

17 • Cosmography in Southeast Asia

JOSEPH E. SCHWARTZBERG

INTRODUCTION

The diversity of cosmographic conceptions encountered in Southeast Asia reflects the ethnic and religious diversity of the region's inhabitants. Alongside Southeast Asia's principal religious traditions of Buddhism and Islam and its locally dominant Christian and Hindu traditions, one encounters a bewildering variety of animistic beliefs. Each tradition, of course, has its own way of envisaging the cosmos, and some have given graphic expression to their cosmographic views in strikingly distinctive forms, while others seemingly have not. Of the myriad tribal and other ethnic groups who inhabit Southeast Asia, a great many have received only scant scholarly attention. Even so, the corpus of anthropological and related literature that might provide visual evidence of the indigenous cosmographies of the region is exceedingly large, and we have only scratched its surface. Among the many groups who have embraced Islam and Christianity, I have come across very little visual evidence of specifically Christian or Islamic components in the composite cosmographies that have sometimes emerged as a result of such conversions. For the Buddhist and Hindu population, however, and for certain animistic groups in Indonesia, we have discovered numerous interesting examples of ways of portraying the cosmos or specific aspects of it or of projecting ideas about the cosmos onto the terrestrial plane. These form the substance of this chapter.

I begin with tribal cosmographies, with particular reference to mortuary cults, divination, astronomy, and horology. I then take up the cosmographies of Buddhism, especially in its dominant Hinayana (Theravada) form, and the related cosmographies of Hinduism. (Separating the two in Southeast Asia is not always possible.) In dealing with those two great traditions, both ultimately of Indian origin, I first consider the underlying cosmographic conceptions of the two faiths. I then proceed to an exposition of the ways the universe as a whole and specific portions of it have actually been portrayed, in two and three dimensions. Next I consider astronomy and graphic examples of aids to geomancy and divination. Finally, I note the relation of cosmographic conceptions to the ordering of earthly human constructions, architectural,

ecclesiastical, and political. Although I do not suggest that my presentation provides a representative, much less a complete, exposition of the wealth of surviving graphic cosmographies, I do dare to hope it conveys a sense of the remarkable range of relevant artifacts and suggests lines along which future attempts might be made to obtain a more comprehensive view of the subject.¹

The distinction between tribal and nontribal societies in Southeast Asia is often far from clear. In general, scholars tend to consider as tribal all those groups whose religious beliefs might be described as animistic, as well as other groups who have only recently converted to one of the major world faiths: groups whose environments are only weakly linked with those of the dominant ethnic groups of the states they inhabit and who speak languages different from that of the politically dominant majority; groups whose populations are small (sometimes only in the hundreds and but rarely in excess of a million); and groups who depend mainly on shifting cultivation for their livelihood. But many tribal groups showing some of these attributes do not exhibit others, especially with respect to religion. A clear majority of the large group of Shans in Burma (Myanmar) and Thailand, for example, have long since become Buddhists, while most of the Minangkabaus of Sumatra, also a rather numerous people, are said to have become devout Muslims. Conversely, among many regionally differentiated segments of the

1. The only work, so far as I am aware, that tries to survey the many dimensions of cosmogony, cosmology, and cosmography longitudinally over the entire area that concerns us in this chapter is Horace Geoffrey Quaritch Wales, *The Universe around Them: Cosmology and Cosmic Renewal in Indianized South-east Asia* (London: Arthur Probsthain, 1977). This scholarly tour de force seeks to outline the origins and evolution of cosmological concepts among the region's tribal, Hindu, and Buddhist populations from prehistoric times to the modern era and traces many ideas to sources as remote as ancient Sumeria, the shamanic traditions of Siberia, and the prehistoric, megalithic Dong-son culture of the northern Southeast Asian mainland. The implicit lesson of such a study for the historian of cartography is the need to keep in mind that the origins of an idea that is being portrayed and the origins of the graphic or symbolic form through which it is conveyed at a particular period in history, though possibly related, are often two quite separate questions. The gap between the two will often be measured in centuries or even in millennia.

dominant national groups, who may profess the Islamic, Buddhist, or Christian faith, animistic beliefs and practices still form vital components of their worldview and cultural behavior.

Religious syncretism is, in fact, so common in Southeast Asia that only rarely does a people practice one of the great world faiths to the total exclusion of one or more earlier traditions. Moreover, not only have the allegedly "more advanced" groups retained animistic practices, but the clearly tribal groups appear to have borrowed, over the millennia since Indians first penetrated Southeast Asia, many aspects of Hinduism and Buddhism and adapted them in accordance with their own cultural proclivities. In time these groups reacted similarly to the intrusion of other alien faiths. This has unquestionably affected the cosmological systems of many tribal and quasi-tribal groups and shaped their mental maps of the cosmos, if not also the physical expressions of those mental maps. It follows that any search for the Ur-cosmography of a particular Southeast Asian people, even among groups who appear to be relatively isolated and primitive, will probably be in vain. Whatever tangible artifacts survive in the humid tropical conditions that characterize the region are likely to incorporate diverse cultural influences.

In reviewing creation myths of ostensibly Muslim villagers from what is now peninsular Malaysia, for example, Skeat refers to the following: the "Mountains of Caucasus . . . called . . . Bukit Kof," forming a wall to the earth protecting it from "excessive winds and beasts of prey"; the "people called Yajuj and Majuj (Gog and Magog)," who are boring through the wall and who, when successful, will bring an end to all things; "a great central mountain called Mahameru (Saguntang Maha Biru)." From another account, found in a Malay charm-book, Skeat describes "the Ka'bah, which is the Navel of the Earth, whose growth is comparable to a Tree, . . . whose branches are four in number, and . . . extend unto the north, south, east, and west, where they are called the Four Corners of the World"; Gabriel, whom God asks to kill an anthropomorphic serpent, Sakatimuna, very probably "a reminiscence of the Indian 'Naga'"; the "Earth of the width of a tray" and "Heaven of the width of an umbrella." There is also reference to the earth's being "carried by a colossal buffalo upon the tip of its horns" and numerous other phenomena. The origins of these ideas can be traced to ancient Greek, Christian, Arabic, Iranian, Hindu-Buddhist, and Indo-Muslim sources.² Although I am not aware of any visual cosmographies from the Malay world in which these elements are evident, I would not be surprised to find them, given the richness of the plastic and graphic arts that characterize so much of the region and the lack of any strong taboo—despite the area's allegiance to Islam—with

respect to the iconic representation of people, animals, and mythological beings.

TRIBAL COSMOGRAPHIES

COSMOGRAPHIES IN MORTUARY CULTS

Pan-Indonesian concepts that are incorporated in many tribal cosmologies are those based on binary oppositions: life/death, humans/animals, village/forest, metal/cloth, male/female, warfare/farming, and so forth.³ Also common are the ideas of the opposition of an upper world and a lower world, with earth between the two and the individual tribal territory, village, or house as a micro-cosmic analogue of the macrocosm.⁴ Many animistic societies posit not only a multitude of spirits investing animate and inanimate objects in the world of humans, but also special spirit worlds separate from our own yet interacting with it. These spirit worlds, over various parts of Indonesia, include realms, which may be either upper worlds or lower worlds or both, to which the dead are ritually transported after appropriate intervals following their initial interment. Among several interior and coastal tribes on the island of Borneo (or Kalimantan, as Indonesians prefer to call it) such mortuary cults are associated with an elaborate cultural complex incorporating all of the attributes of tribal cosmology noted earlier. Constituting an important part of that complex are the elaborate secondary burial ceremonies during a season specially set aside for the purpose.

The largest and best-studied Bornean tribe associated with mortuary cults is the Ngaju Dayaks, who inhabit the regions along the Barito, Kapuas, and Kahayan rivers in the southern part of the island. Their cult has given rise to some of the most striking maps to emerge from the Malay world. Some of these are illustrated and discussed in a classic study that formed the doctoral thesis of a Swiss Protestant missionary, Hans Schärer, who lived among the Ngaju Dayaks and studied their religion from 1932 to 1939 and again from 1946 until his death in

2. Walter William Skeat, *Malay Magic: Being an Introduction to the Folklore and Popular Religion of the Malay Peninsula* (1900; London: Macmillan, 1960), 1–5. Most of the referents will be obvious to readers who have read volume 2, book 1, of this history. The idea of the world's being held up on the horns of a buffalo, for example, is clearly a variant of the Indo-Islamic view that the earth was supported on the horns of a bull, which in turn has an origin in Iran. See Joseph E. Schwartzberg, "Cosmographical Mapping," in *The History of Cartography*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987–), vol. 2.1 (1992), 332–87, esp. 378.

3. Susan Rodgers, "Batak Religion," in *The Encyclopedia of Religion*, 16 vols., ed. Mircea Eliade (New York: Macmillan, 1987), 2:81–83, esp. 82.

4. Horace Geoffrey Quaritch Wales, "The Cosmological Aspect of Indonesian Religion," *Journal of the Royal Asiatic Society of Great Britain and Ireland*, 1959, 100–139.

1947.⁵ Schärer's study includes four elaborate cosmographic maps, three of the Upperworld and one of the Underworld, together with more limited views of particular portions of the cosmos (e.g., a village of the dead) and of associated objects (e.g., the "soul boat" used to transport the dead to the lower world, other boats used by the supreme deities to make their voyage to earth, the "Tree of Life," an individual house within the Upperworld). Such drawings, says Schärer, were of great importance ritually. They were made by Ngaju Dayak priests "in the exercise of their functions" and laid "before them during the recitation of the chants in which the journey to these regions [the Upperworld and the Underworld] is described."⁶ Such maps provide priests with a set of visual mnemonics as they chant, often over the course of several nights, the sacred hymns that will guide the spirits of dead males, accompanied by the *sangiang* (a class of demigods), to their final resting places.⁷ Males go to the Upperworld and females to the Underworld. All the maps are said to "relate to the sacred events of early time, . . . [and] represent that which is handed down in the songs and priestly chants as divine revelation."⁸ The examples Schärer referred to, however, were all allegedly made within fifty years before the publication of his book in 1946. No specific dates are given, and Schärer does not say when the custom of preparing such cosmographies began; but Stöhr advances reasons, based on subsequent writings by Schärer, for believing that all the maps he illustrates were made after the turn of the twentieth century.⁹ In any event it seems clear that, despite their unique appearance, they were influenced to some degree by contacts with various outsiders, including the Dutch, who first penetrated the territory of the Ngaju Dayaks in 1836. Schärer does not specify the medium or the size of the maps, but those he illustrates were apparently drawn on paper with pencils and crayons of Western provenance. On some of the maps made known by him and others there is considerable text, much of it in Ngaju Dayak (which was not a written language before the advent of European missionaries), in cursive roman script. Since other maps have no text at all, one may assume that the text was inserted either by missionaries or by Dayak informants at their behest to explicate the extraordinarily detailed map content. Two of the four maps Schärer illustrates, both annotated, are attributed to "Joh. Salilah," quite likely a convert to Christianity; the others, not annotated, are simply said to be by priests.¹⁰

A number of additional cosmographies are known to exist. Schärer himself refers to a renowned Ngaju Dayak priest and teacher, Massaid Singkoh, who lived on the middle Kahayan River and who, about 1900, first used maps to instruct his students. "These originally very simple drawings were later copied and amplified, and we now

own numerous such works, some of which display much artistic feeling."¹¹ It is not known where these numerous examples are to be found at present, but a likely repository is the Baseler Mission in Basel, Switzerland, with which Schärer was affiliated until his death. I briefly studied one undated map of the Upperworld in a display on the Ngaju Dayak mortuary cult at the Völkerkundemuseum in Basel. Also in Switzerland, at the Völkerkundemuseum of the University of Zurich, is another undated map of the Upperworld. Of all the maps known, this one (to be discussed below) has been most thoroughly studied.¹²

At the Rautenstrauch-Joest-Museum für Völkerkunde in Cologne are two large cosmographic maps. These were bequeathed to the museum by the family of the German missionary Philipp Zimmermann, who worked in Borneo, mainly among the Ngaju Dayaks, from 1903 to 1914 and from 1920 to 1928.¹³ The works were presumably

5. Hans Schärer, *Die Gottesidee der Ngaju Dajak in Süd-Borneo* (Leiden: E. J. Brill, 1946). That work has been translated into English as *Ngaju Religion: The Conception of God among a South Borneo People*, trans. Rodney Needham (The Hague: Martinus Nijhoff, 1963). A more succinct discussion by Schärer appears in "Die Vorstellungen der Ober- und Unterwelt bei den Ngaju Dajak von Süd-Borneo," *Cultureel Indië* 4 (1942): 73–81. Yet another work by Schärer is the posthumously published *Der Totenkult der Ngaju Dajak in Süd-Borneo*, 2 vols., *Verhandelingen van het Koninklijk Instituut voor Taal-, Land- en Volkenkunde*, vol. 51, pts. 1–2 (The Hague: Martinus Nijhoff, 1966). Other discussions of the Ngaju Dayak mortuary cult include Philipp Zimmermann, "Studien zur Religion der Ngaju-Dajak in Südborneo," *Ethnologica*, n.s., 4 (1968): 314–93 (published posthumously from a 1911 manuscript); two works by Waldemar Stöhr, "Über einige Kultzeichnungen der Ngaju-Dajak," *Ethnologica*, n.s., 4 (1968): 394–419 and 12 pls. (a commentary on the cosmographical drawings collected by Zimmermann), and "Das Totenritual der Dajak," *Ethnologica*, n.s., 1 (1959): 1–245 (a comparative analysis of the mortuary cults among all the Bornean tribes in which such cults are found); Verena Münzer, *Tod, Seelenreise und Jenseits bei den Ngaju Dajak in Kalimantan*, *Lizentiatsarbeit*, Universität Zürich, Philosophische Fakultät I, Abt.: Ethnologie (Zurich: Published by the author, 1976); and Wales, "Cosmological Aspect" (note 4). Works relating to mortuary cults among other Bornean tribes include Charles Hose and William McDougall, *The Pagan Tribes of Borneo: A Description of Their Physical, Moral and Intellectual Condition with Some Discussion of Their Ethnic Relations*, 2 vols. (London: Macmillan, 1912); and Peter Metcalf, *A Borneo Journey into Death: Berawan Eschatology from Its Rituals* (Philadelphia: University of Pennsylvania Press, 1982).

6. Schärer, *Ngaju Religion*, 11 (note 5).

7. Schärer, *Der Totenkult*, 441–42 (note 5).

8. Schärer, *Ngaju Religion*, 11 (note 5).

9. Stöhr, "Über einige Kultzeichnungen," 415 (note 5).

10. Schärer, *Ngaju Religion*, pls. 3 (Upperworld) and 4 (Underworld) (note 5).

11. Schärer, *Der Totenkult*, 441 (note 5). The date for Massaid Singkoh comes from Münzer, *Tod, Seelenreise und Jenseits*, 105 (note 5).

12. The Basel Völkerkundemuseum map is approximately 108 by 75 centimeters; no catalog number was noted. The map at the University of Zurich (catalog no. 15650) measures 98 by 43 centimeters.

13. Stöhr's foreword to Zimmermann, "Studien zur Religion der



FIG. 17.1. NGAJU DAYAK MAP OF THE UPPERWORLD. From southern Kalimantan (Borneo), early twentieth century (ca. 1905); black ink and wax crayon on European paper. The map bears the notation *Djalan liau* (Route of the souls of the dead). At its base one sees the earth, or Middleworld, which the Ngaju Dayaks believe is carried on the back of a *naga* (world snake). Rising immediately above the earth is the thirty-one-layered firmament traversed by a route through foggy seas. Beyond lie the three lowest seas, whose surrounding territory, including that along the rivers flowing into them, is associated with six malevolent *rajas* who bring misfortune to the earth. Between this area and the uppermost part of the map lies a rather complicated assemblage of features within the domain inhabited by the *sangiangs* and other demigods. Here one finds rivers by which the soul ship must pass, a Route of the Rajas (the long vertical line toward the left margin), enchanted mountains, restorative mountains, a whirlpool of fire (*upper left*), and so forth. Near the top of the map is a rectangular sea into which two mighty streams flow and out of which flows a canal providing the only link to the seas below. Above these features lies the domain of Mahatala, whose magnificent castle is on a high hill in the upper left, as well as the houses of other gods among Trees of Life and, near the castle, an ivory coconut palm. Size of the original: 138 × 69.5 cm. Courtesy of the Rautenstrauch-Joest-Museum für Völkerkunde, Cologne (cat. no. 51 288).

obtained by Zimmermann during the earlier of his two sojourns in Borneo. Stöhr infers, on stylistic grounds, that the maps predate those illustrated by Schärer, but beyond that he makes no attempt to date them.¹⁴

Also at the Rautenstrauch-Joest-Museum is a photograph of a very detailed but rather tattered map of the Upperworld. The provenance of the map is uncertain. The photograph has been in the museum since about 1967, but the present location of the map is unknown, and no information is now available as to how it was acquired. It is noteworthy on several counts: first, it appears to be on indigenous bark cloth rather than Euro-

pean paper; second, it bears an abundance of text in what appears to be the Arabic script, in which the Malay lingua franca used to be written (this is present both on the map proper and on two attached side flaps, which may have been used to wrap the map after it was folded); third, a number of its features are stylistically distinctive; and finally, it includes abundant depiction of anthropomorphic figures, presumably to represent deities rather than animal totems, which are the virtually universal norm on other Dayak maps.

Although they are arguably less aesthetically pleasing and less interesting, as well as simpler, than Schärer's maps, I have chosen to illustrate the aforementioned pair (figs. 17.1 and 17.2). Figure 17.1, depicting the Upperworld, shows the domain associated with the supreme deity, Mahatala, who is totemically represented by a bird, the hornbill. The following précis by Schärer conveys the flavor of Ngaju Dayak thought in respect to this portion of the cosmos, even though some particulars of what is described do not accord fully with what is indicated on the map caption:

Mahatala lives on the primeval mountain in the Upperworld, which is raised above the world inhabited by

Ngadju-Dajak," 314; and Stöhr, "Über einige Kultzeichnungen," 415 (note 5).

14. Stöhr, "Über einige Kultzeichnungen," 414–15 (note 5). The similarity of the Zurich example to the one in figure 17.1 suggests that it too predates those of Schärer.

FIG. 17.2. NGAJU DAYAK MAP OF THE UNDERWORLD. Provenance and date are the same as for figure 17.1; black ink, watercolor, and wax crayon on European paper. The textual glosses on the map, largely illegible, are thought to have been written by the German missionary Philipp Zimmermann. In contrast to figure 17.1, this map is to be read from the top down. As in figure 17.1, earth, or the Middeworld, provides the place of departure. It is represented by a seaside village borne up by world snakes. The sea itself is enclosed by the head of a snake, signifying the identity of the two. Just below the entrance to the Underworld proper a giant crab stands watch. Since much of the writing left and right of the downward canal is illegible, its meaning cannot be discerned. Farther down are seven gates of successively harder and more precious materials, beginning with fallen leaves and ending with stone. Below these lies what could be the primeval sea in the shadow of the water snake, within which swim many distinctive water creatures, dependents of Jata. Seven more gates, successively of iron, yellow copper, red copper, tin, silver, gold, and diamonds, lead to a sea of golden waves surrounded by a village, the proper realm of Jata. Size of the original: 115 × 36 cm. Courtesy of the Rautenstrauch-Joest-Museum für Völkerkunde, Cologne (cat. no. 51 989).

mankind. Its entrance, in the shape of a wide river, is reached by ascending through forty-two layers of cloud, each with its own name. The Upperworld is a faithful image of this world, but everything there is richer and more beautiful. On the many rivers and lakes there live the *sangiang*, descendants of two of the three brothers of the first human couple. These *sangiang* come to the aid of the third brother, who was left below on earth, on the occasion of all important religious ceremonies. . . . At the headwaters of the river of the Upperworld live the higher spirits, and on the primeval mountain, from which all rivers originate, Mahatala is enthroned.¹⁵

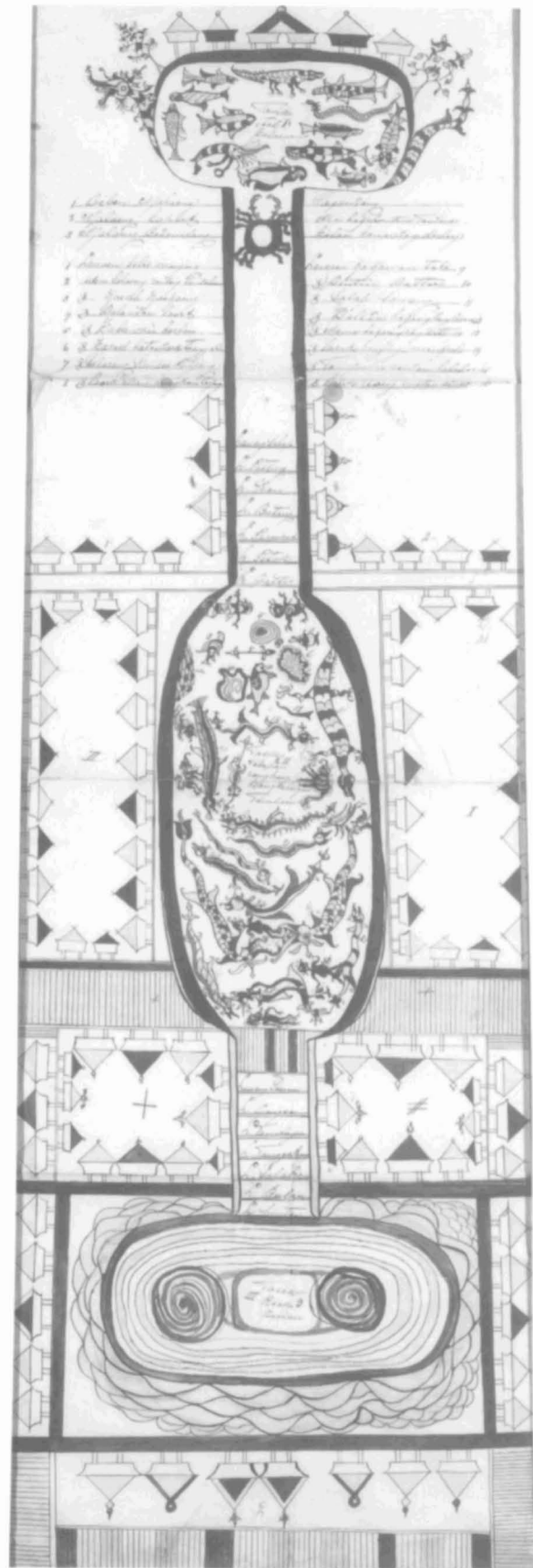
A more explicit, though far from complete, description based on Stöhr appears in the legend of figure 17.1.¹⁶

Of the Underworld, presided over by the goddess Jata, whose totem is a snake, Schärer has this to say:

Jata lives in the Underworld (or primeval waters) lying beneath the world of men. It is approached in the vicinity of a village where a tributary joins the main stream, where the water is exceptionally deep. . . . By this way one enters the extensive villages under the

15. Schärer, *Ngaju Religion*, 16 (note 5). There is an unexplained disagreement between the “forty-two layers of cloud” in this description and the thirty-one-layered firmament shown in figure 17.1. The latter view could have been derived from some Hinayana Buddhist source region, since the cosmos as conceived by Hinayana Buddhism comprises just thirty-one stratified realms (discussed below in this chapter). In either case the striving for exactitude runs counter to what one might stereotypically expect of a “primitive” people. In fact, the elaborateness of the entire mortuary culture complex rivals the rituals of virtually any of the world’s major religions.

16. Stöhr, “Über einige Kultzeichnungen,” 415–16 (note 5).



river where the subjects of Jata live and also Jata herself. The subjects of Jata are crocodiles. . . .

Jata's village lies on the river of the Underworld called Basuhun Bulau, Saramai Rabia, i.e. the river of heaped-up gold, of washed-up gold dust.¹⁷

For a more complete picture, we must turn again to Stöhr, whose description provides the basis for the legend of figure 17.2.¹⁸ In considering both figures, bear in mind that we are essentially analyzing their visual content, which, to the uninitiated, does not do justice to their underlying meaning. Although the latter merits deeper analysis, the issue is too complex to be adequately treated within this brief survey.

The most complete content analysis by far of any Ngaju Dayak cosmography is that provided by Münzer for the abundantly annotated map of the Upperworld in Zurich.¹⁹ Münzer treats the map in six sections, providing a photograph for each to bring out the details. She discusses these under eighty-two numbered subheads, each keyed by number to the map. The actual number of features indicated is much larger, however. For example, rivers alone number 160. Despite her prodigious efforts, Münzer admits that many of her translations and interpretations of glosses on the map are conjectural. Of particular interest in her discussion are the various ways the map shows the Tree of Life, a very important symbol throughout much of Indonesia, which may be represented by a more or less naturalistic tree, by an umbrella, by a spear, or by a golden head covering, adorned with precious stones, for the god Mahatala.²⁰ Also noteworthy, and commented on by several authors, are the scores of flags that fly over many features of the map. Many of these resemble the Dutch tricolor, though other colors are used as well. Schärer warns us against assuming, as one writer did, that this was a Dayak acknowledgment of being under the protection of the Dutch. He notes that the Dayaks had pennants before the establishment of Dutch rule in Borneo and that their colors were associated with specific deities who were only aspects of the total godhead. Thus red, together with yellow or gold, probably signified the Underworld and Jata; white the Upperworld and Mahatala; and black the evil aspects of the godhead as a whole. Each village had a flag whose colors represented its own associated deity, and the flag and flagstaff together symbolized the Tree of Life.²¹

There is a great deal more to Ngaju Dayak symbolism, whether on maps or in other forms of sacred art. Much of it relates to the opposed male Upperworld and female Underworld principles and to their ritual union in numerous contexts on earth and in transporting souls to their final resting place. The soul boat, for example, has a prow shaped like the head of the hornbill representing Mahatala and a stern like the snake that signifies Jata.

Dayak belief systems were, it seems, remarkably plastic. Hence places were found in their maps of the Upperworld for separate rivers for Hindus, Arabs, Chinese, and Europeans and other foreigners as well as for the tribal villages of other strangers they came in contact with.²² The rapid evolution of styles over the past century, very likely accelerated by access to new graphic tools and media, shows that the Dayak propensity for innovation is strong. Can we then hope to uncover some cosmography in which European influence has little or no trace?

Three undoubtedly cosmographic artifacts, foreshadowing those I have just discussed, are decorated bamboo containers on which are portrayed the Upperworld, the Underworld, and, between them, the earth. Two of these belong to the family of the missionary, Philipp Zimmermann. Of those, one is of Ngaju Dayak provenance (fig. 17.3) and the other from the nearby and related Ot Danum tribe. The third container, held in Leiden, bears so striking a similarity to that in figure 17.3 that Stöhr supposes both may have been made by the same individual, even though that the Leiden example was acquired in 1893 (how soon after its completion is not known) whereas that in figure 17.3, according to Zimmermann's notes, was made by a talented artist whom he obviously came to know between the time of his arrival in Borneo and 1911 (when the notes were written) and who died shortly after completing the work.²³ A full interpretation

17. Schärer, *Ngaju Religion*, 16–17 (note 5).

18. Stöhr, "Über einige Kultzeichnungen," 417–18 (note 5).

19. Münzer, *Tod, Seelenreise und Jenseits*, 105–27, with six photographic plates (note 5). The entire map is shown in an exhibition catalog by Elisabeth Biasio and Verena Münzer, *Übergänge im menschlichen Leben: Geburt, Initiation, Hochzeit und Tod in aussereuropäischen Gesellschaften* (Zurich: Völkerkundemuseum der Universität Zürich, 1980), fig. 134, with note on p. 185.

20. The issue of the association between a cosmic mountain as *axis mundi* and a Tree of Life serving a similar purpose has been much discussed and debated by cultural historians. Perhaps the most vigorous exponent of the primacy of the latter is Frederick Bosch, whose concern is with areas touched by Indian civilization. He sees the Meru-centered macrocosm as—at least from a Western perspective—"mechanically governed and built up from inanimate material. In contrast with this," he continues, "I take the view that this macrocosmic system in its turn is rooted in an even older and deeper soil; that it is the expression of a system not built up of lifeless matter but inspired within by Life itself. It is the organism of the Cosmic Tree of Life which set the example to all creation and left its mark on the conception of the greatest and most sublime of all things created, the macrocosmos." Frederick David Kan Bosch, *The Golden Germ: An Introduction to Indian Symbolism* (The Hague: Mouton, 1960), 231; originally published in Dutch as *De gouden kiem: Inleiding in de Indische symboliek* (Amsterdam: Elsevier, 1948). The point is made early in this chapter because, as the reader will observe, sacred trees and sacred mountains are so frequently conjoined in Southeast Asian cosmographies.

21. Schärer, *Ngaju Religion*, 25 (note 5).

22. Schärer, *Ngaju Religion*, 12–15 (note 5).

23. Stöhr, "Über einige Kultzeichnungen," 394–95 (note 5); a discussion of all three works appears on 394–99. Only brief remarks relate



FIG. 17.3. COSMOGRAPHIC ENGRAVING ON A BORNEAN BAMBOO CONTAINER. Ngaju Dayak, ca. 1905. The three registers depict the Upperworld, Middleworld (earth), and Underworld from top to bottom, not counting the purely decorative lower border. The creatures inhabiting the Upperworld and Underworld are largely known from the chants that accompany the mortuary ceremonies that form a prominent part of the religion of most Bornean peoples. Not all, however, can be identified here. Among the objects depicted are Trees of Life, the hornbill (the bird totem of the supreme deity, Mahatala),

the spirit ship that transports the dead from earth to the Upperworld, and the *sangiangs* (demigods who guide the souls of the dead on their cosmic journey). The activities taking place on earth relate to the preparations for a feast that will inaugurate the days of ceremonial activity during which the sacred mortuary rites will be performed.

Size of the original: height 27.5 cm; computed circumference 15.1 cm. By permission of the Rautenstrauch-Joest-Museum für Volkerkunde, Cologne.

can be offered for none of the works, but all three show the major divisions of the tripartite Dayak cosmos in relation to one another and represent phenomena associated with the mortuary cult. Both the container in figure 17.3 and the Leiden container are incised, whereas the scenes on the Ot Danum container are executed in bas-relief. The tools and processes used in making the three objects are not indicated. The two containers illustrated by Stöhr were derived from Zimmermann's own rolled-out impressions of the originals. They contain many of the same elements, from an iconographic perspective, but are stylistically rather different, the Ot Danum work being considerably less detailed and less meticulously executed than the Ngaju Dayak piece.

The meanings of many of the elements portrayed have not been ascertained, but most are clearly appropriate for the portions of the cosmos where they are placed. There are, however, a few elements in the Middleworld of the figure 17.3 cosmos that are shown—more properly in Stöhr's view—in the Upperworld in the Leiden example. Stöhr suggests the reason might be that in the former work the artist ran out of space. One such example is the palm tree surmounted by a lance (one of the many forms of the Tree of Life) on which is perched a huge fabulous bird (as big as a house in the local mythology) near the left margin of the middle register. Immediately to the right of this tree is a small structure identified as an ossuary. Farther to the right, a house on stilts extends from the bottom of the middle register into the register signifying the Upperworld. The proffered explanation in this case—as in many Indonesian cultures—is that the house in itself represents a microcosm uniting all three worlds. The attic thus partakes of the Upperworld even when the house itself is on the earth. Hanging in the attic are several vessels of the type Dayaks use to store sacred objects. In the right portion of the attic one sees an act of “sacral prostitution,” a rite that is supposed to take place on the night before the commencement of the chanting that recites the journey of dead souls to the afterworld. Elsewhere in the middle register one sees other preparations for a ritual feast. Some of the figures in the picture are recognizable as priests and priestesses. Among the more cryptic elements is the tree near the right margin (seen again near the left margin because of the overlap in the illustration) that seems to be sprouting rifles and other weapons. This is among the very few evidences of European influence in the work.

In the Upperworld one is struck by the seemingly mundane nature of most of the elements portrayed. The explanation is that most of what we desire on earth is also to be found in the Upperworld, but in larger and more splendid form. Moreover, although hunting and fishing—presumably pleasurable activities—still take place there, the pursuit of the quarry is easier, which may be

why one of the figures, at the far left (and again at the far right), is armed with a rifle. Although many of the animals and birds depicted can be identified, at least generically, others are fabulous. The more or less anthropomorphic figures are *sangiangs*, the demigods who assist in transporting spirits from earth to the Upperworld. Prominent elements of the upper register are the two giant Trees of Life, with their lower, fruit-bearing limbs intertwined; the large hornbill, the symbol of the supreme deity, Mahatala, perched between the lower and upper limbs of the tree on the right; and the hornbill-prowed spirit boat that transports the dead, seen in the triangle on the left.

The lowest register in figure 17.3 (not counting the purely decorative border), representing the Underworld, is in some ways the hardest to interpret. Its aquatic denizens are, of course, appropriate for the domain of the goddess Jata, whose own form is that of a water snake. That some of them are swimming into a weirlike fish trap is tentatively explained in that fish form the principal food for those who live in the Upperworld, and they are here offering themselves as such for a specific ceremonial occasion.

Stöhr illustrates one additional Ngaju Dayak bamboo container from Zimmermann's collection that depicts a scene of strife between *sangiangs* and other mythological figures.²⁴ The style resembles that in figure 17.3. Although the work does contain some cosmological elements, the arrangement is less orderly than in the work just discussed, and no case could be made for calling it a map.

Were it not for the scholarship of individuals such as Schärer, Zimmermann, and Stöhr, one might reasonably infer that maps as detailed as those of the Ngaju Dayaks must have evolved over a rather long period. Yet the contrary seems to be true. That does not mean, however, that cartography was alien to Borneo before the advent of Europeans. In what remains of my discussion of that region, I shall present evidence suggesting that mapping probably did form a part of the tribal tradition and that the thinking of Dayaks incorporated a strong element of

to the third container, held by the Rijksmuseum voor Volkenkunde, Leiden (inventory no. 942132), and it is not illustrated by Stöhr. Notices and illustrations are provided in several other works, however: Hendrik Herman Juynboll, *Borneo*, 2 vols. (Leiden: E. J. Brill, 1909–10), 2:376–77; J. A. Loebér, “Merkwaardige kokersversieringen uit de zuider- en oosterafdeeling van Borneo,” *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch-Indie* 65 (1911): 40–52; and B. A. G. Vroklage, “Das Schiff in den Megalithkulturen Südasien und der Südsee,” *Anthropos* 31 (1936): 712–57, esp. fig. 13. The similarity to figure 17.3 is, as Stöhr has indicated, remarkable. The relevant notes, however, are exceedingly meager and do not relate to cosmography.

24. Stöhr, “Über einige Kultzeichnungen,” pl. XX, description on 399 (note 5).

cartographic imagery—that is, that they possessed a keenly developed sense for making mental maps.

Figure 17.4 reproduces a map made by a chief of the Madang tribe of Sarawak, presumably early in the present century, to portray “the land of the shades [dead souls] and of the country traversed by the ghost on its journey thither.” According to Hose and McDougall,

This was done in the way maps of their own country are always made by the Borneans, namely, he laid upon the floor bits of stick and other small objects to represent the principal topographical features and relations. We tested the trustworthiness of his account by asking him to repeat it on a subsequent occasion; when he did so without any noteworthy departure from the former description.²⁵

In considering the Madang map in the larger context of Bornean mortuary cults, Hose and McDougall observe that it conforms to the essential general view that “the land of shades is the basin of a river divided by a mountain ridge from that which the ghost departs.”²⁶ Noteworthy in the first quotation are the use of the word “always” and the absence of any suggestion that the chief’s accomplishment was at all exceptional.

In his discussion of the mortuary practices of the very small (1,600 or so souls) Berawan tribe of Sarawak, Metcalf makes clear the geographic specificity of the chants by which the souls of the dead are guided on their upstream journey toward the land of the dead. The initial part of this journey leads to a high mountain divide, analogous to the mountain range shown in figure 17.4, beyond which the route becomes mythical. The Berawan rite is recitative. The lead singer repeatedly asks the assembled community, “What place is this, you live ones?” to which the community replies with the names of successive sidestreams upriver from the longhouse (“The place of *long* [name] . . . , you dead one”). The *longs* (river mouths or confluences) so named along the route may be as little as a few hundred yards from one another. “So,” says Metcalf,

the soul’s journey continues, verse by verse, river-mouth by river-mouth. . . . For the Berawan, the river provides their principal highway. They use it to get to their farms, and to travel to other villages. Consequently, they know all its twists and turns and side-streams intimately. This journey was one that everyone present could readily imagine. . . .

But this is not merely a journey in space, it is also a journey in time. Every time the site of a previous longhouse is passed that place is referred to . . . just as [it was when it first became known]. Consequently, the song reiterates the migration route of the ancestors of the community.²⁷

One might say, then, that the song gives expression to a

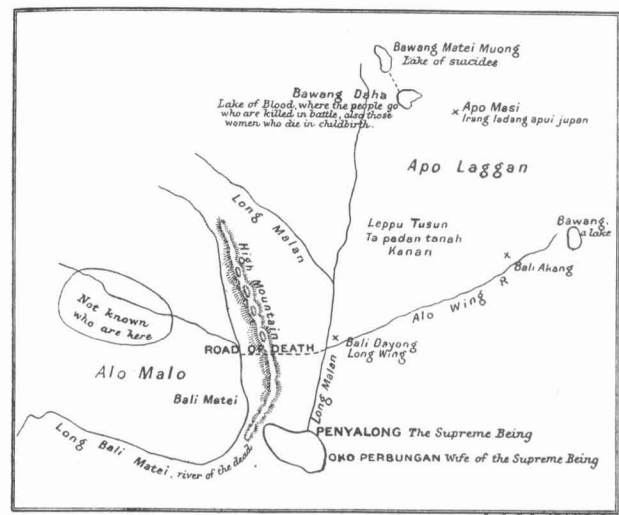


FIG. 17.4. COPY OF EPHEMERAL MADANG MAP OF THE “LAND OF SHADES” AND OF THE WAY THERE. The original of this map was made in the early part of the twentieth century from bits of stick and other small objects and was copied by a colonial administrator at whose behest it was made. Although the details differ notably from those of more or less contemporaneous Ngaju Dayak maps, the basic ideas in this map—that there is a land, or lands, for dead souls and a difficult and perilous way to get there—are in general agreement with the belief systems of tribes throughout Borneo whose religion centers on an elaborate mortuary cult. The administrator for whom the map was made found the work in no way extraordinary.

From Charles Hose and William McDougall, *The Pagan Tribes of Borneo: A Description of Their Physical, Moral and Intellectual Condition with Some Discussion of Their Ethnic Relations*, 2 vols. (London: Macmillan 1912), vol. 2, fig. 78.

consensual mental map of the historical geography of the Berawans, a part of which lies in the real world and another part, more vaguely limned, in the world of myth. One might further hypothesize that the type of ephemeral map the Madang chief created for Hose could have been provided by members of any number of other Bornean tribes among whom chants relating to the journey of the dead form part of the local mortuary cult.

Finally, note that, although the Berawan example indicates a mental map that is essentially linear (i.e., a route map), there are reasons to suppose that most groups share more multidimensional mental maps, as did the Madang chief. In discussing the “sacred land,” that is, the territory collectively occupied by the Ngaju Dayaks, Schäfer makes it clear that they are sensitive to both its mythical and its real-world boundaries. Lying between the Upperworld and the Underworld and resting on the back of

25. Hose and McDougall, *Pagan Tribes*, 2:43–44 (note 5).

26. Hose and McDougall, *Pagan Tribes*, 2:44 (note 5).

27. Metcalf, *Borneo Journey into Death*, 216–17 (note 5).



FIG. 17.5. KAYAN TRIBESMEN OF SARAWAK EXAMINING A PIG'S LIVER FOR PURPOSES OF DIVINATION. Early twentieth century. This practice is (or was) associated with tribal groups throughout Borneo. Among some groups, the various lobes of the ventral side of the liver were believed to represent specific geographic regions or spirit worlds with respect to which knowledge of the future was sought. See also figure 17.6.

From Charles Hose and William McDougall, *The Pagan Tribes of Borneo: A Description of Their Physical, Moral and Intellectual Condition with Some Discussion of Their Ethnic Relations*, 2 vols. (London: Macmillan, 1912), vol. 2, pl. 159.

Jata, the water snake (see fig. 17.2), the sacred land is "bounded by the raised tail and head of the deity of the Underworld."²⁸ This land, the primeval village Batu Nindan Tarong, becomes conflated with the Ngaju Dayaks' own terrestrial home villages, each regarded by its residents as "the largest and most beautiful place in the whole world," where alone "peace, safety, happiness, and the good life are to be found."²⁹ As Ngaju Dayaks move through the space beyond the physically marked boundaries of their sacred land, including the worlds of the Indians, Chinese, Arabs, Europeans, and other friendly Dayak groups, all of whom have been assigned visible places in their divine cosmographies, they exhibit forms

of ritual behavior appropriate to the meanings attached to such places.³⁰

Malay mortuary cults extend as far west as Madagascar, and research on that island may reveal cosmographies related to those discussed for Borneo. For a less distant aboriginal Malay culture, that of the Semelais in the interior of the West Malaysian states of Perak and Pahang, Gianno has been able to draw a rather elaborate map of the Underworld and describe the accompanying beliefs with respect to the means by which the dead reach that domain. Regrettably, however, she does not indicate whether her map is copied from an original Semelai artifact or is a reconstruction based on a wholly oral account.³¹

GRAPHIC AIDS TO DIVINATION

Many methods of divination are practiced in tribal Southeast Asia, where the belief that the future can be foretold is widespread, if not universal. Here I can do no more than point out briefly a few of the methods that embody a cartographic component.

To begin, one need look no further than some of the Bornean tribes considered above in connection with mortuary cults. Among these tribes the markings on the liver of a ritually sacrificed pig are commonly consulted to provide information on the future course of events. Indeed, Hose and McDougall aver that this is a pig's "most important function."³² Figures 17.5 and 17.6 illustrate how various parts of the liver were taken to represent particular regions and peoples in a given divination rite. "The various lobes and lobules are taken to represent the various districts concerned in the question on which light is desired, and according to the strength and intimacy of the connections between these lobes, the people of the districts represented are held to be bound in more or less lasting friendship."³³

There is remarkable similarity between the divination scheme just described and that surmised for the "Bronze Liver of Piacenza," an Etruscan object dating from the third century B.C. (though the features shown on the latter appear to be mainly extraterrestrial), and possibly also that for an even older Chaldean terra-cotta liver in the British Museum.³⁴ Since divination from animal entrails

28. Schärer, *Ngaju Religion*, 60 (note 5).

29. Schärer, *Ngaju Religion*, 61 (note 5).

30. Schärer, *Ngaju Religion*, 64–65 (note 5).

31. Rosemary Gianno, *Semelai Culture and Resin Technology*, Memoirs of the Connecticut Academy of Arts and Sciences, vol. 22 (New Haven, 1990), map 4, with key on p. xi and discussion on 46–48.

32. Hose and McDougall, *Pagan Tribes*, 2:61 (note 5).

33. Hose and McDougall, *Pagan Tribes*, 2:62 (note 5).

34. Both of these are discussed, and the Piacenza liver illustrated, in O. A. W. Dilke, "Maps in the Service of the State: Roman Cartography

is widespread, it would not be surprising to find comparable objects that would help fill the enormous temporal and spatial gap between the ancient Western and modern Bornean examples.

To the southwest of the Kayans, among the Ibans, sometimes referred to as Sea Dayaks, similar practices apply, but here the territories denoted are not all of this earth. The gallbladder is of particular importance in that it divides the liver's left central lobe, representing the territory of men, from the right central and right lateral lobes, associated with the domain of the spirits. At the base of the gallbladder is a ligament that appears to function as a bridge between the lobes at either side, between men and benevolent spirits, thereby providing the latter with access to the afflicted in times of sickness.³⁵

Several types of divination totally different from the one just described are found among the Bataks of northern Sumatra. The Bataks are a congeries of tribal groups whose cosmology in many ways resembles that of the Dayaks, but who have had considerably more contact with nontribal peoples over a very long period and who have developed—as few other tribal groups have done—their own written language and literature. Modes of Batak divination are discussed in considerable detail in a doctoral thesis in theology by Parkin, who notes that similar, though simpler, systems are followed in Javanese and Malay societies. The Batak system, of indisputable Hindu derivation, is both spatial and horological.³⁶ I shall consider only its visual aspect.

Parkin's thesis unfortunately provides no photograph of the designs drawn by Bataks in their divination practices, though it does include some simple black-and-white diagrams of them. The key element in most of these is an eight-armed figure, the *desa na ualu*, showing the eight principal points of the compass. In these diagrams north and south are equated with "upstream" and "downstream," respectively, while east and west signify "rising" and "setting," as with the sun. These directions describe a cosmic field through which move not only people but also the *naga* (snake), "which controls space and time" and "whose movements determine the course of history in the middleworld." (For some groups a dragon, scorpion, or turtle takes the place of the snake.) It is believed that the *naga* "begins his annual circumlocution of space in the East and spends three months in each of the cardinal points in turn."³⁷ The *bindu*, or point from which the eight arms radiate, is the place where cosmic power is concentrated.³⁸

The drawing of the *desa na ualu* often accompanies an animal sacrifice, the design being laid out at the base of the sacrificial pole to which the animal to be slaughtered is tethered. Events or ceremonies entailing a spatial risk or hazard (e.g., establishing new villages, planning new irrigation systems, or preparing for battle or for legal

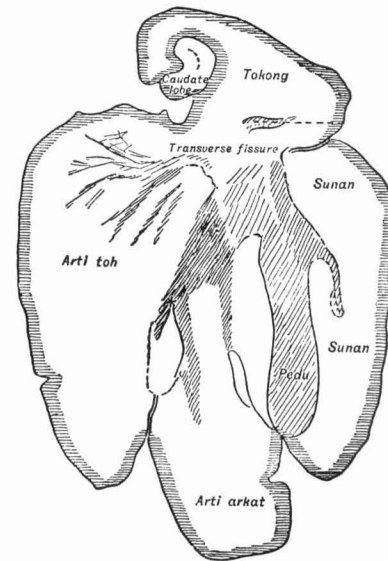


FIG. 17.6. VENTRAL SIDE OF PIG'S LIVER FROM WHICH OMENS ARE READ. The several parts, the local Kayan terms for which are provided here, are taken as signifying the territories about which information is sought. The future relations between the inhabitants of these territories are foretold by examining the ligaments, fissures, and various markings connecting or separating the parts in respect to both their distribution and their state. In one augury discussed by Hose and McDougall (*Pagan Tribes*, 2:63), three districts and one specific village were recognized. The short gallbladder (*pedu*) separating two of the districts identified was seen as a good omen, as was the large development of the caudal lobe and the strength of the ligaments. See also figure 17.5.

From Hose and McDougall, *Pagan Tribes*, vol. 2, fig. 79.

actions) can be carried out only after drawing the requisite diagram. This cosmogram

is not a direction-finding compass, it is not merely an instrument to ascertain required information, it is, rather, the magico-religious re-enactment of space "in illo tempore." . . . It re-establishes, in visible and local form, the primeval focal point of totality power. "Salvation," or success, depends upon bringing the local event into harmony with that special spatial kratophany.³⁹

to the End of the Augustan Era," in *The History of Cartography*, ed. J. B. Harley and David Woodward (Chicago: University of Chicago Press, 1987-), 1:201-11, esp. 202-4 and figs. 12.2 and 12.3.

35. Erik Jensen, *The Iban and Their Religion* (Oxford: Clarendon Press, 1974), 138-39.

36. Harry Parkin, *Batak Fruit of Hindu Thought* (Calcutta: Christian Literature Society, 1978), esp. chap. 8, "Magic and Divination," 199-217. A brief account of the fundamentals of the Javanese system of divination appears in Clifford Geertz, *The Religion of Java* (Glencoe, Ill.: Free Press, 1960), 32-35, and Skear's *Malay Magic*, 532-80 (note 2), deals with a wide variety of Malay divinatory practices.

37. Parkin, *Batak Fruit of Hindu Thought*; quotations on 199-200 (note 36).

38. Parkin, *Batak Fruit of Hindu Thought*, 207 (note 36).

39. Parkin, *Batak Fruit of Hindu Thought*, 201 (note 36). Another



FIG. 17.7. KENYAH DAYAK TRIBESMEN OF BORNEO MEASURING THE LENGTH OF THE SHADOW OF A GNOMON AT NOON TO DETERMINE THE TIME FOR SOWING PADDY.

From Charles Hose and William McDougall, *The Pagan Tribes of Borneo: A Description of Their Physical, Moral and Intellectual Condition with Some Discussion of Their Ethnic Relations*, 2 vols. (London: Macmillan, 1912), vol. 2, pl. 60.

What follow in Parkin's account are notes on the relation of the Batak system of divination to others practiced in the Malay world and in India;⁴⁰ a list of some of the rules according to which movements in specific directions are prescribed or proscribed at particular times; and copies of diagrams that are variations on the basic *desa na ualu* motif, with appropriate commentary.

Another type of diagram, several variations of which Parkin discusses, is an elaboration of the *bindu* from a simple point to a *bindu matoga*, "the authoritative point of power," represented as a double-square diagram (a diamond placed within a square so as to bisect all four of its sides, a symbol signifying the Middleworld). Such diagrams are drawn in red, black, and white, colors that represent the cosmic trinity, and they form the field

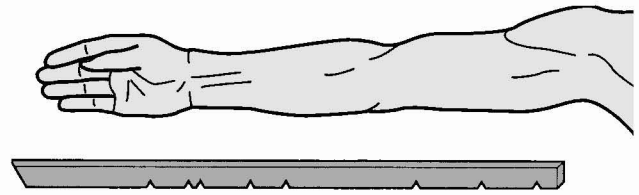


FIG. 17.8. BASE OF GNOMON EMPLOYED BY KENYAH DAYAKS. Notches indicate times for conducting various agricultural operations. The periods when the midday sun's shadow falls between successive notches are those that are appropriate for specific tasks, based on prior experience of the seasons. These notches are calibrated against specified lengths of portions of the arm of the professional village weather clerk. After Gene Ammarell, "Sky Calendars of the Indo-Malay Archipelago: Regional Diversity/Local Knowledge," *Indonesia* 45 (1988): 84–104, esp. 87.

around which dances of cosmic renewal are performed. Added to the diagram are cosmic symbols such as the *naga*, Trees of Life, an egg, axes and adzes, and others. One such drawing is described as having sides one meter long and being drawn on the ground outside the house of the person for whom the rite is performed. A particular side had to be parallel to the front of the house and a particular corner had to be toward the east.⁴¹ I note these matters, without further elaboration, simply to demonstrate the sorts of considerations that enter into the cosmographic thinking of supposedly simple tribal societies and that inform the expression of such thought in a host of cosmographic diagrams of which we at present have only rudimentary and fragmentary knowledge.

ASTRONOMY AND HOROLOGY

Some knowledge of astronomy, however rudimentary, may reasonably be assumed among virtually all peoples whose lives are regulated by the seasons and who look to the heavens for indicators of their progression. Not sufficiently understood, however, are the ways various nonliterate societies express and transmit graphically the astronomical knowledge they possess and the specific forms in which such expressions are rendered. Given the

account, differing in minor respects from that of Parkin, is that of Anicetus B. Sinaga, *The Toba-Batak High God: Transcendence and Immanence* (Saint Augustin, West Germany: Anthropos Institute, 1981), 127–32. This account, for example, notes that a tortoise, not a snake (though still called *naga*), is buried beneath the sacrificial pole to represent the Underworld, that the Middleworld is symbolized by an octagon, and that the hornbill represents (as among the Dayaks) the Upperworld. Both accounts agree on the necessity to draw the cosmic design on the ground at the base of the slaughtering pole, which represents the Tree of Life.

40. Indian divination charts are discussed in Schwartzberg, "Cosmographical Mapping," 343–51 (note 2).

41. Parkin, *Batak Fruit of Hindu Thought*, 207–9 (note 36).

hundreds of tribal groups inhabiting Southeast Asia, one cannot hope to do justice to that subject in a work not devoted exclusively to astronomical lore, or even to sketch adequately the limited knowledge about it that modern scholars have thus far been able to acquire. Suffice it to say that it has been established that numerous tribal groups in Southeast Asia do recognize and portray some of the more prominent constellations and do understand and chart, after a fashion, regularities in the motions of the sun and moon.

The first attempt to summarize the state of astronomical knowledge among peoples of the Malay Archipelago was that of Maass in 1924.⁴² Maass's study made no special distinction between tribal and nontribal or literate and nonliterate peoples and, not surprisingly, was devoted mainly to detailing the knowledge and beliefs of the former groups, a large part of which is actually astrological and not central to our present concerns.

A much briefer attempt at synthesis, concentrating on what might be considered tribal peoples, was put forward by Ammarell in 1988. Ammarell observes that the Malay Archipelago reveals a "tradition that is, at once, unique to this cultural area and richly diverse in its local variation." He classifies Malay observations of celestial phenomena under three broad rubrics: those that depend on measuring the altitude of the sun at noon, those that relate to annual changes in the apparitions of familiar groups of stars; and those that trace cyclical changes in the phases of the moon.⁴³

An illustration of a method falling under the first of Ammarell's three general rubrics is provided by figures 17.7 and 17.8. This method, derived from the previously cited study of Bornean tribes by Hose and McDougall, is but one of several Bornean ways of determining the time for sowing paddy. The tribe in question, the Kenyah Dayaks, relies on observing the changing lengths of shadows cast by a gnomon specially constructed for the purpose. Another Bornean group, the Kayans, relies on noting the position of a midday sunbeam (*kleput doh*, "the blowpipe of the spirit") shining through a hole in the roof into the chamber of the tribal weather prophet in the communal longhouse. Still other groups employ altogether different techniques based on stellar observations.⁴⁴

Among the various types of gnomons that Ammarell reports and illustrates, a particularly sophisticated and accurate type, called a *bencet*, was in use in Java from about 1600 to 1855. Derived from the *bencet* was a unique Javanese calendar of twelve unequal months, ranging in length from twenty-three to forty-three days.⁴⁵

Stellar observational techniques, according to Ammarell, are of two types, one based on fixing the heliacal apparitions of individual stars or of constellations, the other based on observing their culminations. Heliacal

apparitions refer to stellar positions with respect to the horizon when they are first or last visible in the twilight of dawn or of dusk, while heliacal culminations refer to the times when particular stars transit the meridian (are at their highest altitude) at either dawn or dusk. Observations of heliacal culminations for calendrical purposes appear to be confined to the Malay cultural realm.⁴⁶

An example of the way two constellations, equivalent to Scorpio in Western astronomy, are perceived by the seafaring Bugis of the island of Sulawesi (Celebes) is given in figure 17.9. Maass provides comparable illustrations for other Malay peoples. Far more complete than either of these two expositions, however, is the depiction in figure 17.10 of the entire celestial vault as seen from the island of Palawan in the Philippines, comparing the Palawan and Western systems.⁴⁷ It is not known when, why, or even whether members of various Malay ethnic groups had occasion to draw diagrams of constellations without being asked by outsiders to do so; but where there is agreement from one group to another in the manner of their perception, as often appears to be the case, it suggests that constellations must occasionally have been graphically rendered, since it is difficult to imagine how knowledge of them could otherwise be transmitted from one nonliterate society to another speaking a different language. Similarly, transmission from one generation to another within a given society also argues for constellations' being drawn in some simple form (e.g., scratched on a leaf, outlined in the sand).

42. Alfred Maass, "Sternkunde und Sterndeuterei im Malaiische Archipel," *Tijdschrift voor Indische Taal-, Land- en Volkenkunde* 64 (1924): 1-172, 347-460, and appendix in 66 (1926): 618-70.

43. Gene Ammarell, "Sky Calendars of the Indo-Malay Archipelago: Regional Diversity/Local Knowledge," *Indonesia* 45 (1988): 84-104; quotation on 86. Curiously, Ammarell does not cite Maass among his many sources, most of which postdate Maass.

44. Ammarell, "Sky Calendars," 90 (note 43); and Hose and McDougall, *Pagan Tribes*, 1:105-9 (note 5).

45. Ammarell, "Sky Calendars," 90 (note 43).

46. Ammarell, "Sky Calendars," 91, 95, and illustrations and captions on 92-93 (note 43). Not all the ways described entail graphic methods of recording time. I have confined the discussion to those that utilize a graphic solution.

47. The system of Palawan astronomy is discussed in considerable detail in Nicole Revel, *Fleurs de paroles: Histoire naturelle Palawan*, 3 vols. (Paris: Editions Peeters, 1990), vol. 2, *La maîtrise d'un savoir et l'art d'une relation*, 189-242. The work includes numerous illustrations by Anna Fer. In addition to mapping the entire night sky as seen from Palawan, this remarkably thorough work includes the configurations of numerous individual constellations and their figurative equivalents in the Palawan view and also provides a map of the regions of the Palawan sky that correspond to five motifs of Palawan mythology.

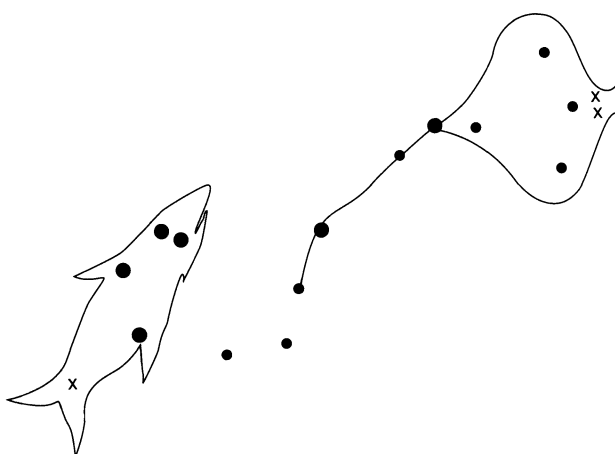
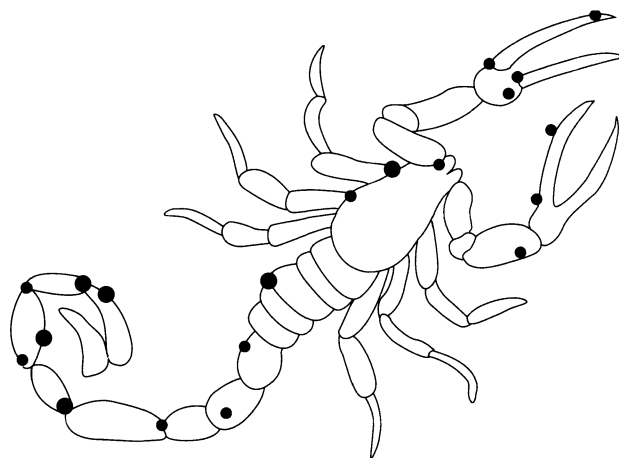


FIG. 17.9. BUGINESE PERCEPTION OF THE STARS CONSTITUTING THE INTERNATIONALLY DESIGNATED CONSTELLATION SCORPIO. Though most of the same stars are included in each of the two views, those that appear to Western observers as a single cluster, internationally designated Scorpio (right), are seen by Bugi mariners as two separate aster-



asterisms, one perceived as a ray, the other as a shark (Xs indicate stars drawn by informants but not pointed out in the sky). After Gene Ammarell, "Navigation Practices of the Bugis Seafarers" (paper presented at the Forty-first annual meeting of the Association for Asian Studies, Washington, D.C., 18 March 1989).

BUDDHIST AND HINDU COSMOGRAPHIES UNDERLYING CONCEPTIONS

In an earlier volume of this history, I outlined a number of attributes of certain cosmological conceptions that were common to the Hindu, Buddhist, and Jain traditions.⁴⁸ These traditions flourished and coexisted in India for more than one and a half millennia. Two of them, the Hindu and the Buddhist, also took root in Southeast Asia by the beginning of the Christian Era and subsequently diffused over much of the region. Thus the basic cosmological perspectives associated with India were embraced first by the elite and ultimately by the masses in the lands to India's east. Hence I need not repeat here in detail earlier discussion of the development and nature of Indian cosmology in general. Rather, I shall provide only an initial synoptic overview and then discuss certain particularities of the specifically Hinayana Buddhist views that now predominate over most of mainland Southeast Asia.⁴⁹ Of the formerly important Mahayana cosmology, which still informs Vietnamese Buddhism, I shall say virtually nothing. In brief, Indian cosmology, whether in its home region or in Southeast Asia, can be characterized as follows:

1. The cosmos is vast, exceedingly complex, and composed of a very large number of discrete constituent units whose dimensions and shapes are precisely specifiable.
2. There is a multiplicity of universes. (In Hinayana Buddhist cosmography their number is infinite.)
3. Each universe is centered on its own gigantic Mount Meru (Sumeru in the Pali canon of Hinayana tradition), which, as *axis mundi*, runs through the center of the

earth and unites it to the realms above and below. Meru itself comprises several vertically stratified layers that, like the surrounding universe, have their characteristic degrees of merit, denizens, plants, and so forth. Ranged about Meru are buttress ranges of mountains, terrestrial continents lying in the four cardinal directions, concentric ring continents, and intervening ring oceans.

4. Each universe within the cosmos is vertically structured. (Consequently, visual representations of a universe are often rendered on a vertical plane rather than on the horizontal plane that characterizes most terrestrial maps.)

5. The fundamental division of the universe is tripartite. The arrangement of the major divisions, however, and the number of subdivisions within each basic division, varies from one system and region to another. (Variations also apply to other aspects of the cosmos.)

6. The motions of the sun, moon, and stars within the universe and their spatial relation to one another and to other parts of the universe are specified.

48. Schwartzberg, "Cosmographical Mapping," 332-43 (note 2).

49. The most comprehensive secondary source on Buddhist cosmography is Willibald Kirfel, *Die Kosmographie der Inder nach Quellen dargestellt* (Bonn: Kurt Schroeder, 1920; reprinted Hildesheim: Georg Olms, 1967; Darmstadt: Wissenschaftliche Buchgesellschaft, 1967). Also exceedingly useful is W. Randolph Kloetzli, *Buddhist Cosmology, from Single World System to Pure Land: Science and Theology in the Images of Motion and Light* (Delhi: Motilal Banarsidass, 1983), which, apart from its own original analysis, contains a valuable guide to the primary and secondary literature.

A brief overview will be found in W. Randolph Kloetzli, "Buddhist Cosmology," in *The Encyclopedia of Religion*, 16 vols., ed. Mircea Eliade (New York: Macmillan, 1987), 4:113-19. For a comparative historical and cultural perspective, Wales, *Universe around Them* (note 1), is recommended.

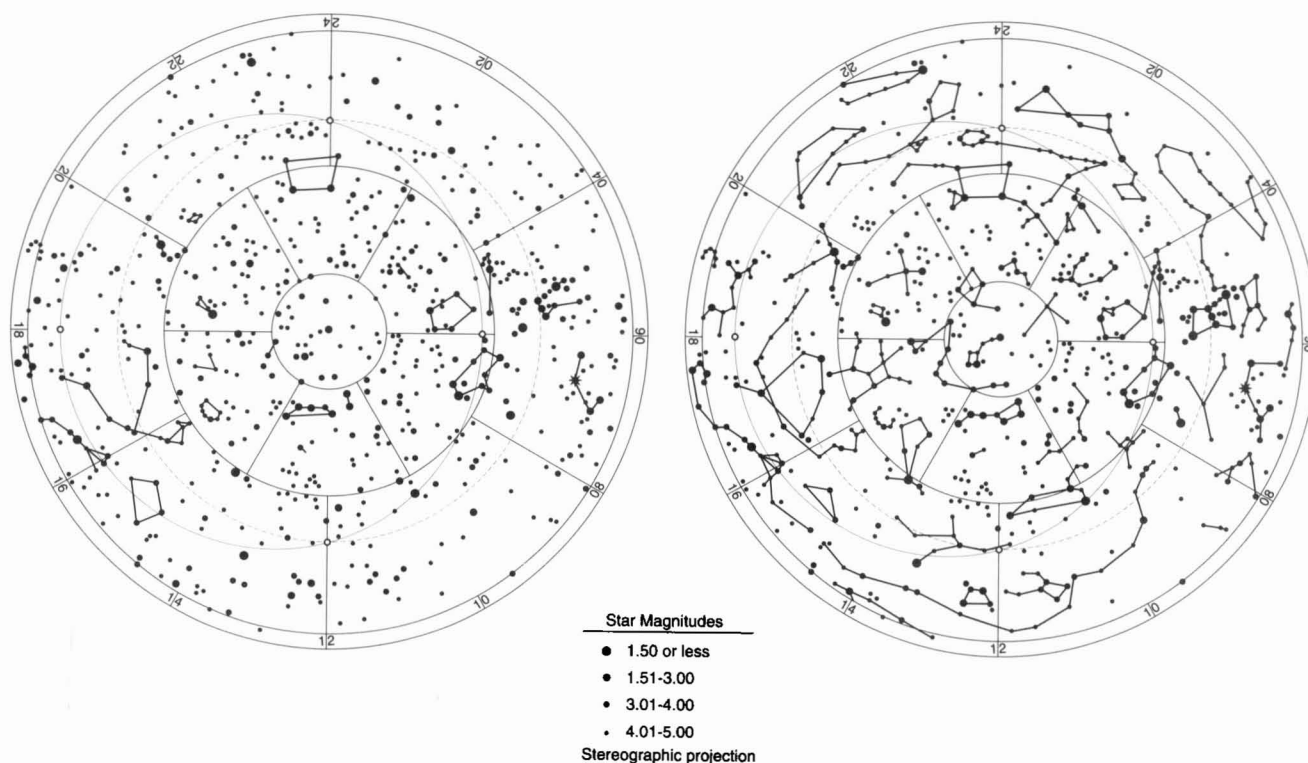


FIG. 17.10. CONSTELLATIONS OF THE NORTHERN HEMISPHERE AS SEEN FROM PALAWAN. The constellations perceived by the Palawan Islanders (*left*) are much less numerous than those known to Western astronomy (*right*). Although they tend to incorporate many of the same brighter stars, they have substantially different configurations. The

Southern Cross, known to Palawanese as Būntal, does not appear on the Palawan Islanders' map.

Simplified from Nicole Revel, *Fleurs de paroles: Histoire naturelle Palawan*, 3 vols. (Paris: Editions Peeters, 1990), vol. 2, *La maîtrise d'un savoir et l'art d'une relation*, 226–27.

7. The cosmos has been ethicized; that is, its constituent units are perceived as having greater or lesser merit, as are the various periods of time. As a general rule, higher components of the universe connote greater merit than lower components. Moksa (Hindu) or nirvana (Buddhist; often romanized as nibbana from Southeast Asian languages) is the highest domain.

8. The religiophilosophical preoccupation with cosmology is essentially eschatological and is rooted in the axiomatic belief in reincarnation and the quest for escape from the cycle of rebirth through attainment of moksa or nirvana.

9. Like humans and other sentient beings within the cosmos, universes themselves are reborn and go through cycles of emanation, degeneration, and annihilation.

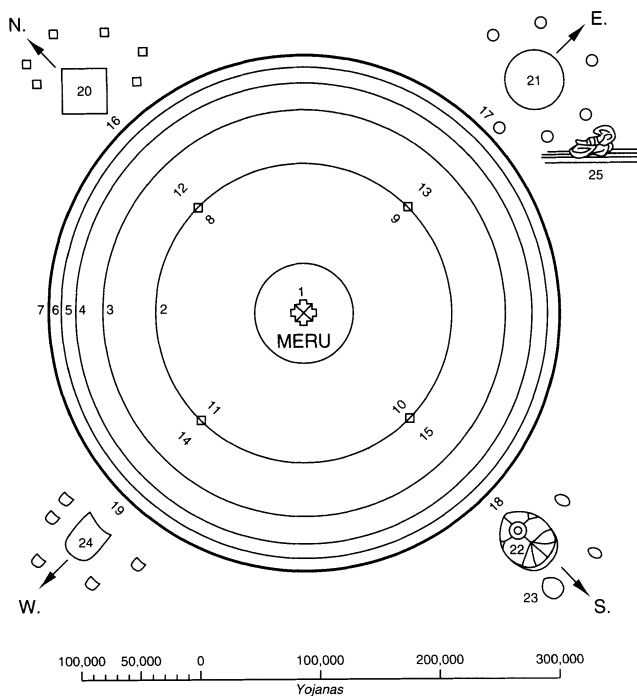
10. The various parts of any universe are populated by a multitude of denizens in addition to human beings: various types of spirits, titans, deities of various degrees of potency, bodhisattvas (in Buddhist views), and so forth. The parts are also characterized by numerous real and fabulous plants and beasts whose phenomenal life spans, vast sizes, and even shapes may be related to the part of the universe they inhabit. (Individually or in com-

bination, these entities may serve in cosmographies as icons to represent particular portions of the universe.)

11. In all systems, the realm of humans is far from being the most meritorious, and none of the systems is anthropocentric. Similarly, the current age, rather than being a golden era, is one in which the universe is debased and approaching dissolution.

With specific reference to Buddhism in general or the Buddhism of Southeast Asia in particular, there is no single system of cosmology. But the oldest and still the most common view is the "singleworld" or Cakravāla system. The broad outline of this system is provided both in the Pali canonical texts and in Buddhist Sanskrit texts, in which the designation Cakravāla (Pali Cakkavāla) refers to the iron mountain ring that is believed to encompass the world and provide the outermost limit within which heavenly bodies move around the axis of Meru.

The following account from Kloetzli is based on the *Abhidharmakośa* of Vasubandhu, an Indian text of the fourth or fifth century. It relates to the Cakravāla in a restricted sense of the word, namely the portion of universe where the earth is situated. It should be considered



1. Indra's palace atop Mount Meru, sphere of the Tāvatiṃsadevaloka (Sanskrit Trayāstriṃsadevaloka), thirty-three gods.
- 2-7. The Kulācalas or concentric ranges of mountains.
- 8-11. Mansions of the Cātummahārājika (Sanskrit Caturmahārājakāyika), four great kings.
- 12-19. Oceans: 12, golden; 13, silvery; 14, rosy; 15, blue; 16, yellow; 17, milky; 18, salt; and 19, crystalline.
- 20-24. Continents and islands: 2, Uttarakuru; 21, Pūbbavideha (Sanskrit Pūrvavideha); 22, Jambūdvīpa (Sanskrit Jambūdvīpa); 23, Lankā (Sri Lanka); and 24, Aparagoyāna (Sanskrit Aparagodāniya).
25. Vishnu floating on the sea of milk and reclining on the coiled body of the serpent Śeṣa as a couch.

FIG. 17.11. PLANIMETRIC VIEW OF THE CAKRAVĀLA ACCORDING TO THE TRAI PHUM. This drawing was prepared by Gerini to help explain an important rite of passage for a crown prince of Thailand incorporating the cosmic symbolism derived from the *Trai phum*, Thailand's principal cosmographic text. The diagram is only approximately to scale. Thus Meru, which ought to have a diameter of 10,000 *yojanas* (1 *yojana* = 15+ km), has been presented at a much larger size to render it more distinguishable. The outer wall of the Cakravāla is not shown, since it lies very far out and would have occupied too much space. These departures from true scale, however, are compensated for by the more correct view presented in figure 17.12.

After Gerolamo E. Gerini, *Chūlākantamaṅgala, or, The Ton-sure Ceremony as Performed in Siam* (Bangkok: Siam Society, 1976; first published in 1895), diagram no. 1.

along with figures 17.11 and 17.12, which for the most part provide correct scale representations of the Cakravāla from a planimetric perspective and in cross section, respectively:

The *cakravāla* is represented as a disk ringed with a series of seven circular, golden mountain ranges,

arranged concentrically with Mount Meru at the center and the *cakravāla* wall of iron at the perimeter. Proceeding outward from the center, the mountains are known as Meru, Yugandhara, Īśadhāra, Khadirika, Sudarśana, Aśvakarṇa, Vinataka, Nimindhara, and Cakravāla. Mount Meru has a height of eighty thousand *yojanas* and penetrates the waters in equal measure; each of the mountain ranges is half the height and depth of the preceding range. The waters of various seas (*sītā*) fill the regions between the mountain ranges.⁵⁰

Between the Nimindhara and Cakravāla mountain ranges lies a great ocean (*mahāsamudra*) within which are four islands (*dvīpas*) situated in the four cardinal directions from Meru: Pūrvavideha to the east, Jambūdvīpa to the south, Aparagodāniya to the west, and Uttarakuru to the north. The names suggest not only spatial but also theological directions. For example, Jambūdvīpa, named for the *jambū* tree that is found there, suggests the fruit of the path of Buddhism.

All these entities rest on a layer of golden earth (*kāñcanamayibhūmi*), and all of the mountains except the *cakravāla* are composed of excrescences of this golden earth. . . . The golden earth of the *cakravāla* rests on a circle of water (*abmaṇḍala*); a layer of wind (*vāyumaṇḍala*) supports the water and in turn rests on empty space (*ākāśa*).⁵¹

The four islands in the *mahāsamudra* differ in size and shape. Uttarakuru, for example, is square and measures two thousand *yojanas* on a side. The islands differ also in the duration of life for their inhabitants, a thousand years in the case of Uttarakuru. Symmetrically flanking each mentioned island are two similarly shaped islands that are only one-tenth as large. The faces of the inhabitants of both the main and the satellite islands are said to conform in shape to that of the islands themselves.

The vertical plan of the universe (table 17.1) is summarized by Kloetzli as follows:

A series of heavens is arrayed above the *cakravāla* in three great divisions: (1) those heavens in the "realm of desire" (*kāmadhātu*) corresponding to the six classes of the "gods of desire" (*kāmadeva*); (2) the seventeen heavens belonging to the "realm of form" (*rūpadhātu*), grouped into four classes of "meditation realms" (*dhyāna*); and (3) the four "infinities" of the "realm of nonform" (*ārūpyadhātu*). . . . Several of the heavens have characteristics worth noting. The ruler of the Trāyastriṃśa is Indra, or Śakra, whose abode rests atop Mount Meru. The Tuṣita is distinguished by the fact that it is here that the *bodhisattva* is born

50. Kloetzli, "Buddhist Cosmology," 114 (note 49).

51. Kloetzli, "Buddhist Cosmology," 114 (note 49).

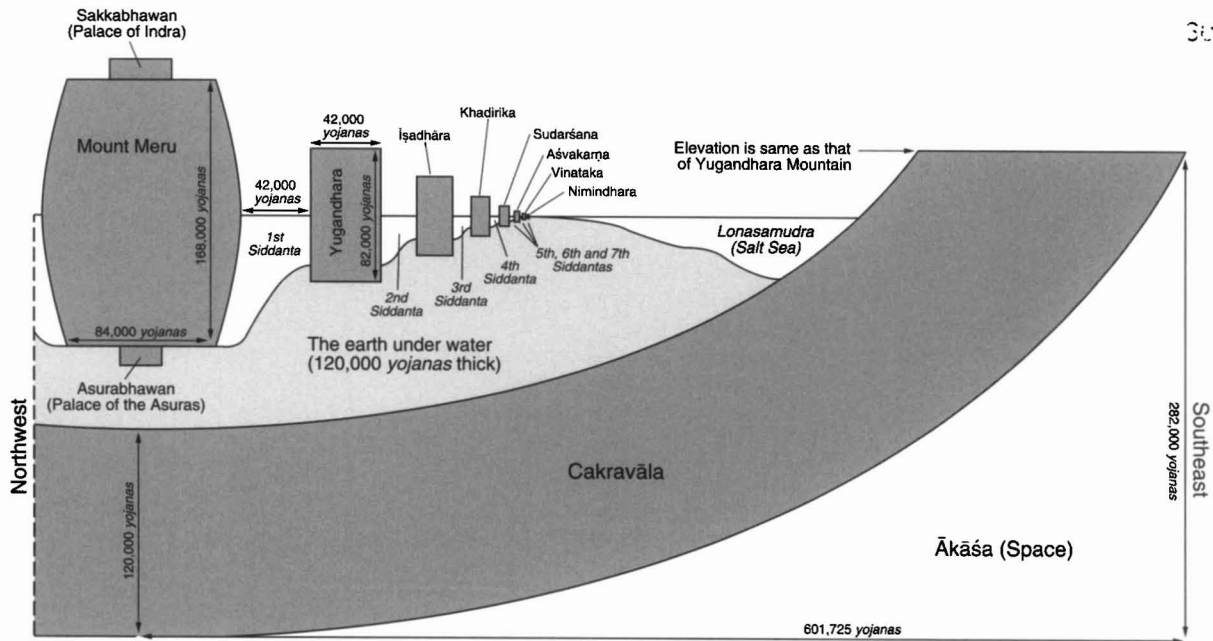


FIG. 17.12. PORTION OF A CROSS SECTION THROUGH THE CAKRAVĀLA. This cross section is adapted from one of a series of drawings, all to scale, that collectively set forth the horizontal and vertical dimensions of all the major components of the Buddhist cosmos as given in the Pali canon. Those drawings were based on another set copied from a monastery in Sri Lanka to which the originals had been brought from Burma at some unspecified date. Because of the symmetry of the Cakravāla about Mount Meru, there is no need to show its full horizontal extent. The relation of the portions of this presentation to what is shown in figure 17.11 is self-evident. The height of the Cakravāla wall is the same as that of the Yugandhara Mountain. In the annular space between those two features the sun, moon, and stars revolve about Meru. The differential distance of the sun from Yugandhara and its changing elevation

in the sky will cause seasonal and diurnal variations in the length of Yugandhara's shadow, and hence in the length of a day and of shadows during the day on the several island continents. Because this profile extends from northwest to southeast rather than along one of the two cardinal axes, none of the four island continents shown in figure 17.11 appear as they otherwise would within the Lonasamudra. Eight levels of hell, situated within the earth underwater and centered under each of the four continents, are for the same reason omitted from this diagram. Based on Adolf Bastian, "Graphische Darstellung des buddhistischen Weltsystems," *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, 1894, 203-15, in *Zeitschrift für Ethnologie*, vol. 26, esp. pl. 5 and key on 210-13.

immediately prior to being born as a Buddha in Jambudvīpa. The duration of life in the Tuṣita corresponds to the ages in which a Buddha appears. The uppermost heaven is the Akaniṣṭha; the fourth infinity is designated *bhavāgra* ("pinnacle of being").⁵²

In my discussion of South Asian cosmography, I noted a Hindu tradition associated primarily with divination, which had little relation to the Meru-centered systems that predominate in religions of Indian origin.⁵³ The *kūrma* (tortoise), one among many icons of this tradition, also appears, as we shall see, as a symbol for the earth in contemporary cosmography of the still Hindu island of Bali—often, as in India, in association with a *naga* (snake)—and figures also in the cosmographies of other parts of Indonesia.

Southeast Asian cosmology incorporates a strong belief in astrology, utilizing a system of Indian origin. Many published and manuscript manuals and charts abound in visual representations of the heavenly bodies and celestial forces said to be at work in determining the destiny of

humans. The subject, however, is too extensive and specialized to be treated adequately in this work.

REPRESENTATIVE COSMOGRAPHIC ARTIFACTS

Although my search for Southeast Asian cosmographies may best be described as an introductory reconnaissance, it has revealed a remarkable variety—if not a particularly large number—of artifacts on paper, palm leaf, stone, and other media that reflect concepts of Indian origin in both the Hinayana Buddhist and Hindu traditions. In this section I make no attempt to document all the cosmographic

52. Kloetzli, "Buddhist Cosmology," 114 (note 49). A different and much simpler model of the vertical cosmos, as envisaged by the Burmese, appears in John B. Ferguson, "The Symbolic Dimensions of the Burmese Sangha" (Ph.D. diss., Cornell University, 1975), table 1. One reason for the different Burmese perspective was the necessity for them to find places in their cosmos for the thirty-seven *nats*, pre-Buddhist spirits who continue to be propitiated by Burmese and accommodated within Buddhism as practiced in Burma.

53. Schwartzberg, "Cosmographical Mapping," 337-38 (note 2).

TABLE 17.1 The Vertical Aspect of the Buddhist Universe in the Cakravāla World System

III. ĀRUPYADHĀTU (REALM OF NON-FORM)	<ul style="list-style-type: none"> 31. Naivasañjñānāsañjña (Neither Consciousness nor Not Consciousness) 30. Ākincanya (Realm of Nothingness) 29. Vijñānānantya (Infinity of Intellect) 28. Ākāśānantya (Infinity of Space) 	<ul style="list-style-type: none"> Caturārūpya Brahmaloka (Fourfold Formless World of Brahmas) 		
II. RŪPADHĀTU (REALM OF FORM)	<ul style="list-style-type: none"> 4th Dhyāna (4th Meditation) <ul style="list-style-type: none"> 27. Akaniṣṭha (Not Youngest) $2^{22} \times 40$ Ky 26. Sudarśana (Well Seeing) $2^{21} \times 40$ Ky 25. Sudr̥ṣa (Beautiful) $2^{20} \times 40$ Ky 24. Atapa (No Heat) $2^{19} \times 40$ Ky 23. Avṛ̥ha (Effortless) $2^{18} \times 40$ Ky 22. Bṛ̥hatphala (Abundant Fruit) 21. Punyaprasava (Merit Born or Merit Begetting) 20. Anabhṛ̥ka (Cloudless) 3d Dhyāna (3d Meditation) <ul style="list-style-type: none"> 19. Śubhakar̥ṣṇa (Complete Beauty) 18. Apramāṇaśubha (Immeasurable Beauty) 17. Parittaśubha (Limited Beauty) 2d Dhyāna (2d Meditation) <ul style="list-style-type: none"> 16. Ābhāsvara (Radiant Gods) 15. Apramanābha (Immeasurable Splendor) 14. Parittābha (Limited Splendor) 1st Dhyāna (1st Meditation) <ul style="list-style-type: none"> 13. Mahābrahma (Great Brahmas) 12. Brahmapurohita (Brahma Priests) 11. Brahmakāyika (Retinue of Brahma) 	<ul style="list-style-type: none"> Suddhāvāsika (Abodes of the Pure Ones) $2^{17} \times 40$ Ky $2^{16} \times 40$ Ky $2^{15} \times 40$ Ky $2^{14} \times 40$ Ky $2^{13} \times 40$ Ky $2^{12} \times 40$ Ky $2^{11} \times 40$ Ky $2^{10} \times 40$ Ky $2^9 \times 40$ Ky $2^8 \times 40$ Ky $2^7 \times 40$ Ky $2^6 \times 40$ Ky 	<ul style="list-style-type: none"> $1,000 \times 1,000 \times 1,000$ Worlds $1,000 \times 1,000$ Worlds $1,000$ Worlds Four-Island Universe 	<ul style="list-style-type: none"> Brahmaloka (World of Brahmas)
I. KĀMADHĀTU (REALM OF DESIRE)	<ul style="list-style-type: none"> Kāmadeva (Gods of Desire) <ul style="list-style-type: none"> 10. Paranimittavaśavartin (Rulers over Things Created by Others) 9. Nirmāṇarati (Those Who Have Pleasure in Creation) 8. Tuṣṭita (Blissful Gods) 7. Yāma (Yāma) 6. Trāyastriṃśa (Meru) (Gods Who Have the Thirty-three at Their Head) Pariṣaṇḍā (Beings on the Four Steps of Meru) <ul style="list-style-type: none"> 5. Caturmahārājakāyika (Meru) (Four Great Kings) Saddāmatas (Meru) (Always Drunk) Mālādhāras (Meru) (Bearing Garlands) Karotāpāṇis (Meru) (Bowl in Hand) 4. Maṇuṣya (Mankind) 3. Preta (Ghosts) (Abode is Yama, below Meru, not to be confused with Yāma) 2. Tiryagyoni (Animals) (Special abode is the Exterior Ocean) 1. Naraka (Damned) (Abodes are the Hells) 	<ul style="list-style-type: none"> $2^5 \times 40$ Ky $2^4 \times 40$ Ky $2^3 \times 40$ Ky $2^2 \times 40$ Ky 2×40 Ky 40 Ky 	<ul style="list-style-type: none"> Devaloka (World of Gods) 	
Layers upon which the Cakravāla rests	<ul style="list-style-type: none"> Kāñcanamayībhūmi (Golden Earth) 320 Ky Ābmaṇḍala (Circle of Water) 800 Ky Vayumaṇḍala (Circle of Wind) $1,600$ Ky 	<ul style="list-style-type: none"> $1,120$ Ky 		
Ākāśa (Space)				

Note: Sanskrit forms are the designations of various portions of the universe or of their denizens. These are followed in parentheses by English translations. Figures preceding the abbreviation "40Ky" (for 40,000 *yojanas*; one *yojana* = 15+ km) indicate the vertical extent of specific portions of the universe, where indicated in the *Abhidharma-kośa*, the text on which this figure is based.

This figure is adapted from W. Randolph Kloetzli, *Buddhist Cosmology, from Single World System to Pure Land: Science and Theology*

in the *Images of Motion and Light* (Delhi: Motilal Banarsidass, 1983), figs. 2, 3, and 8, supplemented by personal communication, 4 September 1991. Not indicated in this figure, but provided by Kloetzli, are the horizontal dimensions of various portions of the cosmos (in two systems, his figs. 4 and 5), the duration of life of the denizens of each portion of the cosmos (fig. 6), and the heights of these respective denizens (fig. 7).

works encountered, but I will discuss and illustrate a fairly representative set of objects. Beginning with views that relate to the universe as a whole, I next narrow my concern to Manuṣya, the realm of humankind; then I focus further on Mount Meru, the *axis mundi*, and its associated surrounding features; and finally I proceed to consideration of a small sample of other specific, still more circumscribed portions of the cosmos. The subsequent section deals mainly with less tangible constructions considered in relation to the cosmic forces believed by Southeast Asians to govern the universe. Here I touch briefly on astronomy, the indispensable handmaiden of astrology, on geomancy, and on divination. Finally, I take note of the mental cosmographic maps that have exerted an important influence on the layout of architectural monuments, the distribution of temples and pilgrimage routes, and the conduct of statecraft.

Views Showing the Structure of the Universe

The vertical axis of the universe and its essentially tripartite division are, as we have seen, given in the several Indian views of the cosmos and in their Southeast Asian derivatives. Figure 17.13, an early nineteenth-century representation of the many levels of the universe, illustrates this perception. With its multiplicity of heavens and hells and the several layers of the Kāmadhātu (the material world of desire), including the level of the earth itself, it reflects fairly closely the cosmological schema presented in table 17.1.⁵⁴ I know of no other Thai cosmography that encapsulates so much of the universe in a single image. For obvious reasons, given the enormous range in the dimensions of particular parts of the cosmos, no attempt was made to draw this—or any other known traditional Southeast Asian cosmography—to scale. But that does not mean that Southeast Asian Buddhists were unmindful of the stupendous dimensions of their universe. In 1882, for example, a Burmese scholar, U Kalyāṇa, probably a monk, prepared a text and chart titled *Hbôn sin* (A chart of the universe according to the Buddhist cosmography), in which the dimensions of each portion of the cosmos are specified. A large printed version of the chart, with the relevant dimensions (but not



FIG. 17.13. THE VERTICALLY ARRAYED UNIVERSE. Commissioned painting on European paper by the Chinese-Thai artist Bun Khong, in the Thai album of James Low, Thailand, about 1825. The uppermost column of small pavilions, each containing its own divinity, represents the many heavenly levels rising above the seven-tiered Mount Meru. Meru is flanked by the chariots of the sun and the moon, the stars, and two unidentified mythological figures. At the base of the mountain are magical forests inhabited by wild animals, and below that, ranged around Meru and shown in planimetric perspective, the four terrestrial island continents in an ocean ringed by a great double *naga* (snake). Still lower are various levels of hell, each characterized by a particular form of punishment for those consigned there for their past misdeeds.

Size of the original: 146 × 27 cm. By permission of the Oriental and India Office Collections, British Library, London (Add. MS. 27370, fol. 5).

54. Although I have no grounds to contest the authenticity of this representation, which is included in at least two reputable works on Thai painting, it must be noted that the work was commissioned by a British Lieutenant, James Low, while he was on temporary duty in Ligor, in southern Siam, and was executed by Bun Khong, an ethnic Chinese artist resident in that part of the country. Portions of this work are illustrated, in color, in Wladimir Zwalf, ed., *Buddhism: Art and Faith* (London: British Museum Publications, 1985), 179, caption on 184; and in Henry Ginsburg, *Thai Manuscript Painting* (Honolulu: University of Hawaii Press, 1989), 15. Notes on Low were provided to me by the Library of the Royal Asiatic Society, 21 December 1983.

the associated text), is in the British Library.⁵⁵ Dimensions are also noted, as we shall see, on various older manuscript maps.

A broadly similar, but stylistically different, Burmese view of the entire universe was published by the German ethnologist Adolf Bastian.⁵⁶ That view, meticulously drawn in black ink, was prepared from a copy by a Sinhalese monk of a Burmese drawing, accompanied by abundant text explaining the various parts of the universe. The Sinhalese copyist tried to adhere to the original Burmese form of the Pali text but in doing so made many errors. Hence, in presenting the work Bastian did not follow the often incomprehensible glosses that came with it but rendered all the names in their Sanskrit form, using a language he was more familiar with. The dimensions of each part of the cosmos are also provided by Bastian but, regrettably, not those of the drawing or of the copy made of it.

The most important and best-known text on Southeast Asian cosmography is the *Trai phum* (Story of three worlds) (*Traibhūmikathā* in Sanskrit).⁵⁷ Compiled from more than thirty Buddhist sources, this work, the oldest of Thai literature, is attributed to the then crown prince of the kingdom of Sukhothai, Phya Lithai, who is supposed to have composed it in A.D. 1345, primarily for the religious edification of his mother, but also to spread the message of the *dhamma* (Buddhist faith) to his future subjects. It has appeared in subsequent centuries in a number of different recensions, and beautifully illustrated copies may be found in several museums and libraries in Europe and the United States and, of course, in Thailand itself. None of the surviving examples, however, predate the sixteenth century.⁵⁸ Of the copies believed to have existed in the former Thai capital of Ayutthaya, few are known to have survived the city's sack by Burmese invaders in 1767.⁵⁹

55. The work is in the Oriental and India Office Collections, with the pressmark OP 218 (32). The chart (60 × 48 cm) bears an abundance of text, entirely in Burmese except for the notation "Bengalee Job Printing Press.—Ranoon [*sic*]." At each of the many levels of the cosmos depicted there is a modicum of embellishment by a repetitive, stylized design, but this does not appear to convey any distinctive meaning. I am indebted to Patricia Herbert for tracking down this document, which had been misplaced, and transmitting a copy of it to me.

56. Adolf Bastian, *Ideale Welten nach uranographischen Provinzen in Wort und Bild: Ethnologische Zeit- und Streitfragen, nach Gesichtspunkten der indischen Völkerkunde*, 3 vols. (Berlin: Emil Felber, 1892), vol. 1, pls. II and III, with detailed key on 280–82. The principal one of those two illustrations also appears in Robert Heine-Geldern, "Weltbild und Bauform in Südostasien," *Wiener Beiträge zur Kunst- und Kulturgeschichte Asiens* 4 (1920–29): 28–78, fig. 22, opposite p. 65.

57. Complete translations of the *Trai phum*, with extensive commentary, appear in George Coedès and C. Archambault, *Les trois mondes (Traibhūmi Braḥ R'vai)* (Paris: Ecole Française d'Extrême-Orient, 1973); and Frank E. Reynolds and Mani B. Reynolds, *Three Worlds according to King Ruang: A Thai Buddhist Cosmology* (Berkeley, Calif.: Asian Humanities Press, 1982) (which contains twelve color plates of the Berlin manuscript cited below and three additional reproductions of cosmographic paintings, in a modernistic style, by a contemporary Thai artist). Craig J. Reynolds has written an excellent historiographic essay, "Buddhist Cosmography in Thai History, with Special Reference to Nineteenth-Century Culture Change," *Journal of Asian Studies* 35 (1976): 203–20. A very useful account of the history and nature of the *Trai phum* is provided in Klaus Wenk, *Thailändische Miniaturmalereien nach einer Handschrift der indischen Kunstabteilung der Staatlichen Museen Berlin* (Wiesbaden: Franz Steiner, 1965), 14–22, which includes twenty-four superb color illustrations (with gold leaf laid on by hand) from the Berlin manuscript. Another beautifully illustrated work, with fifty-three quarto-sized pages of photographs in color, is *Samutphāp traiphūm burān chabap Krung Thon Buri/Buddhist Cosmology Thonburi Version* (Bangkok: Khana Kammakān Phichāranā læ Čhatphim Ēkkasān thāng Prawattisāt, Samnak Nāyok Rathamontri, 1982). The text of this work, except for the title page and very brief photo captions, is entirely in Thai.

A set of views different from those in the Bangkok Thonburi manuscript is illustrated in Sugiura Kōhei, ed., *Ajia no kosumosu + mandara* (The Asian cosmos), catalog of exhibition, "Ajia no Uchūkan Ten," held at Rafōre Myūjiamu in November and December 1982 (Tokyo: Kōdansha, 1982), 28–33. A work by an art historian that includes numerous illustrations, largely in color, from both the earliest (Ayutthaya) and Thonburi manuscripts in Bangkok is Jean Boisselier, *Thai Painting*, trans. Janet Seligman (Tokyo: Kodansha International, 1976). Other useful notes and illustrations appear in Ginsburg, *Thai Manuscript Painting*, 13–18, with four illustrations, three from the Berlin manuscript and one from the manuscript at Harvard (note 54); and a review of Wenk, *Thailändische Miniaturmalereien*, by Elizabeth Lyons in *Artibus Asiae* 29 (1967): 104–6. Finally, an easy-to-read summary of the work is provided by George Coedès, "The Traibhūmikathā Buddhist Cosmology and Treaty on Ethics," *East and West* (Rome) 7 (1957): 349–52.

58. Three incomplete illuminated manuscript copies of the *Trai phum* are held by the National Library in Bangkok. Of these the shortest, dating from the first half of the sixteenth century or from the early seventeenth century (respectively, Wenk, *Thailändische Miniaturmalereien*, 20, and Boisselier, *Thai Painting*, 89 [note 57]), is the oldest surviving example. A second, stylistically similar to the one just noted, is from the first half of the seventeenth century. A third, called the Thonburi version, is precisely dated, being from the year 2319 of the Buddhist Era (A.D. 1776). (The Thonburi period of Thai history was from 1767 to 1782, when, after the Burmese sack of the previous capital of Ayutthaya, the seat of government was at that site across the Mekong from modern Bangkok.) Libraries outside Thailand known to possess manuscript copies include the Museum für Indische Kunst, Berlin (MIK II 650, acquired by Adolf Bastian in 1893), a more complete manuscript than the Thonburi manuscript in Bangkok of the same date; the New York Public Library, with three examples, Thai Manuscripts 1 (twentieth century) and 25 and 26 (both nineteenth century); and the Harvard University Art Museum, Hofer Collection, 517 (1984), which, despite its recent date, has been prepared in the traditional accordion style. Portions of another *Trai phum* manuscript, consisting of sixty-one folios written in Lanna Thai script, were unearthed during the excavation of a stupa in the vicinity of Chiang Mai, in northern Thailand; see Sommāi Prēmchit, Kamon Siwichainan, and Surasingsamrūam Chimphanao, *Phračhēdi nai Lānnā Thai* (Stupas in Lanna Thai) (Chiang Mai: Khrongkan Suksā Wichai Sinlapa Sathapattayakam Lānnā, Mahāwit-thayālai Chiang Mai, 1981). This as yet uncataloged manuscript, which has not been translated or studied by any Western scholar, is in the Echols Southeast Asian Collection of the Cornell University Library, which acquired it about 1965.

59. Reynolds and Reynolds, *Three Worlds*, 37–38 (note 57).

Most of the illuminated manuscripts contain relatively little text. Of three manuscripts in Bangkok, for example, only one has extensive text, and even that covers no more than a tenth of the entire work, which in the published English translation comes to more than three hundred pages. That the *Trai phum* continues to retain a strong hold on the minds of modern Thais is evident in that between 1912 and 1972 eight edited versions of the full text were published in Thailand, largely for inclusion in university curricula, and a number of abridged and simplified versions have also appeared.⁶⁰ Not known, however, is how far these recent works incorporate the visual cosmographic elements we are principally concerned with here.

In subject matter, successive recensions of the *Trai phum* are not necessarily consistent but reflect modifications of previously presented views in light of the beliefs of the day. This will become apparent from the discussion in the chapter on terrestrial cartography of some of the geographic details the work portrays. As one would expect, there are also modifications over time in the artistic style of the illustrations—for example, in the adoption by the late nineteenth century of an essentially Western perspective.

Of the known illustrated manuscripts containing portions of the *Trai phum*, one in Berlin has received the most scholarly attention. Most of its illustrations relate to the cosmography of the three worlds (the three *dhātus* shown in table 17.1) and to a rather mythicized geography of Southeast Asia and the Indian Ocean. Other portions focus on the earthly life of the Buddha and various Jatakas (stories of the Buddha's previous lives, often set in mythical locales).⁶¹ The manuscript copies of the *Trai phum* known to me are lengthy documents, each including scores of illustrated, primarily cosmographic folios. They are made on thick indigenous paper and pasted together accordion-style so that the work can be extended to provide as lengthy a view of particular portions as the reader might wish. Hence the work is said to contain “the world's longest cosmic picture.”⁶² Books prepared in this manner are known as *samud khoi* manuscripts (after the tree, sometimes described as mulberry, from whose bark a type of unbleached paper is made). They were bound between wooden boards and were designed to be read continuously from panel to panel on one side and then turned over and read in the same manner on the verso side. The same system was common among manuscripts from Burma, where such works were known as *parabaiks*. (The Burmese, however, often wrote in white ink or steatite on black paper.)

As mentioned above, the *Trai phum* manuscripts are lengthy documents—one manuscript, according to Boisselier, extends to 34.72 meters.⁶³ The comparable, but more complete, Berlin manuscript, 272 leaves in all, is

50.90 meters long. Individual folios have an average width of 51.5 centimeters and a height of 23.9 centimeters. Thus the four longest sixteen-folio illustrations just noted might have covered 8 meters of continuous illustration, within which single scenes often appear to extend over numerous continuous folios. Not surprisingly, therefore, there is no easily reproducible section that will provide a succinct view of the entire cosmos such as that shown in figure 17.13.⁶⁴

The introductory text to the Thonburi manuscripts in Berlin and Bangkok informs the reader that the work was executed in 1776 at the command of King Phrya Taksin under the guidance of the supreme patriarch of Wat (Temple) Rakang. The names of four illustrators and four copyists are given, and the trained art historian can distinguish unevenness and personal idiosyncrasies in the quality of the work. Thai manuscript artists employed a broad range of colors. The palette for the Thonburi manuscripts comprised “white, yellow, vermilion, lapis-lazuli blue, malachite green and black, as well as all the tones that can be obtained by mixing these colours and fine gold.”⁶⁵ Illustrations in the *Trai phum* relate to each of the thirty-one realms that compose the three worlds of Hinayana Buddhism. Subjects covered for each such realm are the mode of birth (instantaneous, from moisture, from an egg, or from a womb), the quality of existence within the realm, the character of beings and events to be encountered, and the ways of death and subsequent fates of the realm's inhabitants. The five lower realms, those of hell beings, of animals, of suffering ghosts, of *asuras* (semidivine and semidemonic creatures), and of humans, are treated in particular detail. Following this exposition, a chapter is devoted to

entities that have no minds and indistinct material factors—that is, the mountains, rivers, trees, etc.—that provide the “natural” environment for the beings who live in the lower realms of the world of desire. In this chapter Phya Lithai includes an account of Mt. Sumeru and the surrounding seas, mountain ranges, and continents that form the *cākkavāla* or cosmological unit within which we live. He includes an obviously archaic but nevertheless quite logical system of astronomy that describes the way in which the sun,

60. Reynolds and Reynolds, *Three Worlds*, 24 (note 57).

61. Wenk, *Thailändische Miniaturmalereien*, 16 (note 57).

62. *Ajia no kosumosu*, 28 (note 57); translation by Amy Weeks.

63. Illustrated in *Ajia no kosumosu* are four continuous sections of the text (shown side-by-side on two facing pages), each consisting of sixteen continuous folios; two other sections of seven folios each, at a larger scale; and a section three and a half folios in length at a still larger scale, 28–33; see also Boisselier, *Thai Painting*, 90–94 (note 57).

64. The set of ten continuous folios illustrated in *Ajia no kosumosu*, 32–33 (note 57), right column, do, however, appear to depict a series of heavens very much like those illustrated in figure 17.13.

65. Boisselier, *Thai Painting*, 90, 92, and quotation on 94 (note 57).

the moon, the stars, and the planets revolve around the peak of the central mountain. He also incorporates a highly mythical geography of northern India and the surrounding areas, which he identifies as the southern continent in the *cakkavāla* and calls Jambudīpa.⁶⁶

From a stylistic point of view both Boisselier and Wenk see various external influences both in the Thonburi manuscripts and in earlier recensions. "In the landscapes, trees, rocks and water continue on occasion to reflect the Chinese influence . . . , while as regards figures, the attire of Muslims, Chinese, and Europeans of the seventeenth and eighteenth centuries perpetuates the classic note of exoticism."⁶⁷ One reviewer, however, takes issue with Wenk and, by implication, with Boisselier, on the extent of Chinese influence in Thai painting.⁶⁸ It seems reasonable to suggest the plausibility of some Chinese and Western influence, whatever the amount, and to raise the related question of the extent of such influence on other aspects of cartography, especially those we shall consider in the chapter on terrestrial mapping.

Within a number of Thai temples one finds mural paintings illustrating some of the same cosmographic themes treated in the *Trai phum*, though many of these are falling to the ravages of time.⁶⁹ When, in the reign of King Rama I (1782–1809), Bangkok's Wat Phrachet-tuphon was being restored and expanded, paintings from the *Trai phum* were added to the walls of the northern *vihāra* (monastery), which was one of several so adorned. An American visitor of that period wrote that the walls of one monastery

were completely covered with representations of heaven, earth, hell, and one of the stars of which their books speak. There were angels, men, and monkeys, foreigners, or caricatures of white men, and dignified natives—scenes of gaiety and sadness—by land and sea—of war and peace—temples and brothels, with almost every sketch which could be framed from their sacred books, or conceived by their versatile limners. . . . My informant, the prince, remarked that the object of these paintings was to instruct the illiterate, through the medium of their senses.⁷⁰

The *Trai phum*, it appears, still influences contemporary Thais, as do cosmological considerations in general. Although not nearly as popular as the *Trai phum*, other old cosmographic texts are also still read. One, a fifteenth-century northern Thai text, the *Phra malai sutta*, "deals only with the realms of woe and heavenly reward and focuses soteriological interest on the popular hope concerning the future advent of the Buddha Metteya [Maitreya]," the next Buddha who will descend to earth.⁷¹

As evidence of the popular appeal of cosmographic themes, Reynolds and Reynolds cite two remarkable

recent constructions. At Wat Phairongwua in Suphan Buri Province, for example, "there is a gigantic exhibit

66. Reynolds and Reynolds, *Three Worlds*, 35 (note 57).

67. Boisselier, *Thai Painting*, 92 (note 57).

68. Lyons, review of *Thailändische Miniaturmalereien*, 106 (note 57).

69. Reynolds and Reynolds, *Three Worlds*, 21–22; Wenk, *Thailändische Miniaturmalereien*, 7; and Boisselier, *Thai Painting*, esp. 10 (all in note 57).

70. David Abeel, *Journal of a Residence in China, and the Neighboring Countries, from 1829 to 1833* (New York: Leavitt, Lord, 1834), 258. Reynolds, "Buddhist Cosmography in Thai History," adds that "paintings of the Hindu-Buddhist heavens also covered walls within the Grand Palace compound," 211 (note 57). A map of major sites in Thailand where monasteries with mural paintings, often cosmographic, are to be found is provided in Elizabeth Wray, Clare Rosenfield, and Dorothy Bailey, *Ten Lives of the Buddha: Siamese Temple Paintings and Jataka Tales* (New York: Weatherhill, 1972), 118. Figure 2 (p. 124) of that work is a photograph showing one such vast mural on the south wall of the ordination hall of Wat Suwannaram at Thonburi. Regrettably, the mural is in the shade and partly obscured by a large statue of the Buddha placed before it, making it difficult to appreciate this work. Of murals depicting the Jatakas, Wray, Rosenfield, and Bailey (133–34) note that "scenes are not placed in chronological sequence; rather, they are arranged according to where they occur. For example, even though Sama [a character in a story] being wounded and Sama being mourned are two incidents separated in time by several events, they are painted in the same locale, the forest." Although such depictions might not quite qualify as cartographic, they do indicate a special sensitivity to spatial and topographic concerns and a mode of organizing narrative fundamentally different from that taken for granted in Western cultures. (The same organizational system is to be found in the bas-relief sculptures of the Jatakas on the railing medallions around the Bharhut stupa [in what is now the Indian state of Madhya Pradesh], dating from the mid-second century B.C., and also in relatively modern Tibetan and Nepalese paintings depicting events in the lives of lamas.)

Mural paintings of cosmographic themes are also found in Burmese temples, although I do not know how common those that might be described as cosmographies may be. One such illustration appears in Jane Terry Bailey, "Some Burmese Paintings of the Seventeenth Century and Later, Part II: The Return to Pagan," *Artibus Asiae* 40 (1978): 41–61. Figure 24 of that article, facing p. 59, shows a painting in the Ānanda monastery at Pagan that depicts Mount Meru and its seven surrounding concentric mountain chains. The date is about 1776, and the style is much like that of a similar scene painted on the doors of an eighteenth-century Siamese cabinet in the National Museum of Ayutthaya (see fig. 17.21 below). The similarity could well be explained by Bailey's suggestion (p. 61) that "Siamese painters, taken as prisoners of war after the capture of Ayudhyā in 1767, may have been set to work in Burma." I will point out below at least one Burmese cosmographic manuscript that suggests a Thai antecedent and that could be accounted for in like manner.

71. Reynolds and Reynolds, *Three Worlds*, 21 (note 57). Ginsburg, *Thai Manuscript Painting*, 72–73 (note 54), notes that illustrated *Phra malai* manuscripts are known only from the late eighteenth and early nineteenth centuries and states that their illustrations "include visions of heaven, hell, and of daily life on earth." Although the ten reproductions he has selected lack any quality that one might call cartographic, others in Boisselier, *Thai Painting* (note 57), come close to the tone set by the *Trai phum*. It would be worthwhile to examine views from others among the large number of manuscripts in museums in the United States and Europe for which Ginsburg provides the locations.

spread over several acres of land within which one can observe vivid, three-dimensional depictions of the pleasures of the heavenly realms reserved for those who make merit and even more striking representations of the realms of woe to which those who do various kinds of evil are condemned.” No less remarkable, in a temple building in the Buddhist center Wat Phutudom in Pathum Thani Province one finds

representations of each of the three worlds and the thirty-one realms. In the dark recesses of the basement visitors pass through and observe the three lowest realms of woe; on the main floor where a great Buddha image is seated, they pass through and observe the realms of the animals and of men; and as they climb through a series of nine upper rooms, built on top of one another, and reach the temple roof, they pass through and observe the six heavenly realms of the *devatā*, the sixteen realms of the world with only a remnant of material factors, and the four realms of the world without material factors. Moreover, a fascinating twist is given to the symbolic significance of the tour of the three worlds by the fact that the heavenly realms are depicted in nine sets . . . each of which is associated with an event in the Buddha’s life, with a particular planet, and with a particular day of the week. Thus as visitors climb upward through the twenty-six realms above the realm of men, they also pass by and observe the crucial events in the life of the Buddha, the nine major astronomical segments of the celestial regions, and, in addition, they pass through the full temporal cycle represented by a calendrical week.⁷²

Though our discussion to this point has focused on what is now Thailand, the cosmographic notions embodied in the *Trai phum* were not confined to that area.

All Theravāda Buddhist peoples shared the same cosmography as it was inherent in the the Pāli scriptural tradition. . . . Fragments of the Pāli canon and commentaries also reached Burmese, Lao, Mon, and Khmer courts; and through the centuries, the cosmography penetrated deeper and deeper into mainland Buddhist belief. Even in non-Theravāda Southeast Asia, artists portrayed aspects of the cosmography in Buddhist monuments. The bas reliefs on the Mahāyāna Buddhist Borobudur temples in central Java depicting sinners being punished in the hells have their origins in a Nepalese text. The cosmography was not, in fact, exclusively Theravāda but was part of a larger Hindu-Buddhist tradition.⁷³

Although Hinduism is virtually extinct in Southeast Asia (leaving aside its following among recent immigrants from India), Hindu concepts inform the worldviews of many Southeast Asian peoples and, as we have seen, have had some influence on a number of tribal religious systems. The only area in which Hinduism remains the dom-

inant faith is the Indonesian island of Bali and a part of the adjacent island of Lombok. Cosmography in this area, perhaps even more than in most of the rest of Southeast Asia, is an important aspect of popular culture, and cosmographic symbolism plays an important role in architecture, cremation rites, other religious practices, modes of governance, and some of the dances for which Bali is famous. Every Balinese village, for example, has its temple, and every temple has one or more multitiered Meru pagodas. Perhaps the most characteristic as well as spectacular Balinese representations of the cosmos are the great towers in which corpses are borne to the cremation ground.⁷⁴

Though I lack space to discuss other aspects of Balinese cosmography, I should point out that a variety of cosmographic paintings also exist. Bosch provides a striking illustration of the multilayered, vertical axiality of the cosmos through an undated painting of Shiva, the dominant god in the Balinese pantheon, “in the shape of the primeval *liṅga* . . . [who], rising from the underworld and cleaving the sky, penetrates into the highest heaven.”⁷⁵

The Four-Continent Earth and the Mount Sumeru System

As previously noted, in the cosmography of Buddhism the earth is perceived, as it is in Hinduism and Jainism, as a horizontal disk centered on Mount Sumeru (Sanskrit Meru; in this section I shall adhere to the Pali forms of proper names). In each of the four cardinal directions outward from Sumeru lies an island continent, distinguishable by its shape. Plate 35 and figure 17.14 show Burmese examples of this conception. Of the two illustrations, the former, though much simpler, seems in some respects more faithful to the canonical descriptions, especially in regard to the clearly differentiated shapes of the four continents. The wedge-shaped Jambudīpa (Sanskrit Jambūdvīpa) is the southern continent, inhabited by

72. Reynolds and Reynolds, *Three Worlds*, 25–26 (note 57).

73. Reynolds, “Buddhist Cosmography in Thai History,” 206–7 (note 57). Two footnotes to the passage quoted refer to a number of works dealing with various parts of Southeast Asia beyond Thailand that I have not yet had an opportunity to explore. It would not be surprising if those works were to lead to further graphic representations of the cosmos. Later in this chapter I will refer to several Burmese cosmographic paintings that, but for their distinctive style, could be right out of the *Trai phum*.

74. See Miguel Covarrubias, *Island of Bali* (1936; New York: Alfred A. Knopf, 1956), 371–72, for a detailed description and explanation.

75. Bosch, *Golden Germ*, pl. 62.b and text on 165 (note 20). For additional paintings see Covarrubias, *Island of Bali*, 6–7, illustrating the turtle-snake motif with explanatory text (note 74); and *Ajia no kosumosu*, 110 (same painting just noted), 111 (another version of the same theme), and 124–25 and 126 (modern paintings of cremation ceremonies illustrating the cremation towers) (note 57).

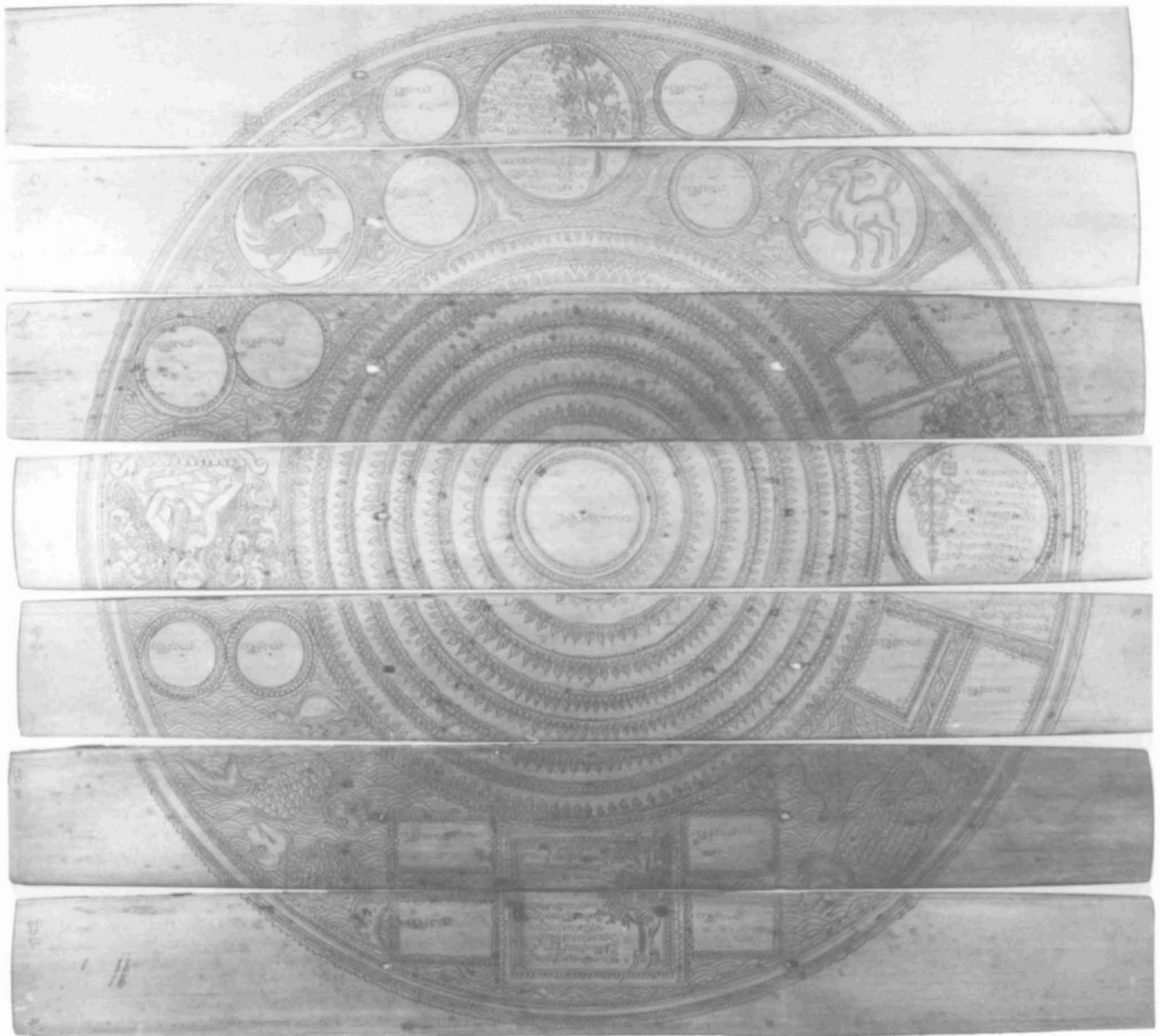


FIG. 17.14. BURMESE PALM-LEAF COSMOGRAPHY. These seven leaves are part of a manuscript of 113 folios (plus several unused leaves), written on one side only, encased in painted wooden endpieces. Etched with a stylus, the design is subsequently fixed with lampblack. Purchased in 1949, the manuscript is of unknown age but thought to date from the nine-

teenth century. The subjects of the leaves depicted are generally similar to those shown in plate 35, but the Buddha, for reasons unknown, here is sitting in what is taken to be the northern continent.

Size of each leaf: ca. 6 × 25 cm. By permission of the British Library, London (Add. MS. 17699 A).

humans like ourselves. There the Buddha sits under the *jambu* tree from which the continent takes its name. The shapes of two of the continents shown on this cosmography differ from those of Thai and Tibetan cosmographies of similar derivation. Here the northern continent, Uttarakuru, is round and the western continent, Aparagoyāna (Sanskrit Aparagodāniya), is square. In the non-Burmese cases the reverse is true. That the arrangement of shapes is correct here, however (at least for Burma), is suggested in that their disposition with respect to one

another is identical to that of the cosmography presented in another version on palm leaf.⁷⁶ One would suppose that the latter, a published palm-leaf manuscript, would be exemplary. Although we do not know the date of that illustration, whose the map portion covers nine leaves, its appearance and style suggest that it is significantly older

76. This palm-leaf cosmography is published in a Burmese encyclopedia, *Myanma swezoun kyan*, 2d ed., 15 vols. (Rangoon, 1968), 10:295.

than the one depicted in figure 17.14 (thought to date from the nineteenth century) and possibly, on that count, closer to the ancient tradition.

Since the orientation of the writing in plate 35 varies from continent to continent, one cannot definitively say which part of the map is “up,” but the manner of binding of all three manuscripts suggests that east is at the top. Despite their overall similarities, several significant points of difference exist among the three maps. Particularly striking are the variations in the number and shapes of tributary continents adjacent to the four principal continents. On both plate 35 and the palm-leaf manuscript not illustrated here, the shapes of main and tributary continents are identical; in figure 17.14 they vary in the west. The two palm-leaf manuscripts, however, are alike in having four symmetrically distributed tributary continents, two on each side of the principal continents, whereas in plate 35 each main continent has a different number (as is true in some Pali texts where, however, the numbers given are in the hundreds). Reading clockwise from Jambudīpa, which has four tributaries, we come to Aparagoyāna with six, Uttarakuru with five, and Pubbavideha (Sanskrit Pūrvavideha), the eastern continent, with only three. (Differences from one continent to another also exist in Tibetan Buddhist cosmographies, though the numbers there do not accord with those in plate 35. This seems to be a matter in which a certain degree of artistic license is in order.) A final point of similarity between plate 35 and the undepicted palm-leaf cosmography is that both show the sun and the moon by large circles symmetrically disposed with respect to Pubbavideha, whereas neither sun nor moon is evident in figure 17.14.

Since palm-leaf manuscripts do not lend themselves to the use of color, the lack of it in figure 17.14 does not constitute an important difference from plate 35, which was painted with a multihued pastel palette. Although particular colors do figure prominently in Buddhist and Hindu cosmographies—signifying, among other things, particular directions—the use of color in the map shown in plate 35 seems in some respects rather arbitrary. Although, as one might expect, tributary continents and main continents are always in the same hue, the four main continents, which one would expect to be of distinctive colors, appear in two cases to be alike. (Possibly the pigment of one has faded with time.) Around Sumeru, each of the ring seas is colored light green, while Sumeru, the seven ring mountain ranges around it, and the outermost rim, the Cakkavāla, are all compounded of bands of several hues. The gold core of sacred Sumeru itself is attested in the canon.

Figure 17.15 presents the Thai equivalent of the Cakkavāla cosmography presented in plate 35 and figure 17.14. This illustration, from the Berlin manuscript of

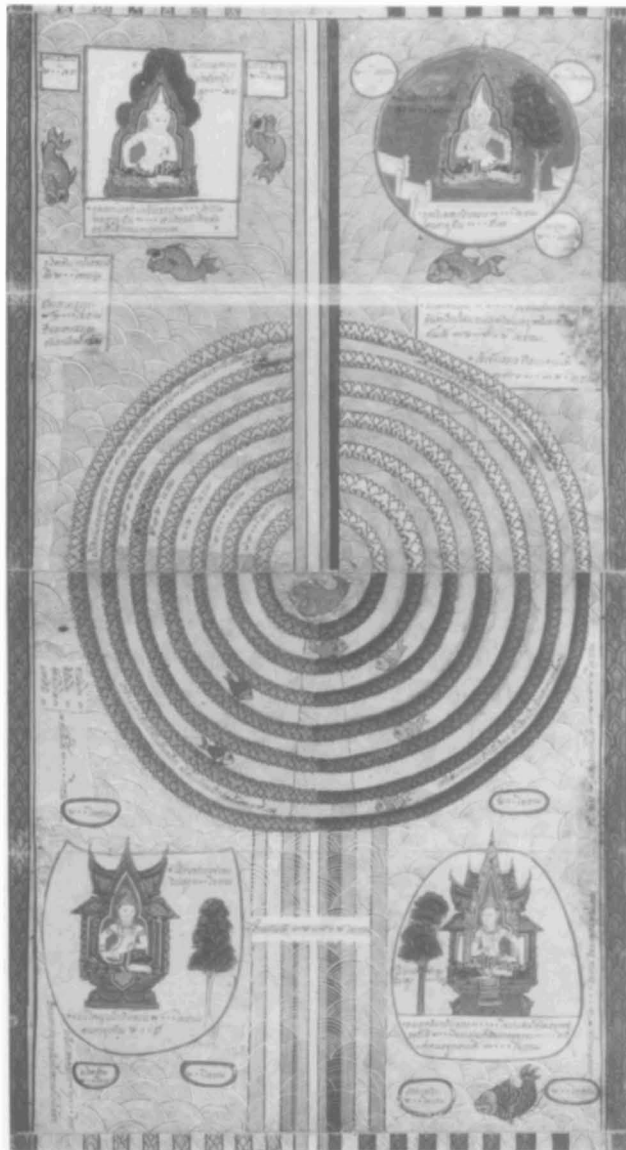


FIG. 17.15. THE FOUR CONTINENTS AROUND SUMERU AS SHOWN IN THE *TRAI PHUM*. Painted, bark-paper (*samud khoi*) manuscript, bound accordion-style, Thailand, 1776 (the year 2319 of the Buddhist Era). Four successive folios, out of a total of the 272 composing the Berlin manuscript of the *Trai phum*, are depicted here. The work was made on the bidding of the then king Taksin of Siam, and the names of the four artists and four scribes are specified in the manuscript. This illustration shows the vertical shaft of Sumeru, the seven surrounding mountain ranges and seas, the four principal continents inhabited by humans, each with its distinctive shape, and the multiple tributary continents nearby (here arbitrarily shown as only three in number). Within each continent a tutelary deity sits within his palace, near or behind which appears a tree, one of the characteristic features of each continent. Size of the entire original: 51.8 × 3,195 cm; each panel: 51.8 × 23 cm. By permission of the Museum für Indische Kunst, Staatliche Museen zu Berlin—Preussischer Kulturbesitz (MIK II 650/RF 10–16).

the previously discussed *Trai phum* cosmography, in most particulars bears a strong resemblance to the comparable representation in the Bangkok manuscript of the same date. In figure 17.15, judging from their shapes, Jambudīpa is in the lower left corner, with the western, northern, and eastern continents ranged clockwise from it, each with three satellite continents of more or less the same shape. Inexplicably, however, the southern and western continents and the northern and eastern ones are

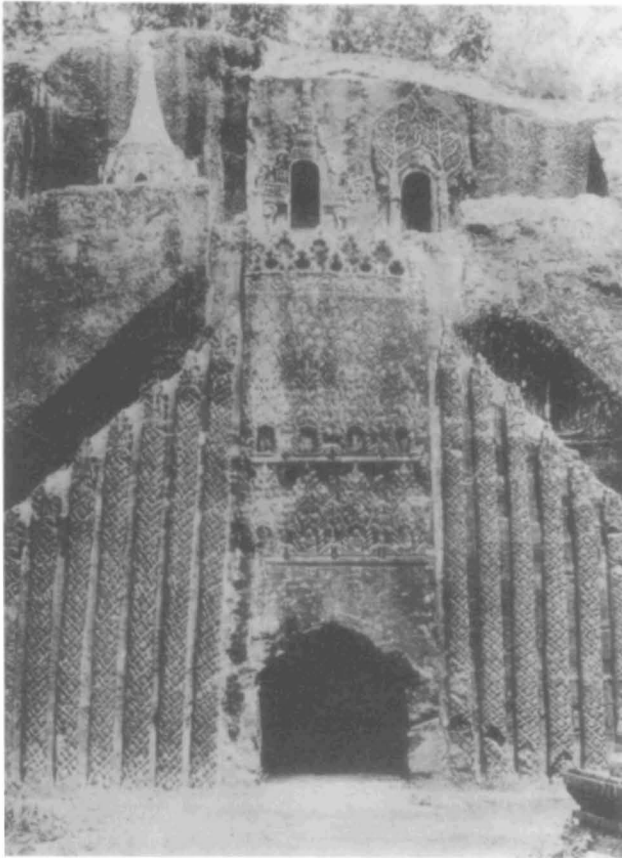


FIG. 17.16. SUMERU AND SEVEN SUCCESSIVE RANGES OF RING MOUNTAINS. This east-facing cross-sectional representation forms part of a very extensive assemblage of monastic caves carved into the live rock at Powun-daung. The height from the ground to the top of the quatrefoil ornaments below the two uppermost niches is approximately 8.2 meters, and the width at the base is 4.6 meters. The arched entrance to the cave is roughly 2.4 meters broad and 2.1 meters high. Atop Sumeru are two niches, one representing Indra's nine-tiered palace in the heaven of the thirty-three *devatās*, and the other formed by the interlocking limbs of two of the wish-granting *Pāricchattaka* trees by which that heavenly realm (line 6 in table 17.1) is characterized. Below this level are two horizontal rows of four niches each. The images that presumably once occupied the upper of those two rows are no longer present; those in the lower row are said to have a goblin-like appearance (not easily discerned in this photograph). It seems likely that the no longer extant former set represented the Four Great Kings and the latter, either humans on the four continents of *Manuṣya* or

reversed from left to right in the Bangkok case, as compared with the Berlin manuscript. Other differences of note relate to the scenes depicted in each of the four continents. In the Berlin manuscript, for example, each contains what appears to be a Buddha within a palace with a characteristic tree alongside or to the rear, whereas in the Bangkok manuscript the scenes are more complex, the palaces being set within white-walled compounds outside two of which (Jambudīpa and Aparagoyāna) a man and a woman are depicted. The background color of the fields where the compounds are situated in the Bangkok manuscript is distinctive, and the color of each set of tributary continents is appropriately matched. This touch, following specifications in the text itself, is absent in the Berlin manuscript. In both, however, the colors of the four quadrants of the seven ring mountain ranges are distinct, and in the Bangkok case that color is also keyed to the color of the continents.

In both manuscripts the dominant perspective is planimetric, while Sumeru appears as a vertical shaft running through the ensemble and linking it to other portions of the universe above and below. That Sumeru goes beneath the level of the seas is indicated in both cases by a wave pattern overpainted on the portion of the mountain in the lower part of the field and the absence of any such overpainting in the upper half.

Stylistically, with respect to the manner of rendering mountains, seas, trees, human figures, fish, and animals and in the use of color, the *Trai phum* cosmography differs markedly from the Burmese examples. But most of these differences are to be expected given the different artistic traditions of the two countries and the varying dates of the works in question, and they have little cartographic significance.

Recently excavated from a stupa in northern Thailand is a *samud khoi* manuscript, written in the Lanna Thai

demigods (*asuras*) living below the world of humans. Although the placement of the latter within Sumeru would not be in accordance with the letter of the canon, the need to accommodate the various elements of the design to the position of the cave entrance could have played a decisive role in the composition. The caves and associated monuments at Powun-daung were used for meditation and prayer and not as residences for the monastic community living nearby. They are believed to have been commenced in the ninth or tenth century, probably by the now extinct Pyu (a Tibeto-Burman people who occupied Upper Burma before the advent of the Burmans proper), and have been continually expanded up to the twentieth century. The date of this particular part is not known, but it is probably not among the more recent parts of the assemblage. Size of the original: height greater than 10 m. From Charles Duroiselle, "The Rock-Cut Temples of Powun-daung," in *Archaeological Survey of India Annual Report, 1914-15* (Calcutta, 1920), 42-55, esp. pl. XXX.

script, that includes a cosmographic map of Sumeru and the four surrounding continents. This map, executed in black ink, was supposed to establish the cosmic link between the stupa and Sumeru. It is in a nonpictorial style altogether different from the southern Thai examples and considerably simpler, showing only a single ring mountain range around Sumeru, out from which is a circular band divided into four quadrants, each bearing the name of the continent in its particular cardinal direction from the cosmic axis and a statement of the width of the continent in *yojanas*.⁷⁷

For sheer grandeur, no essentially two-dimensional Buddhist cosmography I know of can match the one shown in figure 17.16, which presents a cross-sectional view of Sumeru and its surrounding mountain ranges hewn out of a sandstone cliff face at Powun-daung (Powin Taung) in Upper Burma. More than ten meters in height, this as-yet-undatable work forms part of an extensive monastic cave assemblage that was begun in the ninth or tenth century and continually expanded up to the present century. As far as I know, it has not been carefully studied by any modern scholar familiar with the cosmology it is based on, and some of the suggestions offered in the legend must therefore be viewed as tentative.⁷⁸

The complex of Sumeru and the surrounding mountain ranges seen in cross section appears in Southeast Asia in a variety of architectural forms: as a design element in the finials above doors and windows of religious edifices and other important buildings and as an accent on the gates of religious compounds. The styles are quite varied. In his work on the art of Laos, Parmentier illustrates a number of movable carved wooden altars, which he calls *portes-lumineuses*, in which the Sumeru complex figures prominently. Attached to the altars were curved iron rods that held votive candles whose light was reflected from the altar to provide the desired aura of sanctity. A particularly graceful undated work of this genre is found in a temple in the northern Lao village of Ban Mang. This lyre-shaped object has a maximum height and width of approximately 2.35 and 1.42 meters, respectively. Each mountain range on the altar is a narrow, tiered spire in the characteristic form of the Lao pagoda. These rise regularly in height inward toward the central spire above Sumeru, which then rises well above the others. Prominent features of this intricately carved composition are pairs of protective *nagas* entwined about Sumeru and one another at two different levels, with additional entwined *nagas* at Sumeru's base and still others helping to frame the composition. Parmentier does not discuss the iconographic significance of this serpentine emphasis.⁷⁹

I know of no Sumeru cosmographies from Cambodia comparable to those I have just discussed. But since Cam-

bodia's history as a Hinayana Buddhist nation, following the late thirteenth-century Thai conquest of the Mahayana Khmer empire, has much in common with that of Thailand and Burma, the likelihood of finding similar works in that country appears high.⁸⁰

Apart from the essentially two-dimensional representations of the Cakkavāla system and the Mount

77. The map occupies two folios of the manuscript's total of sixty-one. The manuscript (which I shall refer to again in the discussion of terrestrial route maps) is held in the Echols Southeast Asian Collection of the Cornell University Library. According to Phramaha Wan, who examined a microfilm print of it for me, it includes selections from the *Trai phum*. In addition to the brief text in each of the continents, there are eight lines of text within the circle of Sumeru itself, rather brief notes outside the circular band containing the continents, and ornamental projections from the band, each with a few words of text, leading to the four corners of the map.

Yet another Cakkavāla cosmography appears in an illuminated folding manuscript that, though attributed to Burma, shows many points of similarity to the *Trai phum* excerpt in figure 17.15. This work is illustrated in *Ajia no kosumosu*, 35 (note 57). The illustration, on six consecutive folios, presents a continuous, but incomplete, picture depicting Mount Sumeru, with the palace of Indra on its summit; the seven surrounding ranges of progressively decreasing altitude, each surmounted by a palace of its own; a red sun bearing the image of a cock to the right of Sumeru; a white moon with the image of a hare to its left; and additional iconic details on the shaft of the central mountain. Unfortunately the manuscript is in a serious state of decay and very likely incomplete (portions of ten or so additional folios are visible beneath those photographed). No information is available on the date, physical attributes, authorship, or context of this richly and meticulously painted work. The catalog credits Takao Inoue with providing the photographs but does not indicate the manuscript's present whereabouts.

78. The assemblage is illustrated and discussed at length by Charles Duroiselle, "The Rock-Cut Temples of Powun-daung," in *Archaeological Survey of India Annual Report, 1914-15* (Calcutta, 1920), 42-55, esp. 49-51, and more briefly noted by Heine-Geldern, "Weltbild und Bauform," fig. 26 and pp. 71-72 (note 56).

79. Henri Parmentier, *L'art du Laos*, 2 vols. (Paris: Imprimerie Nationale and Hanoi: Ecole Française d'Extrême-Orient, 1954), 1:45-47 and 262-66, vol. 2, pl. XIV.

80. A pair of cosmographic paintings, allegedly from Cambodia, is illustrated in *Ajia no kosumosu*, 93 (note 57). Apart from their attribution to Cambodia, their joint designation, "Kumeru Mandara" (Sumeru mandalas), and the fact that they were owned by a London art dealer, Jean-Claude Ciancimino, no further information about the paintings (size, date, and so forth) was provided. I have seen one of the pair in London and take it to be fairly recent, possibly even of the twentieth century. The paintings bear a striking similarity to a very large pair of paintings in Minākṣi Temple in the south Indian city of Madurai, one titled *Bhūgolam* (Globe/Geography) and the other *Khagolam* (Celestial dome). The first of the allegedly Cambodian pair is clearly a painting of the terrestrial disk as portrayed in Hindu cosmography, essentially as shown in Schwartzberg, "Cosmographical Mapping," fig. 16.9 and a portion of 16.10 (note 2). The other, no less clearly an astronomical work, resembles the Madurai painting illustrated as figure 16.19 of the same essay. The Hindu, rather than Buddhist, content of the pair argues against a Cambodian provenance. Since the Cambodian script bears some resemblance to the Tamil script, both being derived from an ancient Pali prototype, a mistaken attribution would be understandable.

Sumeru complex, both are symbolically reproduced in the architecture of Southeast Asia. This was noted briefly in chapter 16 and illustrated with respect to the great “temple mountain” at Borobudur in central Java (fig. 16.2). Since the literature on Southeast Asian architecture is extensive—if not always definitive—in its treatment of the associated cosmographic concepts, little purpose would be served by attempting to recapitulate here the detailed exposition and sophisticated analyses of art historians who are specialists in the field.⁸¹

Even ephemeral constructions, when created for ritual purposes, may portray cosmography in remarkable detail and on a rather grand scale. This is particularly true of works associated with important rites of passage, such as coronations, consecrations, cremations, and the first tonsure ceremony, especially for persons of royal lineage. Although not as grandiose as in past generations, such works still serve as cosmic legitimizers of the Thai monarchy and were characteristic also of royal ritual in Burma and Cambodia.⁸² Not only the rituals were cosmicized, but also the very person of the monarch himself, as is evident from official documents that identify him as the axis of the universe and describe various parts of his body, as well as his regalia and associated paraphernalia, as representing specific portions of the cosmos.⁸³ Finally, we may note that ephemeral cosmographic structures were also employed in popular religious practices. Among the Burmese, for example, light bamboo constructions of Sumeru are erected for the celebration of the Tawad-eintha festival, which celebrates the Buddha’s ascent to the Tāvatiṃsa heaven to preach to his parents.⁸⁴ It seems probable that a thorough study of religious practices in mainland Southeast Asia would reveal other examples of the use of cosmography in popular ritual.

Reviewing the importance of Sumeru in both Hindu and Buddhist belief systems, Mabbett summarizes the issue as follows (and simultaneously adumbrates certain matters I have yet to touch on):

The ambiguities and multivalences of symbolism which are exhibited by temple and *stūpa* architecture, *maṇḍalas* and tantric ritual, make clear to us a duality in Mount Meru’s nature that could never emerge from the contemplation of it merely as a point on a two-dimensional map, even a cosmic map. For the cosmic map represents only space “out there”—even if the data of cosmography, with its elephant-sized jambu fruits and circumambulating rivers, are invisible to the fleshly eye (so are molecules and magnetic fields), still they are regarded as concrete and physical in a very real sense. The principles of Meru-centric cosmography are continuous with what its authors regarded as hard objective science.⁸⁵

Views of Limited Portions of the Cosmos

Given the essentially didactic purpose of the *Trai phum* and other major cosmographic texts of Hinayana Buddhism in Southeast Asia, it is only natural that illuminated manuscripts, mural paintings in temples, and other forms of pictorial art should portray views of those portions of the cosmos that would present viewers with evidence of the delights or punishments awaiting them as the karmic consequences of good or bad behavior in the present life or in lives yet to come. Scenes of various hells are particularly abundant, which is hardly surprising when one considers that there was a specific type of hell for each category of sinful conduct. Thus, for each of the eight major hells ruled over by Lord Yama there are sixteen associated hells, whose topological relation to one another finds its logic in the moral domain. Figure 17.17, taken from the Bangkok manuscript of the Thonburi recension of the *Trai phum*, provides the sort of awe-inspiring picture—in this case of Roruva, the screaming hell—that would give the viewer an incentive to adhere to the straight and narrow path. But even worse hells, beginning with Maha Roruva, the great screaming hell, and ending with Maha Avici, the great hell of suffering without respite, lie at successively lower levels. The following translated passage will convey some sense of how faithful the picture presented is to the text:

81. Among the major works that deal with the issue of cosmic symbolism in Southeast Asian architecture are Bosch, *Golden Germ* (note 20); Heine-Geldern, “Weltbild und Bauform” (note 56); Paul Mus, *Barabudur: Esquisse d’une histoire du Bouddhisme fondée sur la critique archéologique des textes*, 2 vols. (Hanoi: Imprimerie d’Extrême-Orient, 1935); and Wales, *Universe around Them* (note 1).

82. Among published works that deal with this subject are Wales, *Universe around Them* (note 1); Horace Geoffrey Quaritch Wales, *Siamese State Ceremonies: Their History and Function* (London: Bernard Quaritch, 1931); Dhani Nivat, “The Gilt Lacquer Screen in the Audience Hall of Dusit,” *Artibus Asiae* 24 (1961): 275–82; Gerolamo E. Gerini, *Chūlākantamaṅgala; or, The Tonsure Ceremony as Performed in Siam* (Bangkok: Siam Society, 1976; first published in 1895); Robert Heine-Geldern, *Conceptions of State and Kingship in Southeast Asia* (Ithaca, N.Y.: Cornell University, 1956), a revised version of an article of the same title published in *Far Eastern Quarterly* 2 (1942): 15–30, which in turn recapitulates many of the ideas in Heine-Geldern “Weltbild und Bauform” (note 56); and *Ajia no kosumosu* (note 57).

83. For example, Heine-Geldern, “Conceptions of State and Kingship,” 21–22 (note 82), notes that at the coronation of King Sisowath of Cambodia in 1906 an official document pronounced that “the king is identified with Mount Meru itself, his right eye representing the sun, his left eye the moon, his arms and legs the four cardinal points, the six-tiered umbrella above his head the six lower heavens, his pointed crown the spire of Indra’s palace on the summit of the Meru and his slippers the earth. This means that the king is identified with the axis of the universe.” Or to put it another way, the king had himself become a map.

84. Heine-Geldern “Weltbild und Bauform,” 72 (note 56).

85. I. W. Mabbett, “The Symbolism of Mount Meru,” *History of Religions* 23 (1983): 64–83, esp. 79.

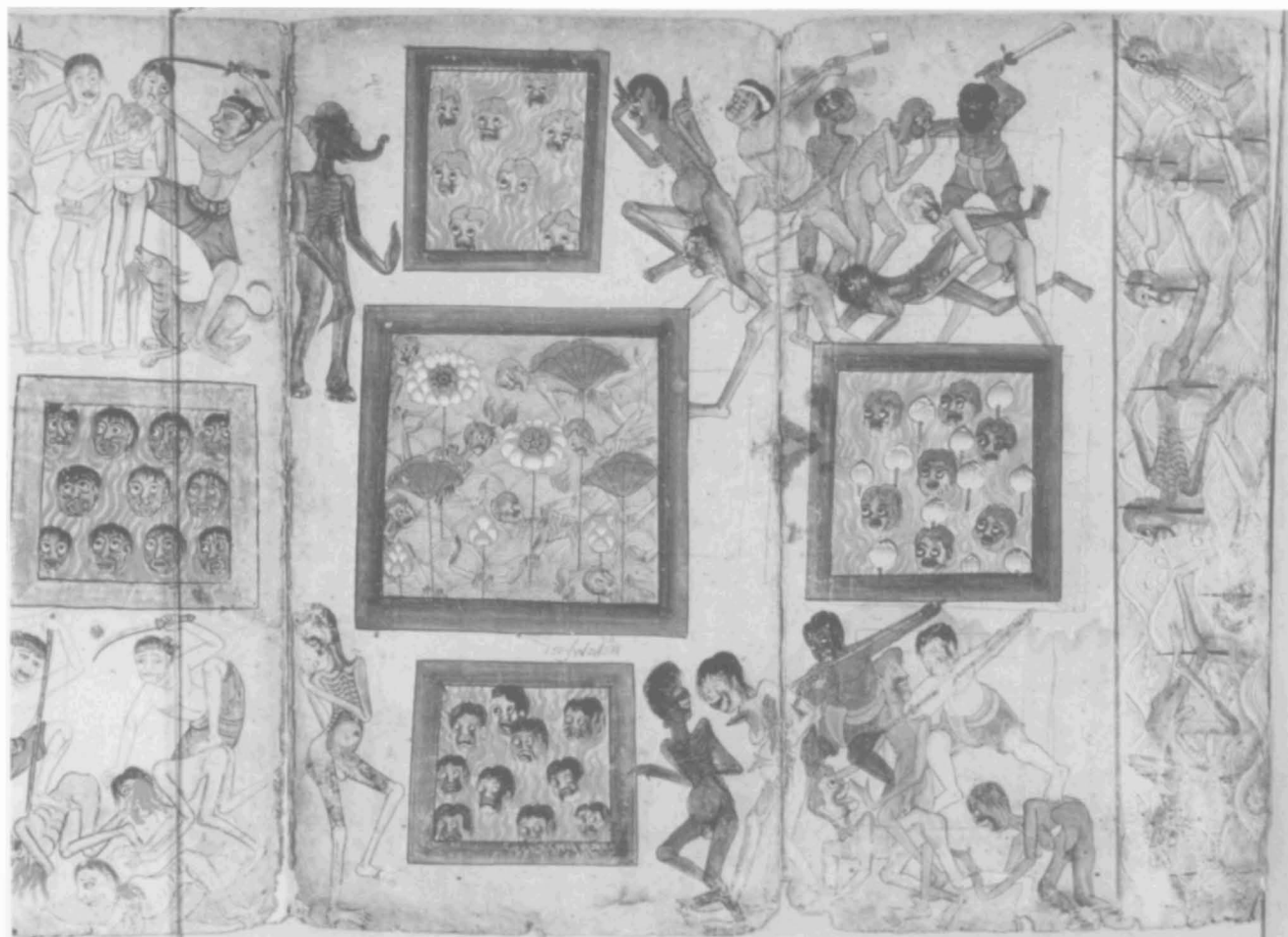


FIG. 17.17. RORUVA HELL IN THE THAI *TRAI PHUM* COSMOGRAPHY. This hell, full of flame-spouting lotus blossoms, is the place to which are consigned those who give false testimony, malign others, commit thefts, or plunder. Creatures so damned are reborn in the blossoms and are unable to push themselves completely out of them. Also seen in this illustration are the innermost four of sixteen ancillary hells that extend in

lines of four from each of the cardinal directions outward from the main hell.

Size of the original: unknown. From *Samutphāp traiphūm burān chabap Krung Thon Buri/Buddhist Cosmology Thon-buri Version* (Bangkok: Khana Kammakān Phīchāranā læ Čhat-phim 'Ēkkasān thāng Prawattisāt, Samnak Nāyok Rathamontī, 1982), pl. 36.

These eight large hells each have four corners with gates at the four cardinal points. The floors that form the bottom of these hells are made of fiery red iron, and the ceilings that cover the top are also formed of fiery red iron. These hells are square and they measure 100 *yojana* [about 1,500 km]. . . . The four sides, the floor, and the ceilings are each nine *yojana* thick, and there are no empty places in these hells; they are full of hell beings who are pressed tightly together and fill the entire hell. . . .

Surrounding each of these eight large hells are sixteen small auxiliary hells, which are their satellites, four on each side. Each of these . . . is surrounded by countless numbers of smaller hells, like the villages surrounding a city in our human world; and each of the auxiliary hells is ten *yojana* wide. These auxiliary hells, plus the large hells, are 136 in number.⁸⁶

There is, of course, much more to the description, including frightening details as to the duration of suffering in each hell and the duration of the hell itself until the dissolution of the universe at the end of a *kappa* (Sanskrit *kalpa*), the termination of one cycle of creation and destruction. Such information reminds us that each portion of the cosmos has not only its spatial dimensions, which are relatively easy to portray graphically, but its temporal dimensions as well. The latter are no less important an aspect of their reality in the mind of Buddhists.

Depictions of heavens and other blessed cosmic spaces, including nibbana, are also common in painted Buddhist cosmographies. As a rule these are portrayed in frontal elevation or in a frontal oblique perspective as palaces

86. Reynolds and Reynolds, *Three Worlds*, 67–68 (note 57).

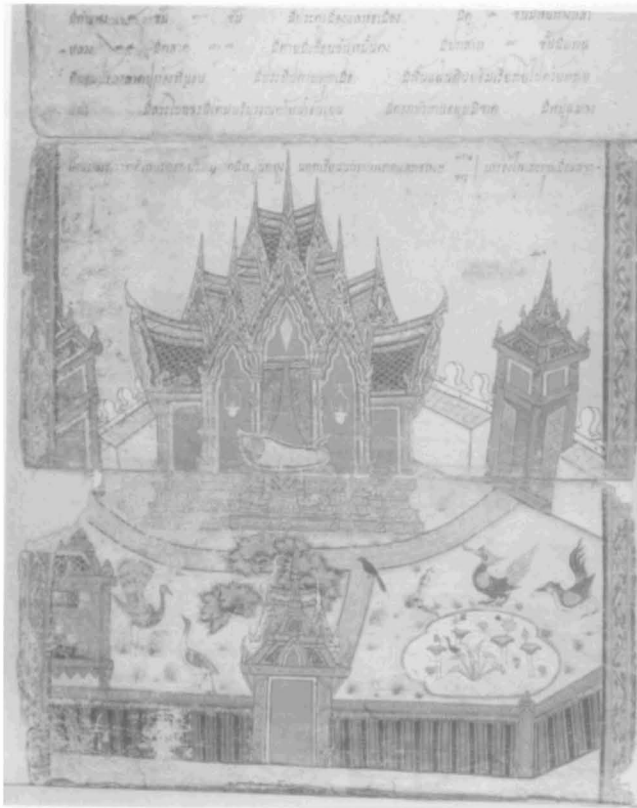


FIG. 17.18. THE GREAT CITY OF NIBBANA, AS SHOWN IN THE ILLUMINATED *TRAI PHUM* TEXT. Painted on paper, two folios of a manuscript of the Thonburi recension, bound in the traditional Siamese accordion style. The literal rendering of a portion of the text accompanying this illustration reads:

Its ground laid with sands of crystal,
A lake filled to the brim with clear cool water, blooming
with lotuses.
Bees are busy fondling the stamens;
Melodious songs are heard from peacocks, cranes, and
wild ducks,
and white and red hansas [swans].

This is a far cry from the canonical idea of a nibbana characterized by the absence of form or consciousness, although some suggestion of formlessness for one attaining that goal is conveyed by the divan with no reclining figure. The idea of a city is conveyed by the walls, the gates therein, the paved paths, and the fact that there are buildings shown in addition to just a single palace.

Size of the original: unknown. From *Samutphāp traiphūm burān chabap Krung Thon Buri/Buddhist Cosmology Thonburi Version* (Bangkok: Khana Kammakān Phičhāranā læ Čatphim ‘Ēkkasān thāng Prawattisāt, Samnak Nāyok Ratthamontri, 1982), pl. 1.

within which is shown a locally reigning deity or grouping of divine creatures. Adjacent features, such as gardens or groves of trees bearing sumptuous fruit, may or may not be depicted. The cartographic nature of such scenes, viewed in isolation, is not always apparent; but when one

recognizes that they have a logically correct place, based on their position within a much larger cosmic ensemble, it becomes evident that they form an integral element of a cosmic map. Higher realms that appear to be particularly common subjects for cosmographic paintings and three-dimensional constructions include the Tāvātimsa heaven, at the summit of Sumeru, where Indra reigns over thirty-three lesser deities and nibbana itself. The popularity of the former realm may be explained largely in terms of its close association with Sumeru and partly because it represents a proximate goal whose attainment—in contrast to more distant heavens—is not beyond the aspirations of ordinary, imperfect mortals.

Nibbana, shown in figure 17.18, on the other hand, is popular despite the remote likelihood of soon being born again at that level. Rather, it is appealing because it represents the ultimate goal toward which all good Buddhists aspire. Yet there is a paradox in its being visibly portrayed in cosmographies such as the *Trai phum*, in that it represents the highest level of Arūpadhātu (Sanskrit Ārupyadhātu), the “Realm of Nonform,” even above the level of “Nothingness.” Although, as table 17.1 shows, this highest level is theoretically one of “Neither Consciousness nor Not Consciousness,” the *Trai phum*, written for the instruction of laypersons, for whom formlessness was probably too esoteric a concept, resolves the problem with the following passage:

As for Nibbāna, there are two kinds that are gained by those who have completely rid themselves of the multitude of defilements. . . . one kind is called the Nibbāna with some substratum of life remaining, and the other kind is called the Nibbāna in which there is no substratum of life remaining. That which is attained as the fruit of fully perfected sainthood is said to reach the first treasure. . . . That which is attained when the five aggregates are left behind is said to reach the Nibbāna in which there is no substratum of life remaining.⁸⁷

It seems, therefore, that what is being depicted is merely the first level of nibbana. (The five aggregates referred to in the quoted passage are material factors, feelings, perceptions, mental formations, and mental processes.)⁸⁸

Figure 17.19 presents a Burmese view of one of the heavenly abodes. Though not dated, this view is roughly contemporaneous with the depiction of nibbana that I have just discussed and is similar in spirit, if not in manner of execution. The twenty-nine-folio palm-leaf manuscript from which the figure is extracted shows a series of heavenly mansions in their appropriate order on one side of the work and a series of hells on the other.

Although the description of the geography of the Cak-

87. Reynolds and Reynolds, *Three Worlds*, 329–30 (note 57).

88. Reynolds and Reynolds, *Three Worlds*, 336–37 (note 57).

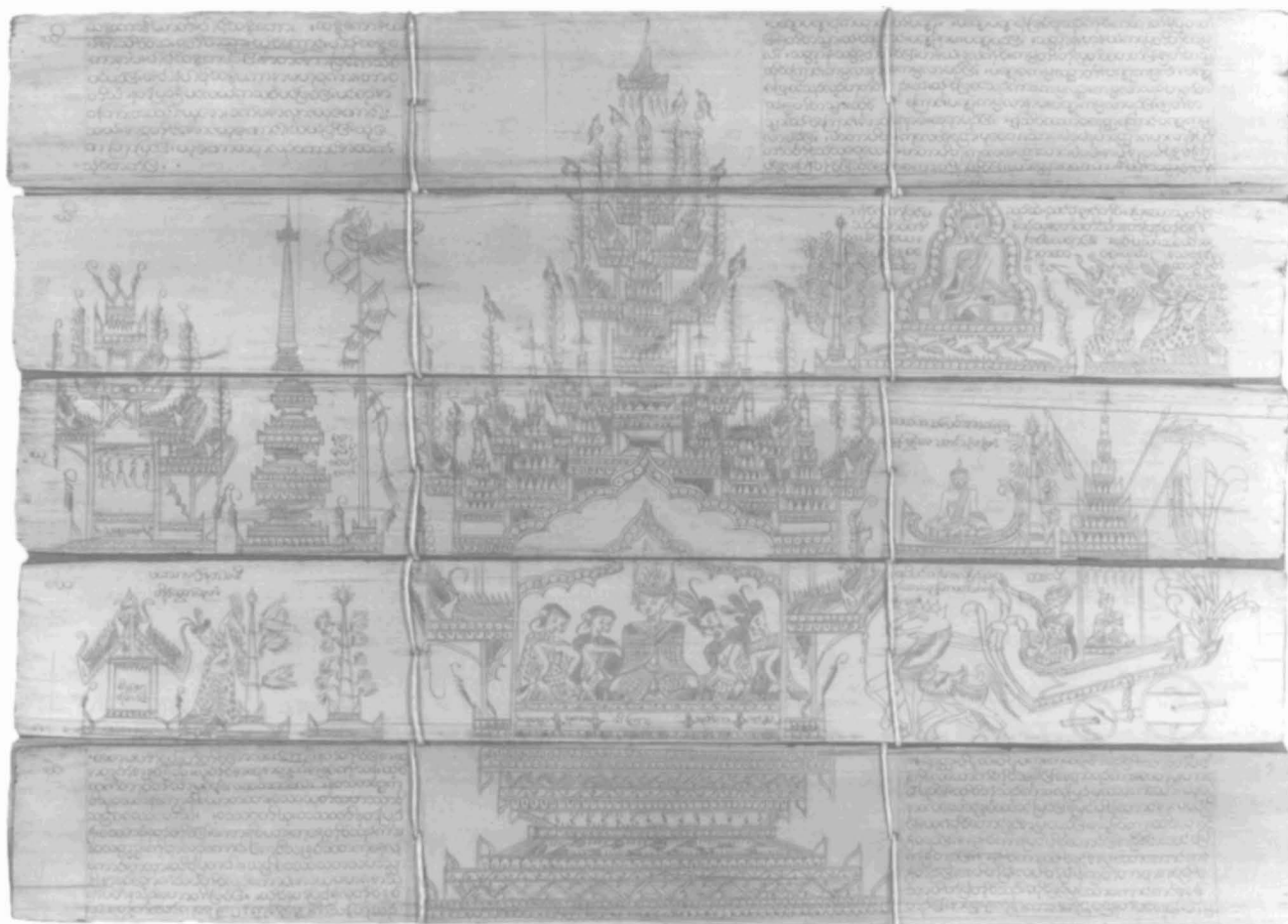


FIG. 17.19. ŚAKA IN HIS HEAVENLY MANSION, TĀVATĪMSA, IN BURMESE PALM-LEAF MANUSCRIPT. Shown are five leaves of a lavishly illustrated twenty-nine-leaf Burmese cosmographic manuscript. On one side of the set of leaves are arrayed a series of increasingly exalted heavenly mansions and on the other a series of increasingly debased hells. Many of the leaves in this work individually depict specific heavenly or infer-

nal locales, whereas elsewhere, as in this excerpt, a number of leaves collectively portray such locales. Though undated this work is thought to be from the eighteenth century.

Size of the original: each leaf ca. 7.0 × 49.5 cm. By permission of the Oriental and India Office Collections, British Library, London (Or. 12168, fols. 3–7).

kavāla, and of Jambudīpa in particular, occupies only a portion of one of the eleven chapters of the *Trai phum* (the rest of that chapter being given over mainly to astronomy), the illustrations relating to that predominantly mythic geography account for approximately half of the manuscript of the Thonburi recension, that is, for one entire side of the many continuously joined folios of illustration and text. In much of what is shown one sees from one to five rivers flowing through fabulous landscapes, often mountainous and forested and populated by a diversity of humans and mythic anthropomorphic creatures, not to mention wild animals, fish, and birds. Although the text—at least the recension translated by Reynolds and Reynolds—bears no evidence of Western influences, this is not entirely true of the illustrations. For example, in one scene in the Berlin manuscript there are two hunters, one carrying a rifle. Seemingly, then, the

illustrators of the Thonburi recension were given considerable license to insert into their work much that was either only hinted at in the text or, as in the case of hunters armed with rifles, not mentioned at all. (The next chapter will illustrate how new knowledge of the geography of lands remote from Siam found its way into the illustrations.)

The origin of the five major rivers of Jambudīpa is a favorite theme in Hinayana Buddhist cosmography. Its illustration in figure 17.20 is taken not from the *Trai phum* (though there are a number of similar presentations in that work), but from the lavishly painted Burmese manuscript from which plate 35 was excerpted.⁸⁹ Since no translation of the accompanying Burmese text is avail-

89. For more on this manuscript, see Zwalf, *Buddhism: Art and Faith*, 173–74 (note 54).

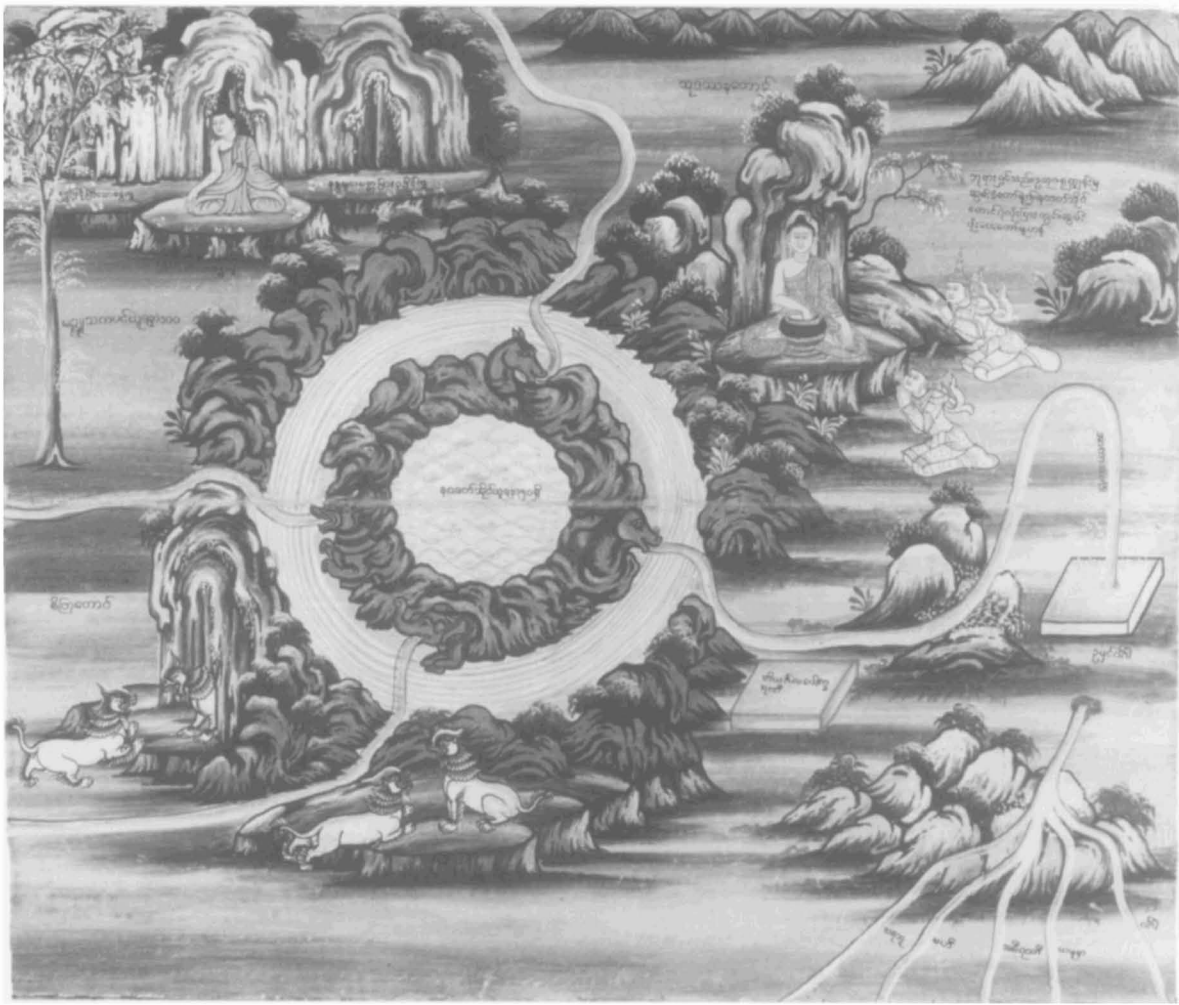


FIG. 17.20. LAKE ANOTATTA AND THE ORIGIN OF THE WORLD'S RIVERS, FROM AN UPPER BURMESE COSMOGRAPHIC MANUSCRIPT. Two folios of a brightly painted and partially gilded paper book in fifty-nine folds with Burmese text, nineteenth century. This scene depicts the mountainous terrain of Himavanta (the Himalayas), within which lies the circular, mountain-girt Lake Anotatta. Through rocky openings in the mountain rim shaped like the heads of an ox, horse, lion, and elephant, rivers flow to the south, east, north, and west, respectively. Though various texts specify that each river

initially flows three times around Anotatta, here that idea is suggested by swirling lines in the ring of water that surrounds the lake, rather than by three spiraling watercourses as on other paintings. The river flowing to the right, the proto-Ganga, dashes against a mountain, spurts high into the air, falls back to earth, follows an underground course, and eventually reemerges to form five rivers, whose names can be traced to north Indian rivers associated with the hearth area of Buddhism. Size of each page: 20.5 × 54 cm. By permission of the British Library, London (Or. 14004, fol. 33).

able, however, I quote here some apposite passages from the *Trai phum*:

In the Himavanta [Himalayas] there are seven large bodies of water: one is called the Anotatta lake. . . .

. . . Anotatta lake is surrounded by five mountain ranges. One mountain range is called the Sudassana range. . . .

. . . The mountain range called Sudassana is replete with gold and surrounds the Anotatta lake like a wall. . . .

There are four outlets on the sides of the Anotatta lake, one in each of the cardinal directions. The outlet in one of these directions resembles the face of a lion;

that in another direction resembles the face of an elephant; that in another direction resembles the face of a horse; and that in another direction resembles the face of an ox. . . .

The water that flows from the side of the head of the bed [i.e., from the south, since people in Jambudīpa were supposed to sleep with their heads pointed away from Sumeru] goes in a circle three times around the Anotatta lake. It is called *Avatṭagangā*. . . . It then flows in the direction of the head of the bed . . . and is called *Kanhagaṅgā*; it then dashes against a mountain, shoots upward for 60 *yojana*, . . . and is called *Ākāsagaṅgā* [identified with the Milky Way]; it then falls on a rock called *Tiyaggala* rock . . . and goes

through the rocks . . . and is called Bahalagaṅgā; the water then drops beneath the rocks . . . and is called Ummagga-gaṅgā; it then flows against the mountain called the Vijjhanatiracchāna mountain, gushes up above the ground, and becomes . . . the five great rivers. One of these is called the Gaṅgā; another is called the Yamunā, another is called the Aciravatī, another is called the Mahī; and another is called the Sarabhū. These rivers [the modern Indian Ganga, its right-bank tributary, the Yamuna, and its left-bank tributaries, the Rapti, Buri Gandak, and Gogra, respectively] flow into the country where the people live [India], and then flow out to the ocean.⁹⁰

This passage does not fit the illustration in every particular, and the elided portions mask discordances beyond those evident from what I have quoted; nevertheless, the correspondences are for the most part obvious. But in any case, we would find here that the world of myth begins to merge into the known geography of South and Southeast Asia. This, we observed, was also true of the Hindu and Jain cosmographies of South Asia.⁹¹

In his sumptuous and extensive study of Thai painting, Boisselier presents several photographs, both in color and in black and white, of additional representations of the the mythic landscape in the environs of Lake Anotatta. Perhaps the most decorative of the many such creations appears on an eighteenth-century gold-and-black lacquer library cupboard. This exuberant composition depicts the entire Sumeru complex, including the palaces atop each of its mountain ranges, among which that of the city of Indra is the most splendid of all (fig. 17.21). Above the Himavanta, but below the summit of Sumeru, are the sun, the moon, and the palaces of the planets and constellations, with crowds of gods hovering in the celestial interstices between them, while below the zigzag crest of the Himavanta the earth teems with animals, luxuriant forests, and lotus-filled lakes.⁹²

Dating from many centuries earlier than the paintings just described is a three-dimensional Khmer representation of Lake Anotatta and the rivers issuing from it. This intriguing architectural assemblage (the Neak Pean complex) was discovered among the vast remains of the former imperial capital at Angkor. Erected in 1191, during the reign of Jayavarman VII (1181 to ca. 1219), it forms the dominant element of what appears to have been an important cult center at Angkor. Since a full and well-illustrated account of it is provided by Boisselier, and since further critical analysis is offered by Wales, among others, I shall not describe it further here.⁹³

The significance of the Neak Pean complex lies not only in its conception but in its antiquity. It seems reasonable to suggest that the attraction of the portion of the Buddhist cosmography relating to Kelāsa (Sanskrit Kailāsa) and Anotatta, while perhaps not quite as pow-

erful as that relating to Sumeru, was such that it would have resulted in many more cosmographic representations than have survived to the present. Less durable cosmographies would not have withstood the ravages of time, as Boisselier notes about painting among various civilizations dating back to the sixth century in the area that is now Thailand.⁹⁴ And if my suggestion about lost representations of Anotatta is correct, it should be no less true of painted, woven, carved, and sculptural representations of other components of the exceedingly vast and complex Buddhist cosmos.

In his study of popular Burmese religious practices, Temple includes several cosmographic paintings, at least two of which show signs of Western influence. Figure 17.22 is particularly interesting. Although Temple's caption, "A Burmese Map of the World, showing traces of Mediaeval European Map-making," makes little sense, much of his commentary on the map warrants quotation in extenso:

The native map shows Zambūdék [Jambudīpa] with the *zambú* tree at its top or northern end. . . . [It] is shown as being surrounded by the Sakyáwāla [Cak-kavāla] Range and cut across by the Himawun (Himavanta or Himálaya). The Himalayas form the Fairyland of the Burmans, on and beyond which to the north everything is marvellous. Here are the seven great lakes, including Anawdat (Anótatta) in the centre, where grows the lotus and whence spring all the great rivers, after forming concentric rings around it. Here also is the jewelled Myinmódaung (Mt. Méru) [curiously off center] with the seven rings of mountains round it.

Below the Himalayan line lies the world inhabited by all the human beings of whom the Burmese have any experience, with the sacred Bó Tree and the sites in the Buddhist Holy Land in the centre. These are quaintly shown by small red squares and circular patches, about and south of the holy trees.

To the south of everything lies the Ocean, Thammódayá (Sanskrit Samudrá), studded with the 500 lesser islands attached to Zambūdék, on which dwell

90. Reynolds and Reynolds, *Three Worlds*, 292–96 (note 57). The identification of the rivers with their modern Indian names is based on Joseph E. Schwartzberg, ed., *A Historical Atlas of South Asia* (Chicago: University of Chicago Press, 1978).

91. Schwartzberg, "Cosmographical Mapping" (note 2).

92. Boisselier, *Thai Painting*, fig. 109, and caption on facing page (140); see also figs. 26, 115, and 116 (note 57). The lacquer cupboard is also depicted at a significantly larger scale in *Ajia no kosumosu*, 25, with a still larger detail of the region around Lake Anotatta on 26–27 (note 57).

93. Jean Boisselier, "Pouvoir royale et symbolisme architectural: Neak Pean et son importance pour la royauté angkoriennne," *Arts Asiatiques* 21 (1970): 91–108, and Wales, *Universe around Them*, 128–33 (note 1).

94. Boisselier, *Thai Painting*, 13–19 (note 57).

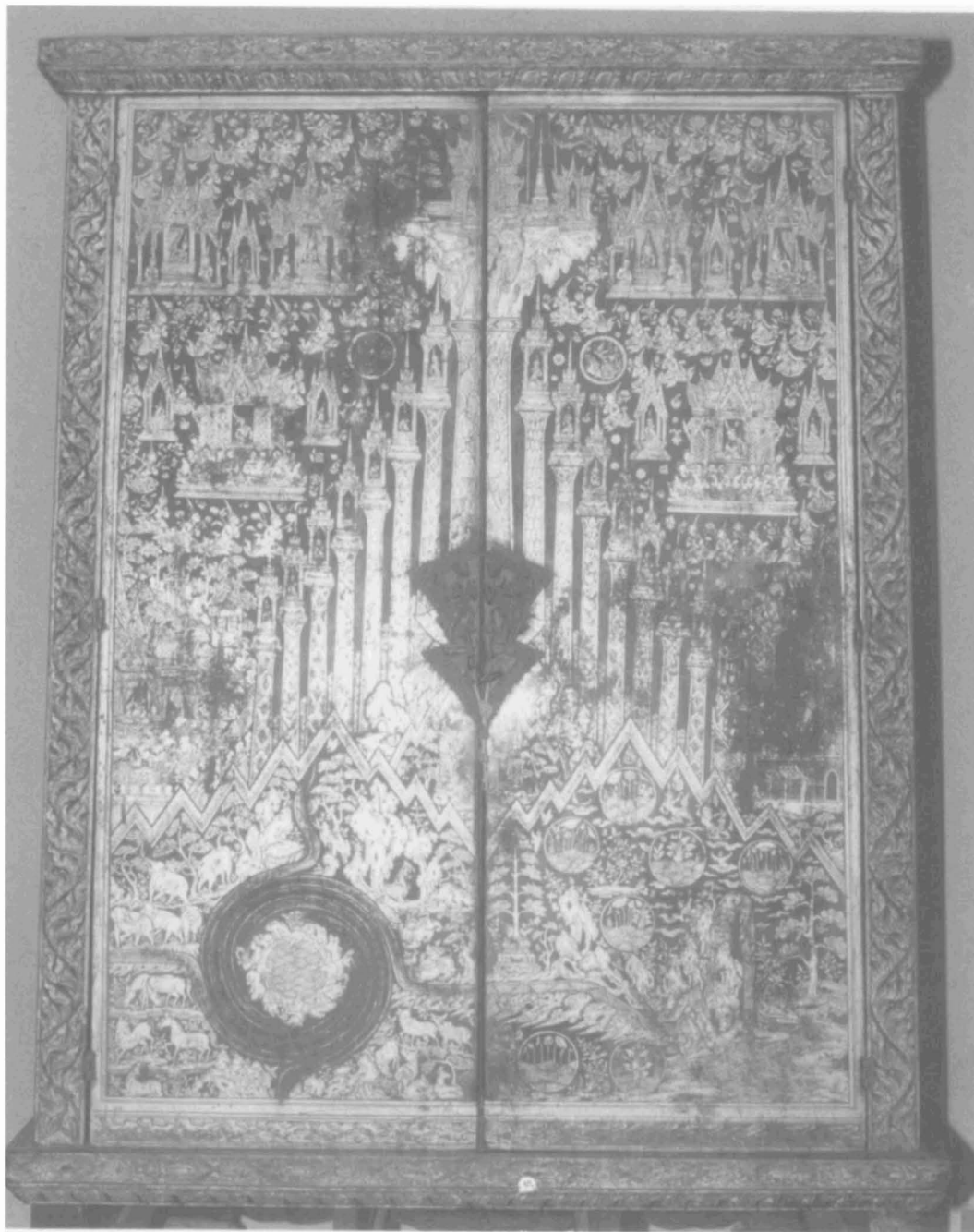
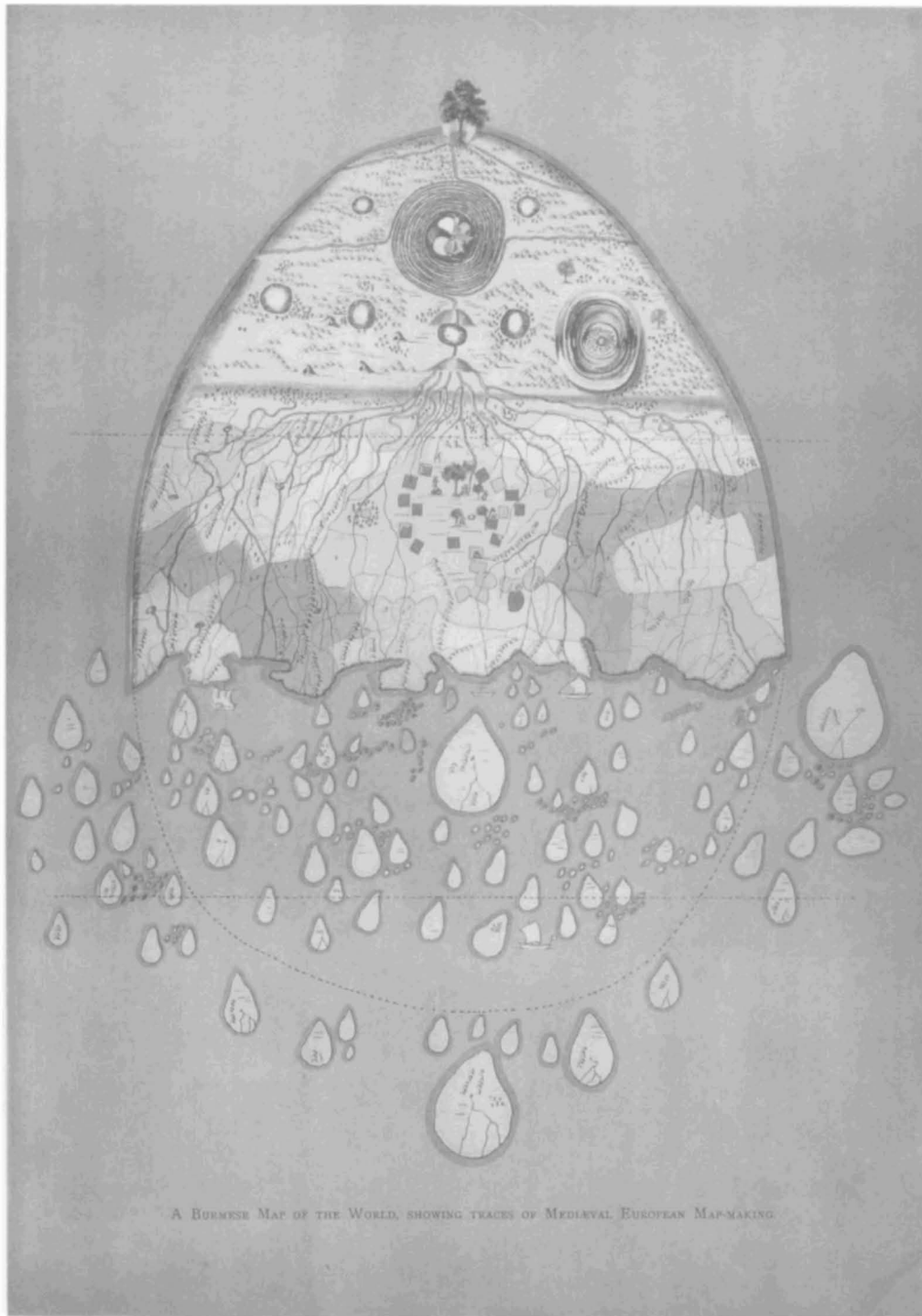


FIG. 17.21. THAI LIBRARY CUPBOARD DEPICTING MYTHIC LANDSCAPE IN THE ENVIRONS OF LAKE ANOTATTA. Black and gold lacquer on wood. Mount Sumeru forms the central axis of this sumptuous composition and is flanked by the seven ranges of surrounding mountains, each, like Sumeru itself, surmounted by a palace inhabited by one or more tutelary deities. In the spaces between the successive ranges one sees a conventional water pattern indicating the intervening oceans. The entire complex is seen as if in vertical cross section. The cosmic elephants, which here support the plateau at the summit of Meru, are not noted in the *Trai phum* text, which this depiction generally follows. On the plateau atop Sumeru is the city of Tāvatiṃsa (Thirty-three Gods) and the abode of the god Indra (Śakra) to which the Buddha ascended to visit his deceased mother. Somewhat lower, in a line with

the palaces above Yugandhara, the highest of the seven flanking mountains, are the sun and moon. The jagged mountains at the foot of Sumeru are the Trikūṭas, the buttress mountains that support the cosmic axis. Within them may be seen the city of the *asuras* (demons). Flanking the Trikūṭas are the Himavanta (Himalayas), whose equally jagged crest serves as a divider between the heavenly realm and Jambudīpa, the land of humans and also of all sorts of mythical creatures and exuberant vegetation. Near the lower left is Lake Anotatta, from which issue the same four rivers shown in figure 17.20. One of these, flowing toward the lower right, is the proto-Ganga, which, again as in figure 17.20, strikes against a mountain, rises high into the air, and then dashes into the earth.

Size of the original: 196 × 122 × 87 cm. Courtesy of the Chao Sam Phraya National Museum, Ayutthaya.



A BURMESE MAP OF THE WORLD, SHOWING TRACES OF MEDIEVAL EUROPEAN MAP-MAKING.

FIG. 17.22. BURMESE MAP OF JAMBUDĪPA, THE SOUTHERN CONTINENT. Ink and watercolor on paper. The locale, date (probably nineteenth century), author, size, and present whereabouts of this cosmographic map are not known. The map portrays many of the key features of Jambudīpa as noted in Pali Buddhist sources: the shape of the continent, its many auxiliary islands, the great *jambu* tree, the northern Himavanta region, Lake Anotatta and the four great rivers issuing from and swirling around it, Sumeru and its surrounding ranges (to the southeast of the great lake), the river-laced plains of India,

and the Cakkavāla mountain wall surrounding the great island. The traditional spatial relationships, however, are in large measure garbled. There is also substantial evidence of European influence in the cartographic signs used, the bounded spaces colored as if they were discrete political entities, and the imposition of what appear to be two parallels of latitude. From Richard C. Temple, *The Thirty-seven Nats: A Phase of Spirit-Worship Prevailing in Burma* (London: W. Griggs, 1906), figure facing p. 8.

the inferior peoples that come from across the sea. . . .

It is interesting to note that all this is “natural” geography. All the seas known to the Burmans are to



FIG. 17.23. ADAM'S PEAK IN SRI LANKA AS SHOWN IN THE *TRAI PHUM*. At the summit of this peak, the most visually prominent in Sri Lanka, is a large indentation, approximately 1.5 meters long, which Buddhists take to be the footprint (*sripada*) of the Buddha. (Hindus and Muslims, respectively, ascribe the footprint to Śiva and to Adam; hence the peak is a major place of pilgrimage for all three faiths). The height of the peak is given as either 428 or 528 *sens* (figure is not wholly legible) and 6 *wās*, equivalent to approximately 8,572 or 10,572 meters, as against the surveyed altitude of 2,238 meters. Half-way up the peak is a feature identified as the Nila cave. The other named features of the peak, as well as those elsewhere on the island and most of those on other islands, have yet to be determined. Although the shape of Sri Lanka is not recognizable here, the steep, asymmetrical aspect of the peak itself, which has been described as resembling the Swiss Matterhorn, does suggest an attempt to represent the visual impression it conveys to pilgrims. However, the relationship of other identified places on the map to Sri Lanka bears little resemblance to geographic reality. For example, the large island near the lower-right corner bears the toponyms Phuket, Thalang, and Songkhla, which denote an island off the west coast of the Malay Peninsula, a town on Phuket Island, and a town on the east coast of the peninsula.

Size of the original: unknown. From the Bangkok manuscript (Thonburi recension) of the *Trai phum*. Photography courtesy of Joseph E. Schwartzberg.

the South, and the land of great mountains is chiefly to the North and also to the East and West of them. And beyond these dwell people who are marvellous to them, at any rate by hearsay.

As to the form of the map. It is an attempt to copy a coloured European map of the 17th century, as is shown by the method of indicating mountains and rivers especially, and also of depicting men, animals and ships. Perhaps the most interesting point in the copying is the use of the colours for dividing off the different countries and the dotted lines for their apparent subdivisional boundaries, while in fact no countries are named or meant. The compiler has even gone so far as to represent the Equator and the Tropic of Capricorn [equator and Tropic of Cancer would seem to make more sense] without having any idea as to the meaning of either expression.⁹⁵

It is a pity that Temple does not say more about how and why this fascinating map came to be drawn, but it seems not to have to have been made at his behest. It would also be interesting to know on what grounds, other than inference, he could assert that the compiler had knowledge of some unnamed seventeenth-century European map that allegedly provided his model.

For a much more detailed representation of the religious topography of Jambudīpa than that of the map described by Temple, we may return to the *Trai phum*, a very large part of which is devoted to what appear to be terrestrial locales traversed by the rivers flowing south from Lake Anotatta. More than two hundred places are situated along these rivers and on the bodies of water they flow into. Most are towns or countries, with names included in rectangles or, less commonly, in ovals or circles. Others are religious sites, shown by drawings of the events or personages they are associated with. Many rectangles are devoid of names or other text. The places identified include many in India and Nepal that are historically linked with the life of the Buddha as well as many others within South and Southeast Asia whose association with the Buddha is wholly mythological. The topological arrangement of such places cannot be reconciled with that revealed by modern maps. The course of the rivers themselves is for the most part mythological. Individual streams and groups of streams repeatedly divide and reconverge as they wend their often parallel ways over successive folios of the several manuscripts. Based on my recollection of the manuscripts I have personally inspected, the pattern is more or less consistent,

95. Richard C. Temple, *The Thirty-seven Nats: A Phase of Spirit-Worship Prevailing in Burma* (London: W. Griggs, 1906), illustration following p. 8 and explanation on verso side of same, both pages unnumbered (there is also a new edition with an essay and bibliography by Patricia M. Herbert [London: P. Strachan, 1991]).

suggesting that the artists tried to adhere faithfully to the original textual description.

Twelve consecutive panels of the Bangkok manuscript of the *Trai phum* were reproduced in 1984 on a calendar that was distributed as a complimentary New Year's greeting by the Thai magazine *Sinlapa Wattanatham* (Art and culture). Within the first four and a half panels of this portion of the manuscript much of the terrain traversed by the rivers is associated with northern India; but two rivers flowing out of that region lead directly into and through various countries of Southeast Asia, with no indication of the intervening mountain barriers shown on modern maps. Thus the function of the rivers in certain areas may be to provide a pictorial guide to the flow of the narrative rather than to convey a credible sense of geography. The arbitrariness of the sequencing of places is evident in that Takṣaṣilā (Taxila), in what is now Pakistan, appears in panel 4, just short of the transition in panel 5 to northern Siam. Panel 6 includes various places in Burma and northern Siam. Panel 7 covers a vast area and includes the former Burmese capital at Pagan, the centrally positioned former Siamese capital at Ayutthaya, places in the Korat Plateau in northeastern Siam, and two small squares at the top of the map labeled Yuan (Vietnam) and Champa, a former Hindu kingdom in southern Vietnam that was conquered by the Vietnamese in the fifteenth century. Tavoy and Martaban on the Tenasserim coast of southern Burma, a number of towns in central Siam and on the Siamese portion of the Malay Peninsula, and islands in the Gulf of Siam are found on panel 8. The positioning of places on panels 7 and 8 indicates a general orientation toward the east. Although most of panel 8 appears to relate to known surviving places, localities such as Bean Island, Banana Island, and Squash Island are more problematic. Also depicted on panel 8 is Hanuman, the monkey hero of the Indian *Rāmāyaṇa* epic, advancing along a causeway to Hanuman's Island, which appears in panel 9, along with one additional Siamese town on the Malay Peninsula. Most of panel 9 consists of water, however, and within it are two large ships, one seemingly Chinese and the other Siamese. A third ship, presumably European, appears in panel 10, which is also mainly water, along with one unidentified circular island and parts of several others including Sri Lanka. Panel 11, illustrated in figure 17.23, includes a confusing cluster of islands, the largest of which is Sri Lanka, as is apparent from the depiction there of Adam's Peak, on whose summit the Buddha is supposed to have left his footprint. Finally, panel 12 shows the continuation of several of the previously noted islands; a sugarloaf-shaped island bearing the caption "Naga Island, where naked people live"; and a diverse assortment of fish, both realistic and fabulous, including one with the trunk and tusks of an elephant. Nearby a large rectangular island (or perhaps

simply an informational box) bears the caption, "Place where the big fish come together, the biggest of which, Anon, is the head of them all; when Anon shakes his body there is an earthquake."⁹⁶

ASTRONOMY, ASTROLOGY, GEOMANCY, AND MENTAL MAPS IN RELATION TO FIELDS OF COSMIC FORCE

Throughout recorded history, most Southeast Asians—animists, Hindus, Buddhists, and Muslims, whatever their estate—have believed that their lives are largely controlled by unseen forces emanating from various parts of the cosmos and, in matters of moment, have ordered their behavior accordingly. As put by Heine-Geldern, among others, a central concern in this regard is

the parallelism between Macrocosmos and Microcosmos, between the universe and the world of men. According to this belief humanity is constantly under the influence of forces emanating from the directions of the compass and from stars and planets. These forces may produce welfare and prosperity or work havoc, according to whether or not individuals and social groups, above all the state, succeed in bringing their lives and activities in harmony with the universe. Individuals may attain such harmony by following the indications offered by astrology, the lore of lucky and unlucky days and many other minor rules. Harmony between the empire and the universe is achieved by organizing the former as an image of the latter, as a universe on a smaller scale.⁹⁷

Citing as his evidence the designs on Dong-son Bronze Age drums, Wales asserts that the inhabitants of a large part of mainland and insular Southeast Asia "had by the fourth or third century B.C. become aware of the planetary cosmology."⁹⁸ But whether or not that inference is correct, it is certain that the subsequent Indianization of much of the region entailed the diffusion of Hindu astronomical knowledge and its associated astrological lore and iconography. This knowledge served a wide range of purposes: calendrical, horological, astrological, as aids in navigation and the regulation of agriculture,

96. I am grateful to Lorraine Gesick, professor of history at the University of Nebraska, Omaha, for sending me copies of the twelve panels of the calendar and for translating selected portions of the text, and also to Chanthaburi Thawut of Rambhai Barni Teachers' College, Chanthaburi, Thailand, who was particularly helpful in the interpretation of panels 11 and 12.

97. Heine-Geldern, "Conceptions of State and Kingship," 15 (note 82), and see also his "Weltbild und Bauform" (note 56). Heine-Geldern's examples and arguments are also largely repeated, frequently amplified, and occasionally challenged in the more extended monograph by Wales, *Universe around Them* (note 1).

98. Wales, *Universe around Them*, 5 (note 1).

and as guides to architecture, town planning, and the spatial organization of state polities.

A diversity of calendars and astrological almanacs based on knowledge of the movements of the sun and moon are currently in use in Southeast Asia. Many, perhaps most, were illustrated. Some were adopted with little change from Hindu models, and others were developed in Southeast Asia itself. Both the Indian and the derivative Southeast Asian systems necessitated the recognition of the appropriate zodiacal constellations. Manuscripts containing horoscopic diagrams—in effect, maps of the positions of the principal heavenly bodies at a particular moment in time—are common, and such diagrams are sometimes seen painted or portrayed in bas-relief on the walls of temples and other important edifices, presumably to commemorate the auspicious day when they were formally consecrated.

Approximately half of chapter 9 of the *Trai phum* is devoted to a carefully reasoned exposition of astronomy. It commences as follows:

The space in the middle between the region of the Cakkavāḷa mountain range and the Yugandhara mountain range is the area where there are paths for the sun, the moon, the planets, and the multitude of stars, and where they travel back and forth in an orderly fashion in paths that enables us to know the years and the months, the days and the nights, and to know the events, both good and bad.⁹⁹

The text also provides guides for recognizing the constellations; for example: “The group of stars called *assayuja* has five gem abodes in a line. The lunar mansion called *bharanī* has three gem abodes close together like the three stones that hold a cooking pot.”¹⁰⁰ Diagrams in the illustrated manuscripts exhibit some of these heavenly relationships and aid in the recognition of particular zodiacal configurations.

Despite the importance of astrology, Southeast Asia has never had, it appears, any form of astronomical observatory—comparable, say, to the observatories established by Sawai Jai Singh in India—to take careful measurements of the positions and paths of various heavenly bodies over the course of years.¹⁰¹ Nor were planispheric or spherical astrolabes or any other comparably sophisticated astronomical instruments in use in that region. Nevertheless, Eade reports that a number of dated inscriptions from Pagan, the Burmese capital from A.D. 1044 to 1287, give planetary positions in degrees and minutes, which he found accurate to within two or three minutes, and in a few cases to the very minute. How such accuracy was attained is not indicated.¹⁰²

Evidence from many parts of Southeast Asia attests to the sensitivity of ordinary people to their orientation in cosmic space, usually with particular reference to com-

pass directions, but sometimes with respect to other dyadic referents, such as sky/earth (simultaneously symbolizing male/female), Upperworld/Underworld (also male/female), mountain (inland)/sea, upstream/downstream, interior/exterior (with respect to houses), toward the capital/away from the capital, and so forth. To know that one is positioned correctly in a specific situation entails carrying in one’s head an ever-changing contextually specific mental map; for what is a horoscopically correct pattern of movement on one day of the week or month may be altogether incorrect on another. To treat this issue in detail would take us beyond the scope of this study, but it is appropriate to direct attention to it, since it forms a particularly promising area for future research that may yield valuable insights on the circumstances in which it was deemed necessary to move from the realm of mental map to tangible graphic artifacts.¹⁰³

Apart from astrology and other forms of divination, beliefs in Southeast Asia that incorporate considerations of directionally determined cosmic forces include those based on geomantic principles. I do not know to what degree the Chinese system of *feng shui* (wind and water) has found acceptance among various Southeast Asian ethnic groups. Certainly the drawings that constitute figure 17.24, extracted from a Burmese text giving the rules for siting halls for the ordination of Buddhist monks, do appear to conform to a similar set of principles. But the work in question, published in 1967, is allegedly a translation of a part of the *Tipiṭaka* (Three baskets; Sanskrit *Tripiṭaka*) of the Pali Buddhist canon that was originally codified in the third century B.C. in India, a country that lacks a well-articulated geomantic tradition. (The specific portion of the *Tipiṭaka* from which the text is said to have been taken is the *Vinayapiṭaka*, the portion of the law prescribing rules for monks.) The explanation of this seeming paradox may be that the recent Burmese recension of the Pali text (one of a number prepared by various sects over time) deviated from the original in much the same way as does the noncanonical *Trai phum*. This

99. Reynolds and Reynolds, *Three Worlds*, 277–89; quotation on 277 (note 57). See also the unnumbered color plate from the Berlin manuscript showing “the astral paths” and the diagrams of the astronomical system by Reynolds and Reynolds on 360–61.

100. Reynolds and Reynolds, *Three Worlds*, 280 (note 57).

101. On Jai Singh, see Schwartzberg, “Cosmographical Mapping,” 361–67 (note 2).

102. J. C. Eade, *Southeast Asian Ephemeris: Solar and Planetary Positions, A.D. 638–2000* (Ithaca, N.Y.: Cornell Southeast Asia Program, 1989), 7.

103. Among works that discuss the subject are Geertz, *Religion of Java* (note 36); H. L. Shorto, “The Planets, the Days of the Week and the Points of the Compass: Orientation Symbolism in ‘Burma,’” in *Natural Symbols in South East Asia*, ed. G. B. Milner (London: School of Oriental and African Studies, 1978), 152–64; and Wales, “Cosmological Aspect” (note 4).

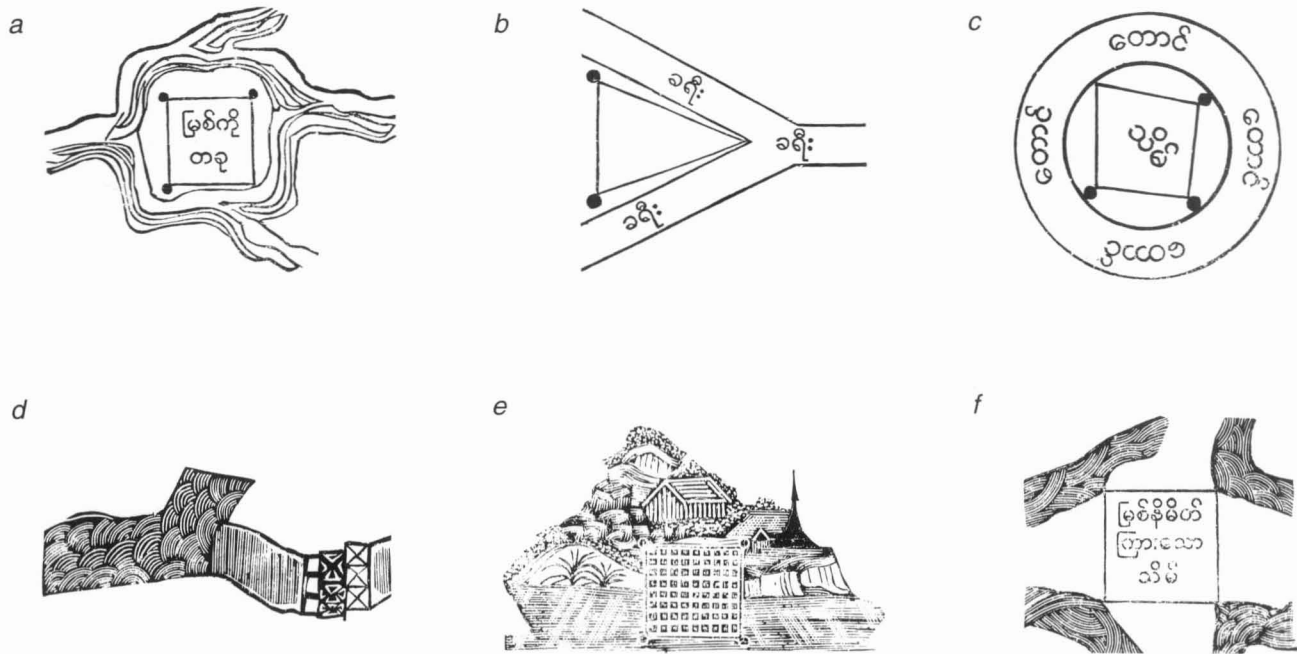


FIG. 17.24. DIAGRAMS PRESCRIBING RULES FOR THE SITING OF ORDINATION HALLS FOR BUDDHIST MONKS IN BURMA. These are six out of a total of eighty-seven paradigmatic illustrations, each accompanied by a brief explanatory text that prescribes what is permissible and what is proscribed in the siting and manner of construction (e.g., with respect to height) of ordination halls so as to remain in cosmic harmony with the physical characteristics of the locality where the hall is to be placed. The rules for the hall in the island (a), for example, state that the hall should have four corners (the number of dots plus one), with only one corner touching a river, while for b the rule is that a hall built in the fork of a road should have three corners and (presumably) that one corner should extend to the fork. The rule relating to the hall

within a double circle (c) states that termite mounds may be used (but how and why?) for locating the boundaries of the hall. Judging solely from appearances, the rules for d-f and other diagrams seem to relate to construction on various types of terrain (smooth, rocky, cultivated, hilly, forested, etc.), on streams with different flow characteristics, in proximity to sacred trees, in areas that are fenced or artificially bounded in various ways, and so forth. The book in which these diagrams appear is a 1967 edition of a compilation of four works forming part of an 1863 recension of the ancient Pali Buddhist canon, the Tipiṭaka. It is printed in the Burmese script but written in the Pali language. From *Wi thi bhūṃ cañ' chan' pum sim' pum* (Rangoon: Ū" Po' Rañ'-Do' Co Rañ', 1967), 162, 165, 168, 169.

seems likely in that the published book the diagrams were taken from was a new edition of an 1863 compilation of four texts that came out of the Fifth Buddhist Council, convened in that year by the then reigning Burmese king Mindon. By this time Chinese geomantic ideas may have taken strong enough root in Burma to have been incorporated into the monastic rules.¹⁰⁴

Although perhaps not geomantic in the Chinese sense of the term, the principles underlying temple construction in Southeast Asia also embody ideas of harmony with cosmic forces and their directional orientation. Moreover, they did commonly lead to the graphic depiction on the ground of the cosmic giant Vāstupuruṣa, represented by an eighty-one-square mandala, following the Hindu rites of construction that have been previously described and illustrated. Since the chief gods of the Hindu pantheon are embodied in the mandala, its emplacement in the temple foundation establishes the desired bond between the temple as microcosm and the universe as macrocosm.¹⁰⁵

Similarly, in laying out traditional state capitals Southeast Asian monarchs and their counselors were acutely sensitive to the need for harmony with forces operating within the macrocosm and for displaying through cosmic symbolism the legitimacy of their rule. The architectural

104. The collection of texts in question was compiled by a Burmese monk, Maingkhaing Sayadaw. The book they appeared in is titled *Wi thi bhūṃ cañ' chan' pum sim' pum* (The way to nibbana: Its stages, how wonderful, how gentle). The 1967 edition (in the Pali language, but printed in the Burmese script) was published in Rangoon by Ū" Po' Rañ'-Do' Co Rañ' for the Ratana'wādi Piṭakat' Bookshop. The four works contained therein were "Wi htē pon" (Mental processes), "Bon-sin" (Planes of existence; obviously, judging from the illustrations, a work of cosmography and a part of the *Abhidhammapitaka* [Basket of metaphysics]), "S'an-pon" (Poetics), and "Sein pon sima" (Ordination hall construction). The selected diagrams were excerpted from the last of these four sections (pp. 161-88). I am indebted to Reverend Kelatha of the Burmese Buddhist monastery of Montgomery County, Maryland, and to Mr. Maung of Washington, D.C., for assistance with the interpretation of this book.

105. Schwartzberg, "Cosmographical Mapping," 378-79 (note 2), and Wales, *Universe around Them*, 40-41 (note 1).

plans, which were undoubtedly drawn up as a guide to the layout of some, if not all, of those capitals, are as far as I know not extant (with one known exception, that for Mandalay, discussed in the following chapter). However, the guiding plan is evident in archaeological remains, which are in effect giant cosmographies in stone. The layout of the states themselves also commonly followed cosmographic principles, even though in this respect no graphic representations are known to have existed. Writing of Southeast Asia as a whole, Heine-Geldern observes that

there is overwhelming evidence of the cosmological basis of state and kingship in this area. This evidence is found in numerous passages in literature and inscriptions, in the titles of kings, queens and officials, in the "cosmic" numbers of queens, ministers, court priests, provinces, etc., in rites and customs, in works of art, in the lay-out and structure of capital cities, palaces and temples. One need only put these various items together to obtain a relatively clear picture. This picture will be more complete in continental Southeast Asia, where the old forms of Buddhist state and kingship survived into very recent times. It will be hazier in the Archipelago as a result of Mohammedan and European influences.

In Southeast Asia, even more than in Europe, the capital stood for the whole country. . . . the capital city could be shaped architecturally as a much more "realistic" image of the universe, a smaller microcosmos within that microcosmos, the empire. The remains of some of the ancient cities clearly testify to the cosmological ideas which pervaded the whole system of government.¹⁰⁶

Thus, in Angkor and elsewhere moats and artificial basins came to represent cosmic rivers, lakes, and oceans; and sculptural compositions, often on a monumental scale, were employed to recreate cosmogonic myths. Considerations of space and focus preclude a more extended discussion of this topic, but interested readers will find it amply treated in numerous works by art historians and other scholars.¹⁰⁷

Finally, one must note the connections of the state not only with Buddhist cosmography, but also with Hindu astronomy. As Heine-Geldern notes, from a passage in

the *Xin Tang shu* (New history of the Tang, compiled 1032?-60),

the kingdom of Java in the 9th century was divided into twenty-eight provinces, their governors together with the four ministers again having numbered thirty-two high officials. This may have been a somewhat older form of the same system, in which the provinces corresponded to constellations, the twenty-eight "Houses of the Moon," and the four ministers to the guardian gods of the cardinal points. It is clear that in all these cases the empire was conceived as an image of the heavenly world of stars and gods.¹⁰⁸

106. Heine-Geldern, "Conceptions of State and Kingship," 16-17 (note 82).

107. Among those relating mainly to Angkor, in chronological order, are Henri Marchal, *Guide archéologique aux temples d'Angkor, Angkor Vat, Angkor Thom, et les monuments du petit et du grand circuit* (Paris: G. Van Oest, 1928), particularly useful for its many site plans; George Groslier, *Angkor*, 2d ed. (Paris: Librairie Renouard, 1931), a pioneering descriptive work; George Coedès, *Angkor: An Introduction*, ed. and trans. Emily Floyd Gardiner (Hong Kong: Oxford University Press, 1963), originally published as *Pour mieux comprendre Angkor* (Hanoi, 1943), an interpretative analysis; and Bernard Philippe Groslier and Jacques Arthaud, *Angkor: Art and Civilization*, rev. ed., trans. Eric Ernschaw Smith (New York: Frederick A. Praeger, 1966), with magnificent photographs.

108. Heine-Geldern, "Conceptions of State and Kingship," 21 (note 82).

POSTSCRIPT

Since this chapter was set in type, an important Cambodian cosmographic manuscript has come to light. It is an undated (probably late eighteenth or early nineteenth century) richly illuminated multicolor painted adaptation of the Thai *Trai phum*, prepared in the same accordion-style format on indigenous paper. The work is held in the National Library in Bangkok and is the subject of a well-illustrated seventy-nine-page monograph by the National Library, Fine Arts Department, *Traiphum chabap phasa khamen* (The Cambodian manuscript of the *Trai phum* cosmography), translated into Thai by Amphai Khamtho (Bangkok: Ammarin Printing Group, 1987).