

Landscape, water and religion in ancient India

Julia Shaw

As Buddhism spread into central and western India from its centre of origin in the central Gangetic Plain, how did this change the ways in which the landscape was perceived and organized? In this study of the regional setting of the great site of Sanchi and of other important sites in central and western India, religious, political, economic and agricultural changes are integrated in an holistic approach to archaeological landscapes.

This project was initiated in 1998 with the objective of building an integrated model of religious, economic and environmental history in both central and western India through the documentation of key ritual and settlement sites, and water-resource structures in their archaeological landscape.¹ Key research questions include: How did the spread of the new religions (especially Buddhism) between the third century BC and fifth century AD relate to other key processes such as urbanization, state formation, economic change, and innovations in agriculture? How did incoming religious communities establish themselves in new areas? How did they build up patronage networks with local populations? How did they situate themselves within the pre-existing ritual landscape?

The project's primary focus is the UNESCO World Heritage Buddhist site of Sanchi in central India (Madhya Pradesh), with some comparative investigations at other sites in central and western India such as Ramtek (Maharashtra), Junagadh and Devnimori (Gujarat) (Fig. 1). Sanchi's earliest monumental history dates from approximately the third century BC, and is closely connected with the patronage of the Mauryan empire, whose expanding boundaries mirrored, in part, the early movement of Buddhist monks from the middle Gangetic plains. Both its distance from the cradle of Buddhism and its proximity to the early-historic city of Vidisha,² just 6 km to the north, made Sanchi a suitable case study for examining the socio-economic and religious background of Buddhist propagation. The site is also an archetype for a variety of theoretical and methodological problems in South Asian archaeology in general, and the study of Buddhism in particular. For example, Buddhist archaeology has mainly been focused on well known, grandiose monuments, studied in isolation from their surrounding landscape and the populations living in them. Thus, despite the large body of art-historical and epigraphical scholarship at Sanchi,³ the site's relationship to other ritual or habitational settlements in the area had not been examined prior to the current study. This obviously hampered the understanding of how incoming Buddhist communities established themselves

in the area or how they set up exchange networks with local populations.

The Sanchi survey: research design

The Sanchi survey was aimed at redressing some of these problems, through a multi-phase archaeological survey carried out over an area of c. 750 km² around the hill-top complex (Fig. 2). Initial exploration between 1998 and 2001 resulted in the systematic recording of about 35 Buddhist sites, 145 settlements,⁴ 17 irrigation dams⁵ and over 1,000 sculptural and architectural fragments associated with Hinduism,

Jainism and local cults.⁶ These data have shed new light on inter-religious dynamics, and on the development of exchange networks between Buddhist monks and agricultural communities.

Subsequent field seasons were aimed at refining and develop existing results, and testing earlier hypotheses with new methodologies. Two seasons concentrated on the history of local irrigation through a combination of hydrological and archaeological methods, including the collection of sediments from dams and reservoir beds for optically stimulated luminescence (OSL) dating and analysis of ancient pollen.⁷ Other seasons have focused on systematic mapping and satellite remote sensing for testing the degree of concordance between already-identified archaeological remains in the application area and levels of visibility within a subset of different satellite imagery.⁸ The latter produced variable results: in areas where forest clearance has taken place, the high-resolution Quickbird satellite imagery served as a useful aid to on-site mapping, especially for hard-edged structures such as Buddhist monuments (Fig. 3).⁹ However, dense vegetation cover



Figure 1 Ancient India, showing key Buddhist and urban centres, and Sanchi survey study area in centre.

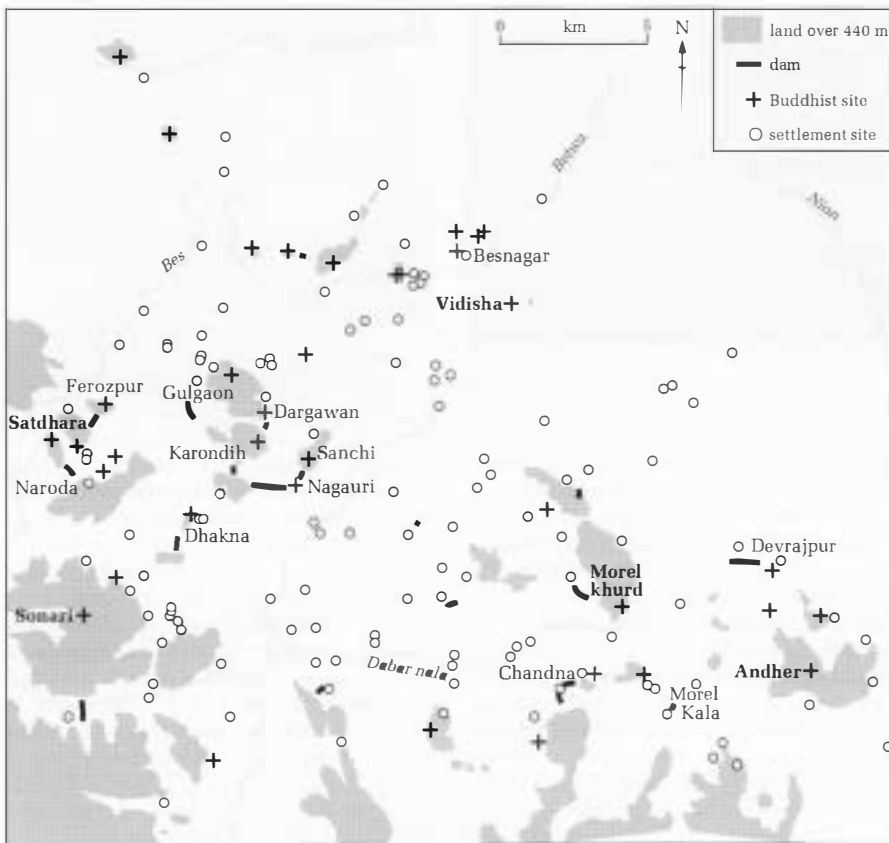


Figure 2 The Sanchi Survey study area, showing Buddhist sites, settlements and dams. Place names are either those of topographical features (such as the hill at Andher) or the names of the nearest modern villages to the various sites or site clusters. (A nala is a seasonal river or stream.)

across much of the hilly region ruled out its effectiveness as either a mapping or primary site-detection tool. Further, in the agricultural zone, sites such as settlement mounds or dams that showed up clearly in the satellite imagery are already high up the ground-based visibility scale: during the primary reconnaissance phase, most of these sites stood out as prominent earthworks from surrounding hilltops. Finally, many sites that rarely show up in satellite imagery, such as hillside settlements, rock-shelters or springs and natural shrines (small piles of rocks worshipped as a manifestation of the divine) are more readily detectable using traditional ground-based survey methods and, more particularly, through a sensitivity to the currency of archaeological sites within the present-day ritual landscape.¹⁰ However, remote-sensing data derived from satellite images have been useful for generating survey contours that, together with sophisticated land-based survey techniques, have enabled



Figure 3 Monastery remains on Ferozpur hill: high-resolution Quickbird satellite imagery with superimposed GPS-derived mapping data.



Figure 4 Stupa remains on Andher hill, c. second century BC

accurate calculations to be made of the probable original areas and volumes of ancient reservoirs in the area.

Sanchi and Buddhism in central India

Sanchi is one of India's best preserved and most studied Buddhist sites, with a continuous constructional sequence from the third century BC to the twelfth century AD. Its earliest history was closely connected with the Mauryan empire, the first pan-Indian polity, whose westwards spread from its epicentre in the Gangetic valley was responsible, in part, for Buddhism's transformation from a regional cult into a pan-Indian phenomenon. Prior to the third century BC, Buddhism was confined to the middle Gangetic Valley, in modern-day Bihar and Uttar Pradesh. Although the precise dating is still debated, the life and teachings of the historical Buddha are usually placed between the sixth and fifth centuries BC, with most of our information coming from texts said to have been composed during the lifetime of the Buddha. Although the four pilgrimage sites associated with the major events in his life have been located (Lumbini, Bodh Gaya, Sarnath and Kusinagara), no distinctly Buddhist remains datable to the pre-Mauryan period have been identified.¹¹ By contrast, many of the major cities in which the earliest Buddhist narratives are set (e.g. Rajgir, Kausambi, Sravasti, Vaisali), have been identified archaeologically, and belong to India's first phase of early-historic urbanization (Fig. 1). It is not until the middle of the third century BC, following the Buddhist conversion of the best-known of the Mauryan emperors, Ashoka (who reigned from 273 BC to 236 BC), that Buddhist archaeology appears on the scene, in the form of shrines and stupas (domed structures built to house relics of the Buddha and important followers) (Fig. 4). The overlapping processes of Buddhist propagation

and imperial expansion can be tracked through the distribution of Ashoka's edicts carved on pillars and rocks, from Afghanistan to southern India;¹² many of these, like the Ashokan pillar at Sanchi, stand within Buddhist compounds. This is also when urban culture, already prevalent in the Gangetic valley for several centuries, spreads westwards, as is attested by the archaeological sequence at Vidisha and other central Indian city sites such as Eran, Tumain and Pawwaya (Fig. 1). The earliest sculpture and architecture associated with orthodox Hinduism also dates to this period; Vidisha and other central Indian cities were important centres of the Bhagavata cult, an early form of Vaishnavism, whose influence reached an apex somewhat later, by the middle of the first millennium AD.

Buddhist propagation, the state, and patronage networks

Although these three processes – religious change, imperial expansionism, and urbanization – were evidently linked, there are major problems, which the Sanchi survey sought to redress, concerning the precise nature of this relationship, and its wider ramifications in rural hinterland areas. A major causal factor here is the lack of horizontal excavation at many early-historic city sites, with settlement histories often based on limited vertical sequences, and the traditional site-based focus of South Asian archaeology, which rarely looks beyond individual sites to patterns in the wider archaeological landscape. Further problems stem from outdated models that assume that the distribution of Mauryan edicts represent the extent of a unified political entity.¹³

There are also major questions surrounding the second major phase of Buddhist propagation in the post-Mauryan period, between the late second century BC and the first century AD. Whatever the role of the state in the formal establishment of Buddhism in central India, it is during this later period of stupa building that Buddhism becomes firmly rooted in the rural landscape. Inscriptions reveal that this work was funded not, as before, by state patronage but by extensive programmes of collective patronage supported by powerful families and guilds.¹⁴ By the middle of the first millennium AD, the donations of land and villages recorded in inscriptions indicate that the sangha (the collective Buddhist order) was involved in sustainable exchange networks with the local agricultural communities. Many Buddhist scholars are reluctant to acknowledge the existence of such links during earlier periods, mainly because of the traditional view of the ideal monk as one engaged solely in spiritual, rather than material pursuits.



Figure 5 The base of a large monastery at Morel khurd, originally surmounted by brick and stone superstructure. A heavily damaged stupa is visible in the foreground. Both are datable to c. second century BC.



Figure 6 An ancient dam at Devrajpur, with spillway in foreground.

Consequently, mendicancy is viewed as the prevailing subsistence strategy, with sedentary monasticism representing a later deterioration of genuine Buddhist values. Closely related to this issue are received notions regarding the history and chronology of organized monastery architecture, the prevalent view being that “there are no monastery remains clearly datable before the Gupta period”.¹⁵

Archaeological patterns as documented during the Sanchi survey present a direct challenge to this view, particularly the identification of various monastery buildings that evidently belong to the late centuries BC (Fig. 5). The scale and number of these post-Mauryan monastic centres in the Sanchi area predicate an integrated sustainable system of exchange between monastic and non-monastic sections of society, although some monks no doubt continued to beg for a living.

Water management and religious change

Further insights into the economic background of Buddhist monasticism were provided by a group of 17 dams, all in close proximity to Buddhist sites in the Sanchi area (Fig. 2).⁵ Surviving as pronounced earthworks up to heights of 6 m, the dams have earthen cores faced with stone slabs, and are laid across valleys up to 1400 m in length (Figs 6, 7). Immediately to the south of Sanchi Hill are the remains of a 350 m-long dam, which, together with a second dam to the west, would have created a reservoir about 3 km² in area with a storage capacity of about 3.6 × 10⁶ m³. Two smaller reservoirs at Karondih and Dargawan in the shorter valleys to the west appear to have been designed to maintain water levels in the main reservoir as part of an upstream irrigation system (Fig. 8).

Similar reservoirs, with volumes of 0.03–4.7 × 10⁶ m³, have been found throughout the Sanchi area. Those built on gradually sloping terrain, as at Sanchi, appear

to have acted as inundation tanks for upstream irrigation, whereas dams built across deeper valleys, as found in the eastern part of the study area, were used for downstream irrigation. Some of those in the latter category, such as Devrajpur, show evidence of spillways and sluice gates (Fig. 6).

Analysis of the surface remains, local present-day hydrology and ancient pollen sequences has led to various hypotheses regarding the dams' chronology and function, their associated crop usage, and their relationship to the urban sequence at Vidisha and the history of Buddhism at Sanchi and neighbouring sites. These may be summarized as follows:

- The earliest dam construction occurred between about the third and second centuries BC, coinciding with the earliest monuments at Sanchi and neighbouring Buddhist sites.
- They were built to provide irrigation, principally for rice, as a response to the increased population levels suggested by the distribution of habitational and

Buddhist sites in Vidisha's hinterland.

- Their position within the wider archaeological landscape warrants their being viewed as part of a cultural package that accompanied the spread of Buddhism, urbanization and the development of centralized state polities during the late centuries BC.
- Similarities with intersite patterns in Sri Lanka, where monastic landlordism is attested from about the second century BC onwards, support the suggestion that the Sanchi dams were underlain by a similar system of exchange between Buddhist monks and local agricultural communities.

Recent attempts to develop and assess these hypotheses have included detailed surveys based on satellite remote sensing and ground-based mapping (discussed earlier), and a programme of geological dating and pollen analysis that focused on two major dam sites: Sanchi and, some 14 km to the east, Devrajpur. This confirmed the suitability of local sediments for optically stimulated luminescence (OSL) dating,⁷ as well as affirming our working hypothesis that the dams were built, along with the earliest Buddhist monuments in central India, in the late centuries BC.

The study of irrigation in ancient India

The Sanchi dams have also provided an empirical basis for re-evaluating current models regarding the administrative and management infrastructure of irrigation. The development of advanced irrigation systems in ancient India is usually seen as a major factor in the rise of complex urban societies. However, some major questions regarding the history and chronology of irrigation technology and its role in the wider economic, political and religious landscape, remain unanswered. The traditional view, based mainly on readings of problematically dated texts such as the *Arthashastra*,¹⁶ is that the building and management of such irrigation works was



Figure 7 An ancient dam at Chandna, reconstructed in recent years.



Figure 8 Quickbird satellite imagery of Sanchi Hill and its archaeological landscape: Buddhist sites, dams and reconstructed reservoir areas.

dependent on centralized state administration. Marxist-inspired models, as exemplified by Wittfogel’s “hydraulic civilizations of the Orient”, have led to similar notions regarding Asian economic systems as a whole.¹⁷ These have undergone major revision following studies of more devolved systems of irrigation management in Sri Lanka and Southeast Asia, involving village councils and religious institutions.¹⁸ In India, however, the traditional model has until recently remained unchallenged, in part because of the paucity of archaeological research on irrigation.

Buddhism and local agricultural cults

Another major focus of the project has been the temporal and spatial distribution of over a thousand sculpture fragments across the study area. Of particular interest is a group of serpent (naga) sculptures datable variously to between about the first century BC and fifth century AD, and closely connected with ancient Indian agricultural and fertility cults (Fig. 9).⁶ In most cases they are located on top of, or close to the dams discussed above, and thus provide latest-possible dates for the construction of the dams. They also shed important light on theories of religious change, especially those regarding the dynamics

between the sangha and local agricultural cults. Gupta-period accounts of Chinese pilgrims in eastern India show that naga shrines were propitiated by monks, often within monastic compounds, because of the nagas’ ability to ensure adequate rainfall and agricultural success. In the Sanchi area, the positioning of naga shrines on dams conforms with this model, particularly since the sangha appears to have played a role in the management of local irrigation. Naga worship was part of Buddhist practice because its effects were in harmony with the sangha’s economic concerns with water harvesting and agrarian production. This hypothesis, based on the relative configuration of dams, settlements and monasteries in the Sanchi area, as well as similar patterns in western India and Sri Lanka, forms part of an active model of religious change, which indicates that monks moved into new areas with a set of motives for local communities to extend their economic support to the monastery.

Conclusion and looking forward

The results of nearly eight years of systematic and non-systematic survey in the



Figure 9 A naga sculpture on Nagauri hill overlooking the main Sanchi reservoir (location indicated on Fig. 8 above).

Sanchi area have provided an empirical basis for re-assessing the economic and environmental implications of religious change in ancient India. Steps have also been taken to situate these patterns within a broader regional framework. In 2002, a study was conducted at the Sudarsana dam site in Junagadh, Gujarat (Fig. 1), where a series of well known inscriptions mention the dam's construction and various bouts of repair between the third century BC and the fifth century AD. The dam, which had not hitherto been subjected to archaeological scrutiny, offered interesting parallels to those at Sanchi, in terms of both its design and its relationship to nearby ritual (both Buddhist and Hindu) sites. Plans are now under way for follow-up investigations at Sanchi and Junagadh, as well as the Buddhist site of Devnimori in Gujarat, where similar dam sites are known. Finally, survey work will be conducted at Ramtek in Maharashtra, which offers interesting parallels to Sanchi from evidence that water management played a major role in the administration and land policy of the Vakatakas (c. fourth–sixth centuries AD), this time within the context of orthodox Brahmanical religion rather than Buddhism.¹⁹

Notes

1. Project website www.britac.ac.uk/institutes/ssas/projects/sanchi.htm. I would like to thank the Archaeological Survey of India, and the Madhya Pradesh Directorate of Archaeology, Archives and Museums (Bhopal) for supporting this project, with special thanks to S. B. Ota, O. P. Misra, K. K. Mohammed, and S. K. Verma for help during fieldwork. Since 2003, research has been funded by the Society for South Asian Studies, the British Academy Board for Academy-Sponsored Institutes and Societies (BASIS), and Merton College, Oxford. Recent fieldwork was carried out in collaboration with the Madhya Pradesh Directorate of Archaeology, Archives and Museums (Bhopal), with additional input by John V. Sutcliffe, Anthony Beck (Durham University) and Lindsay Lloyd-Smith (University of Cambridge). Thanks to Meera and Ishwar Dass in Bhopal; Dharmacaitanya and Pushpa Jain, and Ashutosh Vyas in Vidisha for many kindnesses.
2. The Vidisha Research Group (supported by the Society for South Asian Studies), with which the current project is closely connected, has other studies in the Vidisha area: www.britac.ac.uk/institutes/ssas/groups/vidisha.htm.
3. *The Bhilsa topes*, A. Cunningham (London: Smith Elder, 1854); *The monuments of Sanchi*, J. H. Marshall, A. Foucher, N. G. Majumdar (Calcutta: the Survey of India Offices, 1940).
4. J. Shaw, "Sanchi and its archaeological landscape: Buddhist monasteries, settlements and irrigation works in central India", *Antiquity* 74, 775–6, 2000; "The sacred landscape", in *Buddhist reliquaries from ancient India*, M. D. Willis (ed.), 27–38 (London: British Museum Press, 2000); "The archaeological setting of Buddhist monasteries in central India: a summary of a multi-phase survey in the Sanchi area, 1998–2000", in *South Asian Archaeology: proceedings of the 16th international conference of the European Association of South Asian Archaeologists*, C. Jarrige & V. Lefèvre (eds), 665–76 (Paris: Éditions Recherche sur les Civilisations, 2005); and *Buddhist landscapes in central India: Sanchi Hill and archaeologies of religious and social change, c. third century BC to fifth century AD* (London: Society for South Asian Studies, the British Academy, in preparation).
5. J. Shaw & J. V. Sutcliffe, "Ancient irrigation works in the Sanchi area: an archaeological and hydrological investigation", *South Asian Studies* 17, 55–75, 2001; and "Water management, patronage networks and religious change: new evidence from the Sanchi dam complex and counterparts in Gujarat and Sri Lanka", *South Asian Studies* 19, 73–104, 2003; "Ancient dams, settlement archaeology and Buddhist propagation in central India: the hydrological background", *Hydrological Sciences* 48(2), 277–91, 2003; and "Ancient dams and Buddhist landscapes in the Sanchi area: new evidence on irrigation, land use and monasticism in central India", *South Asian Studies* 21, 1–24, 2005.
6. J. Shaw, "Naga sculptures in Sanchi's archaeological landscape: Buddhism, Vaisnavism and local agricultural cults in central India, first century BCE to fifth century CE", *Artibus Asiae* LXIV(1), 5–59, 2004.
7. OSL refers to the levels of luminescence emitted on exposure to light as the result of released energy accumulated in crystalline minerals through the action of ionizing radiation from natural (background) radioactivity. When a sediment is exposed to sunlight, the OSL acquired over geological time is removed, and the luminescence clock is thus set to zero. If the sediment is then reburied in, for example, the body of an ancient dam, an OSL signal will accumulate over time in the crystalline minerals at a steady and measurable rate, which provides the basis for dating the time elapsed since the previous exposure to light; for further information about the OSL dating technique see: www.rlaha.ox.ac.uk/lumin/lumindx.html For applications of this method (also of pollen studies) in this project, see J. Shaw, J. V. Sutcliffe, L. Lloyd-Smith, J.-L. Schwenninger, M. S. Chauhan, with contributions by E. Harvey & O. P. Misra, "Ancient irrigation and Buddhist history in central India: optically stimulated luminescence and pollen sequences from the Sanchi dams", *Asian Perspectives* 46(1), in press.
8. J. Beck & J. Shaw, "The application of satellite imagery to the Vidisha Research Project, Vidisha, India", in preparation.
9. The offset of approximately 20 m between the satellite imagery and site plan in Figure 3 is a cumulative effect of inbuilt GPS errors and those related to satellite imagery projections.
10. See n. 4. *Buddhist landscapes in central India*, J. Shaw.
11. *The dating of the historical Buddha*, H. Bechert (ed.) (Gottingen: Venderhoeck & Ruprecht, 1991); and R. Coningham, "The archaeology of Buddhism", in *Archaeology and world religion*, T. Insoll (ed.), 60–95 (London: Routledge, 2001).
12. F. R. Allchin & K. R. Norman, "Guide to the Aśokan inscriptions", *South Asian Studies* I, 43–50, 1985.
13. For alternative views, see G. Fussman, "Central and provincial administration in ancient India: the problem of the Mauryan empire", *The Indian Historical Review* 14, 31–72, 1988; and N. Sugandhi, "Context, content, and composition: questions of intended meaning and the Aśokan edicts", *Asian Perspectives* 42(2), 224–46, 2003.
14. V. Dehejia, "Collective and popular bases of early Buddhist patronage: sacred monuments, 100 BC to AD 250", in *The powers of art: patronage in Indian culture*, B. Stoler-Miller (ed.), 35–46 (Delhi: Oxford University Press, 1992).
15. The Gupta period is dated to between c. fourth and sixth centuries AD. K. Trainor, "Constructing a Buddhist ritual site: stupa and monastery architecture", in *Unseen presence: the Buddha and Sanchi*, V. Dehejia (ed.), 18–35 (Mumbai: Marg Publications, 1996).
16. For a critique on the traditional dating of this text, see *Kautilya and the Arthashastra: a statistical investigation of the authorship and evolution of the text*, T. Trautmann (Leiden: Brill, 1971).
17. *Oriental despotism: a comparative study of total power*, K. A. Wittfogel (New Haven: Yale University Press, 1957).
18. R. A. H. L. Gunawardana, "Irrigation and hydraulic society in early medieval Ceylon", *Past and Present* 53, 3–27, 1971.
19. This component of the project is being carried out in collaboration with Hans Bakker (University of Groningen) who has already published extensively on aspects of Vakataka religious and political history: *The Vakatakas: an essay in Hindu iconology*, H. T. Bakker (Groningen: Egbert Forsten, 1997).