sources of the Huainanzi

Another reason for the *Huainanzi*'s relative obscurity during much of its history lies in its reputation as a work heavily dependent on other sources. Scholars have identified more than eight hundred direct quotations or close paraphrases of Zhou and very early Han works in the *Huainanzi*. Of those, by far the largest number are from four sources: *Zhuangzi* (269 references, in Le Blanc's tabulation[10]), *Lüshi chunqiu* (190 references), *Laozi* (99 references), and *Hanfeizi* (72 references). *Huainanzi* Chapter 1 is based heavily on *Laozi*, and Chapter 2 equally heavily on *Zhuangzi*; the importance of *Zhuangzi* and *Laozi* for the *Huainanzi*'s status as a Daoist work will be explored more fully below. The large number of quotations from *Hanfeizi* and *Lüshi chunqiu* have led some scholars, not unreasonably, to assign some chapters of the *Huainanzi* to the Legalist school.

Interestingly, in light of the very strong influence of *Zhuangzi*, *Laozi*, and *Hanfeizi* on the *Huainanzi* as a whole, their influence on the three cosmological chapters

under consideration in this book is not very great. Conversely, while quotations from *Lüshi chunqiu* can be found throughout the *Huainanzi* (in twenty of its twenty-one chapters), they are of unusual importance in Chapters 3, 4, and 5. Much of Chapter 5, indeed, is quoted directly from the first sections of each of the first twelve chapters of *Lüshi chunqiu* (and thus also parallels the "Yueling" chapter of *Liji*, derived from the same source). The nature of *Huainanzi* 5's dependence on *Lüshi chunqiu* is explored in greater detail in the introduction to Chapter 5, below. Of equal significance, however, is the fact that *Lüshi chunqiu*'s influence is apparent in *Huainanzi* 3 and 4 as well.

It would be quite wrong, nevertheless, to regard these three cosmological chapters of the *Huainanzi* as simply derivatives or restatements of *Lüshi chunqiu*, just as it would be wrong to regard the *Huainanzi* as a whole as an extended gloss on *Zhuangzi*, *Laozi*, and *Hanfeizi*. First, *Huainanzi* 3 and 4, and the final three sections of 5, show extensive links to other Warring States and early Han works as well. Second, it is as true for these three chapters as it is for the *Huainanzi* as a whole that the sources quoted are invariably selected, and often amplified or altered, in such a way as to show clear authorial intent. Like the *Lüshi chunqiu*, the *Guanzi*, and the *Shiji*, the *Huainanzi* forms part of the background of the Chinese encyclopedic tradition. These works, each of which may be seen as an attempted summa of contemporary knowledge from a particular politico-philosophical point of view, are not yet true encyclopedias, but they anticipate the tradition in which, especially from Tang times onward, enormous encyclopedic compendia were put together largely by quoting earlier sources. Both the *Huainanzi* as a whole and its individual chapters use sources to promote and expound a particular point of view, a kind of vade mecum of early Han syncretic thought.

Huainanzi 3, 4, and 5 show links to a wide range of sources (including those mentioned above) that share a distinctive philosophical outlook, which might be characterized as combining yin-yang/five phase cosmological theory, a schematic approach to cosmography, and mythic consciousness.

One of the most significant of these sources, especially for *Huainanzi* 4, is the *Shanhaijing*, or some group of hypothetical texts ancestral to it. But the *Huainanzi* does not draw uniformly from (or, one might say more cautiously, parallel) the *Shanhaijing*, at least as that work presently exists; rather, the passages quoted or paraphrased are mostly from *Shanhaijing* Chapters 6–9, entitled "Haiwai dong [nan, xi, bei] jing," the Lands Beyond the Eastern [Southern, Western, Northern] Seas. Indeed, *Huainanzi* 4 begins with lines closely similar to those that begin *Shanhaijing* 6, and the great majority of mountains, marshes, rivers, mythical personages, and strange foreign lands in *Huainanzi* 4 are also to be found—usually in amplified form—in those four chapters. It seems likely, for this and other reasons, that the *Shanhaijing* originally existed as several closely related but separate books, one of which may even in the early

Han have been known as the *Wuzang Shanjing*, with others corresponding (or being ancestral to) the *Haiwaijing* and the *Haineijing*. Those books were later put together by the noted editors Liu Xiang and Liu Xin during the late Western Han—and put together with scant regard for both repetitions and contradictions. Other materials ancestral to the present *Dahuangjing* (*Shanhaijing* 14–17) (along with another, shorter *Haineijing*, now *Shanhaijing* 18) would have been added to the collection in the post-Han period.[11] In any case, it would appear that Liu An's library included some version of all of these works.

Another important source for the *Huainanzi* is the poetic anthology *Chu ci*, particularly the "Tian wen" chapter; *Huainanzi* 3 and 4 both take the "Tian wen" as their points of departure, and share with it a distinctive mythic cosmology. The importance of the "Tian wen" for *Huainanzi* 3 and 4 has not been sufficiently appreciated; this point will be elaborated upon in the general introductions to Chapters 3 and 4 below, and in the relevant section-by-section commentaries that accompany the translations given in those chapters.

Other important sources for *Huainanzi* 3, 4, and 5 include the Mawangdui text entitled *Wuxingzhan*, which is quoted at length in *Huainanzi* 3; and the "Yugong" and "Hongfan" chapters of the *Shujing*. The latter were presumably important influences on the work of Zou Yan in the third century B.C.E. Because only a few scattered fragments of Zou Yan's own writings survive, it is impossible now to know how much his works influenced *Huainanzi* 3–5, but it is reasonable to suppose that such influence was substantial.

Huainanzi 5 bears what one might call a "family resemblance" to *Guanzi* III,8, a calendrical treatise entitled "You guan"; *Huainanzi* 3.XXII and XXIII are somewhat similar to a subsection of *Guanzi* XIV,41, entitled "Wuxing." In general, as Rickett notes, "No other text contains so many parallel passages to the *Guanzi* chapters contained in [the first volume of his translation of the *Guanzi*] as the *Huainanzi*."[12] The same statement would not be true in reverse form, but it nevertheless is clear that at least portions of the *Guanzi* were known at the court of Liu An, and in fact some of its chapters may have been edited there. It is certainly true that *Guanzi* and *Huainanzi* as a whole share many similarities, and I regard them both as exemplary texts of the Huang-Lao tradition.

The three chapters of the *Huainanzi* under consideration here also show some general affinities with *Zhuangzi* and *Laozi*, even though the amount of material directly quoted from those sources is fairly small. There also are thematic links to *Mu Tianzi zhuan*, *Heguanzi*, *Jinizi*, and *Huangdi neijing*, and probably also to other Mawangdui texts such as *Huangdi sijing*, though the question of the relationship between the Mawangdui corpus and the *Huainanzi* still requires much more work. The cosmological

chapters of the *Huainanzi* also share some passages of text and some thematic characteristics with works that are probably in whole or in part later than the *Huainanzi* itself, particularly *Da Dai liji*, *Liezi*, and *Kongzi jiayu*. In some instances those works probably borrowed from the *Huainanzi*, while in other cases the texts perhaps share material from now-lost earlier sources. And, of course, both Dong Zhongshu (or, if as some scholars have suggested, he was not the actual author of the cosmological chapters of the *Chunqiu fanlu*, then whoever did write those chapters) and the savants whose discussions in the White Tiger Hall were recorded by Ban Gu in the *Bohutong*, seem to have been closely familiar with the cosmological chapters of the *Huainanzi*.

Conspicuous by its absence is any reference in these chapters to the *Yijing* (*Book of Changes*) or its appendices. This is not terribly surprising; as Fung Yu-lan long ago noted,[13] the cosmological theories of the *Yijing* and the Yin-yang/Five Phases schools remained quite separate until the early Han. It was, in fact, one of the achievements of Dong Zhongshu to unite the two schools; thereafter treatises combining the two proliferated among the Han apocrypha. Still, the absence of *Yijing* materials in the cosmology of the *Huainanzi* is worth noting, particularly in connection with the development of the Huang-Lao School in the late Warring States and early Han. As stated earlier, I regard the Huang-Lao School as characteristic of the coastal-riverine (or Qi and Chu) cultural style in ancient China, while the *Yijing* is characteristic of the cultural style of the northern inland states.

The commonality of sources shared by *Huainanzi* 3, 4, and 5 is naturally reflected in their content. These three chapters form a clear subunit within the *Huainanzi* as a whole. The treatment of heaven and earth in Chapters 3 and 4 is reciprocal and complementary; as mentioned above, some sources for both chapters were used selectively by the authors of the *Huainanzi*, with those portions of the (originally unified) source material referring to the heavens being allocated to Chapter 3, and the portions referring to the earth being placed in Chapter 4. The astrological sections of Chapter 3 are derived from the same calendrical tradition as Chapter 5; many difficult passages in Chapter 3 are clarified by Chapter 5. These three chapters, taken together, form in effect a contemporary summary of the cosmological theories of the Huang-Lao School in the early Han.

The Huainanzi *and Huang-Lao Daoism*

The nature of the Huang-Lao school of Han philosophy has been much debated by Sinologists since the publication in 1979 of Wei-ming Tu's influential article on that subject.[14] Many, perhaps most, specialists have adopted the view that the *Huainanzi* is a Huang-Lao work, perhaps even a paradigm of the school; other scholars, notably

Roger Ames, have remained skeptical. The point is an important one, because everyone can agree that Huang-Lao was one of the most important—perhaps the most important—philosophical schools of the early Han, but until recently no one was sure of exactly what its tenets were.

Whatever Huang-Lao was, it was syncretic in nature. Some scholars (for example Guo Moruo[15]) argued that Huang-Lao already existed as an identifiable school (though not necessarily yet with that name) at the Jixia Academy in the state of Qi in the fourth century B.C.E. If that plausible view is accepted, the idea of the *Huainanzi* as a Huang-Lao work emerges in turn, for Liu An's academy at Huainan was undoubtedly an heir to the Jixia tradition. This is evident not only in organization and character of Liu An's academy, but specifically in the academicians' interests in issues of the sort found in *Laozi* and the earliest strata of *Zhuangzi*, in various forms of Legalism (both "rewards and punishments" and "administration") and in the Daoist-Legalist synthesis of the *Guanzi*, and in the yin-yang/five phase cosmology of Zou Yan (who was, of course, a Jixia scholar).

The discovery of the funerary library in Mawangdui Tomb 3 brought about a dramatic improvement in our understanding of Huang-Lao thought.[16] If one follows the now generally accepted view that the Mawangdui corpus is Huang-Lao in character, a picture emerges of Huang-Lao as being grounded in a combination of *Laozi* Daoism and Legalism of exactly the sort found in the Mawangdui text *Huangdi sijing*. In light of this, the strong influence of *Zhuangzi*, *Laozi*, and *Hanfeizi* on the *Huainanzi* takes on great significance. Recent advances in peeling back the layers of the received text of *Zhuangzi*, and in understanding the relationship between *Zhuangzi* and *Laozi*, have also further clarified the issue. Hal Roth has even proposed that the received text of the *Zhuangzi* was edited and put into final form at the court of Liu An himself, making it in effect a sister text to the *Huainanzi*.[17]

In all of this, the assumption has been that the term Huang-Lao associates Legalism (whether of the Hanfeizi "punishments and rewards" or of the Shen Buhai "technocratic" variety), or at least state centralism, with Huangdi, while its Daoist elements derive from Laozi. Something is missing from the picture, however, and I believe that the missing piece is supplied by a proper understanding of the cosmological chapters of the *Huainanzi*. In my view, Huangdi stands not only for a Legalist, or statist, approach to government, but also for the integration of cosmology into political theory. If the leading candidates for exemplars of Huang-Lao thought are the Mawangdui corpus, the *Guanzi* (or at least major portions thereof) and the *Huainanzi*, it becomes a matter of significance that Huangdi is represented in some of those texts (e.g., *Wuxingzhan*, *Huainanzi* 3–5) as a thearch whose astral projection is identified with the planet Saturn and whose ritual emblems refer as much to a cosmological as to a political center.

In his response to Roth's paper on the editorship of *Zhuangzi*, Angus Graham argued against identifying the Han syncretism of the *Huainanzi* with Huang-Lao thought:

> Throughout the literature of the third and second centuries B.C.E. the legends of Shennong and the Yellow Emperor develop in interaction as representatives of rival tendencies to political centralization and decentralization. . . . The name of the Yellow Emperor, the inventor of the state and of war, may well have been chosen to represent the legalist side of Huang-Lao; whether this was the case or not, we can hardly class a text as Huang-Lao if it shows a positive preference for Shennong. But the main political chapter of the *Huainanzi*, the *Zhushu*, mentions only Shennong, in agreement with Roger Ames's claims in his *Art of Rulership* for the anti-authoritarian tendency of this chapter.[18]

This view, if applied to the *Huainanzi* as a whole, needs to be modified in light of the very strong preference for Huangdi found in its cosmological chapters. But the Yellow Thearch appears there, of course, precisely in his cosmological rather than his authoritarian guise. If the *Huainanzi* is to be regarded as a Huang-Lao work, it must be in large part because of this second—but, I would argue emphatically, not secondary—attribute of Huangdi as an exemplar of the cosmological arts.

Further advances in Huang-Lao studies appear to be heading for a new, initially surprising but upon reflection very compelling, consensus: That Daoism, as it was understood in the early Han (for example, in Sima Tan's essay on the "Six Schools" in *Shiji*), was essentially identical to the Huang-Lao School.[19] The old distinction between the "philosophical Daoism" of the pre-Han period and the "religious Daoism" of the late Eastern Han and beyond thus breaks down. Daoism as a named, identifiable school was itself a principal product of pre-Han and early Han syncretism, and was ancestral to both the Confucian syncretism of Dong Zhongshu and the religious movement that took the name Daoism in the second century C.E. If this view is correct, it amply justifies the interest that scholars have recently shown in the *Huainanzi*, for it propels that text from being a relatively obscure "miscellaneous" work of "eclectic Daoism" to being a key document of early Han thought.

This view of the *Huainanzi* as a Huang-Lao (= early Han Daoist) work has led to a gradual change in my own view of the cosmological chapters under consideration here. In my early work on this material,[20] I was mainly interested in the origins of certain strands of early Chinese science. I tended to adopt a Needhamesque point of view, seeing in *Huainanzi* 4, the "Treatise on Topography," examples of relatively "pure" early Chinese science, untainted by considerations of ethics, morality, and the art of rulership. It does not detract from my tremendous admiration for Needham's work to say now, however, that I regard the investigation of scientific "might-have-beens,"

promising scientific trends in early Chinese thought that later were led into dead ends by the weight of Confucian orthodoxy, as being a distraction from the greater task of trying to understand as fully as possible what the Chinese actually did think about certain aspects of the natural world at particular times. Rather than seeing the cosmological chapters of the *Huainanzi* as being among the last instances of pure natural philosophy in China before the whole field was forced into the mold of Confucian ideology, I now regard them—and I feel sure that Liu An and his savants intended them to be seen—as part of what a Chinese ruler needed to know to govern his kingdom properly. One of the messages of Huang-Lao Daoism was precisely that the cosmos is a unity, and there is no distinction between the affairs of nature and the affairs of humans—and their ruler.

The eighth chapter of the *Huainanzi*, entitled "Benjing xun," the "Treatise on the Fundamental Norm," is an extended essay on that very point; the treatise eloquently expounds a philosophy of history embracing a view of the remote past as a time when the actions of rulers were in perfect accord with the natural processes of the cosmos itself.[21] As *Huainanzi* 8 puts it, "All of spacetime is the body of one man; all within the six coordinates is under the rule of one man." In that view, it is as important for a ruler to know how to use an astronomical instrument or to understand how metals grow over time in the bowels of the earth as it is for him to know how to select good ministers or to understand the astrological auspices for success in war. The inclusion of chapters on these matters in the *Huainanzi* reflects the profoundly Daoist message that only a ruler who knows how to make his every action conform to the timeless workings of heaven and earth can succeed in controlling the affairs of man. Chapters 3, 4 and 5 of the *Huainanzi*, in addition to their intrinsic interest, are of importance to the intellectual history of Han China by making clear that yin-yang/five phase cosmology was fundamental to, and wholly integrated with, Huang-Lao philosophy in its fully developed state in the early Han.

This view of Huang-Lao has recently been reinforced by Randall Peerenboom from the point of view of the theory of law.[22] Peerenboom finds the Huang-Lao world view far more orderly and determined—verging on something like "natural law"—than the conventional view of early Daoism would suggest. This interpretation resonates with the cosmology of *Huainanzi* 3–5 which, particularly with respect to astrology, depicts human actions as constrained by cosmological principles. In *Huainanzi* 3, portents read from the position of Jupiter in the sky (in conjunction with the seasons, the sexagenary cycle, and other phenomena) are deterministic and not subject to human control; they contain no hint of Daoist "spontaneity." Similarly, the "Seasonal Rules" of *Huainanzi* 5 follow automatically from the annual waxing and waning of yin and yang; they are accompanied by dire warnings of the consequences of ignoring them.

At this point it will be useful to summarize my reasons for taking the *Huainanzi*

as a whole, and these three chapters of that work taken individually, as being part of the Huang-Lao tradition. I take the essential philosophical stance of Huang-Lao to be as follows:[23]

1. *Dao* is the highest and most primary expression of universal potentiality, order, and potency. "It is undifferentiated, indeterminate, and ineffable. Yet it is generative, autonomous, unchangeable, and complete."[24]
2. Dao is expressed in cosmic order, which embraces both the world of nature and the human world; the human order is a subset of the natural order. "Huang-Lao privileges the cosmic natural order: the natural order has normative priority."[25]
3. The human order presupposes the existence of royal government. But royal government must conform to natural order. For a king to act "contrary to nature" is both futile and wrong; the proper stance of the king is *wuwei*, "non-striving" or "taking no action contrary to nature."
4. "A defining characteristic of the true king is the acquisition of . . . penetrating insight."[26] The king must learn all that can be learned about the natural order, so as to make his actions conform to it.
5. The government of the true king is neither sentimental nor vacillating, and neither arbitrary nor domineering. Being in all respects in conformity with the patterns of the Dao as expressed in the natural order, it is balanced, moderate, and irresistibly strong.

Lest this summary seem like a catchall of late Warring States and early Han political philosophy, it is important to note what Huang-Lao (in this view) does not include: It eschews the human-centered ethical consciousness and "benevolence" of Confucianism, the mechanistic despotism of law-centered Legalism, the anarchism of Zhuangzi, the undifferentiated fellow feeling of Mozi, the sophistry of the School of Names, and much else besides. On the other hand, as adherents of a syncretic school, proponents of Huang-Lao felt free to mine any and all other schools of philosophy for ideas congenial to themselves.

An entire book could (and probably should) be written on the theme of "Huang-Lao and *Huainanzi*." Yet even a fairly cursory look at the *Huainanzi* as a whole will show that it conforms quite closely to the principles of Huang-Lao as outlined above. The primacy of the Dao is established in the *Huainanzi*'s first chapter, "Tracing the Dao," and this theme is pursued not only in the cosmological chapters under consideration here but throughout the work. So also is the idea of the primacy of the natural order; that idea is the defining motif of *Huainanzi* 5, the "Treatise on the Seasonal Rules," which makes clear that the ruler's actions must follow those of the seasonal round, lest dire consequences ensue. The primacy of the natural order is also explicit in *Huainanzi*'s philosophy of history, particularly in Chapter 8, the "Treatise on the

Fundamental Norm," which contrasts a Dao-centered golden age of antiquity with the human-centered and decadent contemporary world.[27]

That the rule of the true king proceeds from the natural order and is pursued through non-striving is spelled out in the opening lines of *Huainanzi* 9, "The Art of Rulership": "The art of the ruler is to deal with things through nonaction and to disseminate wordless instructions. Limpid and still, he does not move; even when moved he is not agitated. . . . Things proceed from what is naturally so and nothing arises from him personally."[28]

The obligation of the ruler to acquire "penetrating insight" is seen in the inclusion in the *Huainanzi* of Chapter 4, the "Treatise on Topography," one of the least politically involved chapters in the entire book. This raises a tricky question: would the "Treatise on Topography," taken in isolation from the rest of the *Huainanzi*, be definable as a Huang-Lao work? Or, to take another example, could the Mawangdui text "Xiang ma" ("The Physiognomy of Horses") be regarded as a Huang-Lao text if seen in isolation from the Mawangdui corpus? The honest answer is "not necessarily." But in dealing with Huang-Lao materials, context is of paramount importance. Such texts as the "Treatise on Topography" or "The Physiognomy of Horses" may be regarded as Huang-Lao texts *if they are clearly associated with other Huang-Lao materials.* In fact, given the stance of Huang-Lao regarding the primacy of the natural order, any text that promised to increase a ruler's knowledge and understanding of the natural world would shelter comfortably beneath the Huang-Lao umbrella. A dominant idea of Huang-Lao, and one important reason why the Huang-Lao school emerged so fruitfully from the late Warring States–early Han era of philosophical enquiry, is that *knowledge of the natural world translates into political power.* The cosmological chapters of the *Huainanzi* were included in the book in support of this view.

Finally, the Huang-Lao view that the power of the ideal ruler is possessed of irresistible potency, flowing as it does from the Dao as expressed in the natural order, is seen quite strikingly in the *Huainanzi.* Consider the astrological predictions derived from manipulations of the *shi* cosmograph in Chapter 3, the "Treatise on the Patterns of Heaven." There one reads, for example (in Section 3.XXXIV below), "As to the chronogram suspended in the balance-beam of the Angular Arranger, if there is war, it certainly will be victorious; if there is an assault, it must succeed." If the ruler allied himself with such forces, his potency would be so great as to seem itself like a natural phenomenon. As "The Art of Rulership" puts it, "The most excellent ruler is one of whom his subjects know only that he exists."[29] Thus I see no conflict between Roger Ames's claim that the *Huainanzi*'s political philosophy is antiauthoritarian and the characterization of that philosophy as Huang-Lao. In my view, authoritarianism (such as that found in Shang Yang's Legalism) rests on the whim of an all-powerful ruler; in contrast, the potency of the ruler in the *Huainanzi*'s Huang-Lao philosophy derives

not from his arbitrary wishes backed by military and legal force, but from his being grounded in the Dao as manifested in the cosmic order.

When viewed as elements of Huang-Lao thought, the cosmological chapters of the *Huainanzi* gain in both interest and importance. Perhaps the most remarkable feature of these chapters, in fact, is the comprehensiveness and coherence of the worldview that they depict. Cosmogony, cosmography, astronomy, calendrical astrology, and other features of cosmology form a seamless web, the principles of which a ruler would ignore only at his peril. The principles are not yet imbued with *ethical* norms defined in Confucian terms: that would come a few decades after the *Huainanzi* was written, with Dong Zhongshu and the Han Synthesis. To that extent, they can still be described as a system of natural philosophy or (in Needham's term) "Naturalism"; still, they depict a moral universe. It is clear that, to the extent that these chapters contain what can legitimately be called science, then science in the Huang-Lao School no longer existed as an independent realm of intellectual enquiry (if it ever did, in ancient China), but was thoroughly integrated with the realm of human affairs.

In describing these materials as comprehensive and well-integrated, I perhaps risk overstatement, for in the section commentaries in the chapters that follow I shall sometimes point out apparent contradictions, as well as the sorts of inconsistencies that flow from an encyclopedic or anthologistic (rather than a synthetic) approach on the part of Liu An and his authors. At the same time, one must recognize the limits of one's ability to penetrate into the mind of a Han cosmologist; what now appear to be contradictions in these chapters may, in some instances, be nothing more than a failure of understanding.

CONVENTIONS EMPLOYED IN THIS BOOK

Chinese Characters in the Text

In order to keep typesetting costs within reasonable bounds, Chinese characters appear in this book only in the Appendices, the "Technical and Textual Notes," the Bibliography, and the Index. The Index thus also functions as a glossary for the main text of the book. In a few cases where it has been necessary to avoid ambiguity caused by romanization I have differentiated between Chinese words by the use of superscript letters, as for example with the two feudal states named Wei; they are distinguished as Wei[a] and Wei[b]. In another instance of possible ambiguity, I hope it will be obvious when the text speaks of a heavenly body appearing in *yin* that the *yin* in question is one of the twelve Earthly Branches, not the *yin* of yin-yang. In addition, because the section-by-section translations are keyed by page and line numbers to the Liu Wendian edition of the *Huainanzi*, interested readers will readily be able to locate the Chinese characters for transliterated but untranslated terms.

Divisions of the Text

The chapters of the *Huainanzi* are not divided into sections in the original text. I have supplied section divisions in the translations below and designated them by roman numerals and section titles (e.g., Section XXVI: Seasonal Yin and Yang), to provide some indication of the overall structure of the chapter texts and for ease in inserting passages of commentary following each section. At the beginning and end of each section of translation I also supply chapter, page, and line references to the Chinese text (e.g., 3:19b:5). I use as the reference text for this translation the edition of Liu Wendian, *Huainan honglie jijie.* While scholars differ as to which text of the *Huainanzi* is the most authoritative one, Liu's edition seems to me to provide the best combination of ready availability, textual accuracy, and typographical clarity.[30] This edition is particularly convenient in studying the cosmological chapters of the *Huainanzi,* because it includes, at the end of its second volume, Qian Tang's very helpful "*Huainanzi* tianwenxun buzhu" (Supplementary Commentary to the "Treatise on the Patterns of Heaven" of the *Huainanzi*; ca. 1788).

This book has two separate sets of notes. References to scholarly literature are supplied in endnotes, denoted in the usual fashion with superscript numbers in the text. In a large-scale translation project for which hundreds of scholarly works have been consulted over a long period of time, there is literally no end to the number of reference notes that could be supplied in this fashion. At some point such notes become more distracting than helpful, so I have tried to keep the endnotes to a necessary minimum. The bibliography contains a full list of works consulted in the course of writing this book. The second set of notes herein are the "Technical and Textual Notes," which are keyed to the translations themselves. Within each section of the translation, I have numbered the lines in what seems to me to be a "natural" order, generally one sentence (but sometimes a few closely linked sentences) per line number. These numbers, of course, also do not appear in the original text. Their primary purpose here is to serve as an indexing device for the technical and textual notes that appear near the end of the book. Technical and textual notes—including such matters as textual emendations, variant readings, and detailed comparisons with other early texts—that will be of interest only to the relatively small number of people who might read these translations with the original *Huainanzi* text in hand are designated by chapter, section, and line numbers of the translated text. Thus, for example, "3.XIV.8" refers to *Huainanzi* 3, section XIV, line 8. (The same line in the Chinese text would be designated 3:10b:2, i.e., chapter 3, page 10b, line 2 in Liu Wendian's edition of the *Huainanzi.*)

Each of the three translated chapters is preceded by a general introduction, which gives a synopsis of the chapter and general remarks about it. Thereafter, translated sections of text are followed by commentaries designed to elucidate both the general character of the section and some of the particular points of interest that it raises. Many of

the chapter sections raise problems of great complexity and broad scope, problems on which—given the enormous expansion of scholarly activity in early Chinese studies in recent decades—whole articles or even monographs have been written (or on which they could and I hope will be written). The commentaries, then, cannot hope to be comprehensive, and I have tried as much as possible to limit them to questions fairly narrowly bounded by the text itself. In some instances—Chapter 3, Section XXVIII, on mathematical harmonics, is a good example—a very extensive literature already exists on the general problems raised by the *Huainanzi* text; in such instances, I simply refer to that literature and then add such comments as are necessary to explain particular points of interest in the text. In other instances—for example the passages having to do with the cosmography associated with the Kunlun Mountains in Chapter 4—I myself have commented in depth on the main issues in articles collected in my forthcoming *Essays on the Huainanzi and Other Topics in Early Chinese Intellectual History*; in those cases as well, I have kept my comments here appropriately brief while drawing the reader's attention to my more detailed studies.

Nevertheless, in an important sense the section commentaries are the real heart of this book. Although the *Huainanzi* presents all of the expected problems of any early Chinese text—textual corruption, variant readings, occasionally difficult or obscure passages—it remains true, as Benjamin Wallacker once remarked to me, that with the *Huainanzi* the problem is not so much to know what the text *says*, as to understand what it *means*. I hope, to some extent, to have drawn from these chapters something approaching the truth of how Chinese intellectuals in one of the most fertile of all eras of Chinese thought understood the cosmos to be put together, and how it worked.

TERMS IN TRANSLATION

Units of Measurement

I have followed the common practice of translating the Chinese words *chi* and *cun* as "foot" and "inch" respectively. Readers should remember, however, that a *chi* (the dimension of which changed over time)[31] was, in Han times, less than the length of an English foot; from the evidence of a folding bronze shadow-scale and gnomon excavated at Yizheng County, Jiangsu, a Han foot was 24 cm, or about nine inches, long.[32] Thus when 3.XXXI.9 below says that "the height of an average man is eight feet," that translates to about 6 feet in modern terms—a bit tall, perhaps, for a Han Chinese, but not out of the question. It is also important to remember that a Chinese "inch" (*cun*) represents one-tenth, rather than one-twelfth, of a Chinese "foot." (By chance, the length of a Han "inch" is thus 0.075 of an English foot or about 0.9 of the length of an English inch.)

On the other hand, there is no satisfactory English word roughly equivalent to the Chinese *li* (used as the standard measure for long distances), and I therefore leave that word untranslated. The exact length of a li varied over time, but a length useful at least for purposes of forming a mental image would be about a third of a mile, or about 500 meters.

From ancient times, the Chinese divided circles—the celestial circle in particular—into 365¼ "degrees." Such divisions of a circle are indicated in this book by the use of a superscript "d" (standing for "degree," and also for the Chinese equivalent term *du*): for example, 280^{d}. In contrast, in passages of commentary when I refer to the 360 degrees of a circle in accordance with modern usage, I use the standard superscript "o": 280°.[33]

For more on weights and measures, see Chapter 3, Sections XXXI and XLII below.

Other Terms

Yin and *yang* have become, in effect, part of the vocabulary of the English language; I follow the usual practice of leaving them untranslated. By Han times these terms had, of course, taken on a range of meanings greatly expanded from their original senses of "the shady side of a hill" and "the sunny side of a hill," or "cool" and "warm."

Qi is a more difficult matter. Many scholars have attempted to find an appropriate English equivalent, such as "breath," "vapor," "pneuma," or "specific activity." My feeling is that none of these is satisfactory. Any English word employed to translate qi carries with it its own semantic baggage, which usually is inappropriate to the meaning of the Chinese term. Accordingly, following in the footsteps of Joseph Needham, I choose not to translate qi, which in any case is also gradually edging its way into the English language via the martial arts and acupuncture and other aspects of traditional Chinese medicine; rather, I employ it as a Chinese technical term and explain its nuances, where necessary, in the commentary. The only exceptions to this rule are a few instances in *Huainanzi* 3 where, in the context of meteorological phenomena, qi clearly does mean "vapor," and I translate it thus.

For similar reasons, I choose not to translate the word *Dao*, which, depending on the context, has in the *Huainanzi* its familiar range of meanings, such as "the Way" (of philosophical truth), "natural process," and "the ultimate nature of things." As Sarah Allan pointed out in a recent paper,[34] Dao does indeed mean "way," but the image that the term called to mind in early China was neither a highway nor a pathway, but a *waterway*. The essential meaning of Dao is thus the path of least resistance taken by water flowing downhill.

On the other hand, some other technical terms do seem to lend themselves to translation.

My reasons for translating *wuxing* as "five phases" have been explained in the pages of *Early China.*[35] The use of the term five phases (which I owe to Nathan Sivin) for *wuxing* has provoked much discussion; see for example the early response of Richard Kunst, and the subsequent opinions of A. C. Graham, Derk Bodde, and Chauncey Goodrich.[36] Not to belabor a much-debated issue, it does seem fair to point out that for these chapters of the *Huainanzi,* the translation "five phases" does seem exactly right; the term was borrowed from modern chemistry, and the transformations of qi described here are comparable to the phase changes of matter.

Similarly, my reasons for translating *xiu* as "lunar lodges" have been explained and debated in the pages of *Early China.*[37] Most subsequent writers have agreed that "lunar lodges" is preferable to the old translation, "lunar mansions."

Tian has connotations in Chinese very much like those of the English word "heaven" in its senses of "the overarching sky" and of "a non-anthropomorphic divinity" (though not in the sense of a paradise to which the soul ascends after death); accordingly that translation is employed here in all instances.

The Chinese word *xing* is a much more inclusive term than the usual English translation "star" would suggest; it can mean "star," "planet," or even "constellation." Unless context requires a more specific translation, I translate *xing* as the equivalently inclusive "asterism."

Shen, when used as a noun, will normally be translated as "god" or "divinity"; or, when used as an adjective, as "divine."[38] *Xian* is translated as "immortal." Departures from these usages are indicated in parentheses in the translation.

I translate *di* as "thearch"—a felicitous word first used, I believe, by Edward Schafer—when it refers to specific personage such as the Supreme Thearch (*shangdi*) or the Yellow Thearch (*huangdi*), or to idealized rulers ("emperors"). Thearch captures well the character of ancient Chinese thought wherein divinities might be (simultaneously and without internal contradiction) high gods, mythical/divine rulers, or deified royal ancestors: beings of enormous import, straddling the numinous and the mundane. When *di* is used in a general or collective sense, I translate it as "god" (e.g., in *zhongdi,* "the many gods"); I also translate *di* as god when the implication of divinity seems to me particularly clear, as in the "gods" of the five planets in 3.VI below.

Chinese color words are notoriously difficult to translate; one can at best approximate. *Qing,* which can embrace a spectrum from grey through blue to green, I usually translate as "bluegreen"; *cang,* the brilliant blue of the dome of the sky, I translate as "azure."[39] *Chi,* the emblematic color of the south in Han cosmology, I usually translate as "vermilion," but occasionally as "red" when it seems to be used as a more generic color term.

The word *chen* occurs frequently as a technical term in *Huainanzi* 3, meaning an arc equal to 1/12 of the celestial circle, each such arc conventionally denoted by the name

of one of the twelve Earthly Branches. Following the suggestion of Edward Schafer,[40] I translate *chen* as "chronogram."

The word *shi* denotes a device that came into widespread use in the Former Han for modeling or predicting significant configurations of certain astronomical bodies. It plays a very significant role in the astrology of *Huainanzi* 3. Various translations for *shi* have been proposed: "diviner's board" (Needham), "cosmic board" (Harper), "cosmic model" (Cullen).[41] Cosmic model is accurate, but risks ambiguity because of its plain-English character—that is, it is hard to distinguish between "a cosmic model" in general, and *the* cosmic model, the *shi.* A more specific technical term is needed. I prefer to follow Stephen Field's lead[42] and translate *shi* as "cosmograph"; this term, which applies to the *shi* and nothing else, also accurately depicts the device's function, which was to give a representation of the state of the heavens at any given time.

Other Untranslated and Untranslatable Terms

I have tried as much as possible to translate place names and the names of non-Chinese tribes, as well as such terms as the names of the twenty-eight lunar lodges and the twelve pitch pipes, since most such names obviously were intended to be meaningful. The names of the notes of the Chinese pentatonic scale, however, are so familiar (at least to readers of early Chinese materials) that I have left them untranslated, though they too were semantically meaningful in their time and place; were not convention so firmly against it, it would be tempting to translate *gong* as "ruler," *shang* as "minister," *zhi* as "intendant," *yu* as "wings," and *jue* as "horn."

Other exceptions to the rule that all nouns should be translated are well-known Chinese place names (Mt. Tai, the Yangtse River), and place names that do not yield (to me, at least) a plausible meaning (and which might be, in some cases, Chinese attempts to transliterate foreign words, e.g., the Nalü People in 4.XVI.20). In addition, I have left untranslated a few names of magical or extraordinary plants, animals, and things, such as the Chengruo plant in 4.XVIII.32, as well as the (almost certainly originally non-Chinese) names of the twelve years of the Jovian Cycle, either because I have not been able to find a translation that would not be speculative or bizarre, or because an English term that might seem equivalent would nevertheless carry misleading connotations.

Days and Dates

Like all classical Chinese texts, the *Huainanzi* denotes both days and years by the binary characters of the *ganzhi* sexagenary cycle. Premodern Chinese readers would have had as part of their mental equipment the ability to assign any such binary designation

to its proper place in the cycle without having to think about it. Most readers of English do not have that ability; accordingly, I have given *ganzhi* dates in their Chinese form and, where appropriate, have also given the equivalent ordinal numbers in square brackets, for example, "*gengzi* [#37]." For the reader's convenience, the full *ganzhi* cycle is listed in Appendix B.

Months in this text are, of course, lunar months (from new moon to new moon), and are designated by the names of the twelve *zhi*, or Earthly Branches. The Chinese, from earliest times, regarded the winter solstice as the beginning of the solar year; the first "astronomical" month began with the new moon that immediately preceded the winter solstice, and was designated *zi* in the Earthly Branch cycle. The Chinese civil year did not always, or even usually, begin with the first "astronomical" month, however.[43] Historically, the commonest scheme was for the civil year to follow the so-called Xia sequence of the *Xia xiaozheng* ("Lesser Annuary of the Xia," the oldest extant calendar in China, now invariably published as an appendix to the *Da Dai liji*); whether that sequence had anything to do with the actual Xia Dynasty is subject to debate. In the "Xia sequence," the year began with the third "astronomical" month (the month designated *yin* in the duodenary Earthly Branch cycle), which began on the second new moon after the winter solstice. The *Huainanzi* invariably adheres to the Xia sequence; accordingly, I translate the Chinese phrase meaning "the first month" as "the first civil month."

In fact, however, the civil calendar of the Han did not follow the Xia sequence until the Taichu calendar reform of 104 B.C.E. Prior to that, the Han adhered to the Qin calendar, which began the civil year with the twelfth "astronomical" month, that is, the month designated *hai*, the last month before the winter solstice. Thus my translation "civil month" must be understood as referring to the Xia sequence rather than to the imperial Han calendar at the time the *Huainanzi* was written. Initially I considered using the translation "first [Xia] month" instead of "first civil month," but decided against doing so in order to emphasize the point that Liu An's state of Huainan, at least on the evidence of the *Huainanzi*, followed a different civil calendar from that of the Han imperial state.

The disparity between the *Huainanzi* month count and the legal civil calendar of the Han at the time may stem from any of several causes, or a combination of them. First, the Xia calendar was widely used in pre-Han times; it was employed, for example, in the "Shiji" chapters of *Lüshi chunqiu*, from which other versions of the "Yueling," including that in *Huainanzi* 5, are derived, and before that in the "Lesser Annuary of Xia." Because the *Huainanzi* is heavily derived from such texts of Zhou date (including perhaps some now-lost texts, especially texts in circulation in the old pre-Han state of Chu, of which the Kingdom of Huainan was once a part), it may have seemed to the *Huainanzi*'s compilers too troublesome, or too contrary to tradition, to

convert the month count of those texts to the current Han civil month count. Second, the *Huainanzi* is a prescriptive text, a handbook for rulers in the Huang-Lao Daoist tradition; it is possible that its compilers had an ideological commitment to an ideal Huang-Lao Daoist state in which the Xia sequence calendar would prevail. Third, the use of the Xia sequence might have been an overt political act on Liu An's part; certainly the publication of a text the calendrical portions of which defied the Han civil calendar seems to have contributed to the political difficulties that led to Liu An's demise in 122 B.C.E. I believe Liu An's use of the Xia sequence indicates that he thought the Xia sequence should have governed the civil calendar, and so I translate accordingly.

Diagrams

In premodern China, maps and diagrams (such as diagrams of the celestial circle) were consistently oriented with south at the top. This orientation tends to be confusing and counterintuitive for most modern readers. Accordingly, all diagrams in this book are displayed in Western orientation, with north at the top.