

TABLES

TABLE 1: THE GENEALOGY OF THE SATAVAHANAS

Simuka	228–205 BCE
Kṛṣṇa	205–187
Śātakarṇi I	187–177
Purṇotsanga	177–159
Skandastambhi	159–141
Śātakarṇi II	141–85
Lambodara	85–67
Apilaka	67–55
Meghasvāti	55–37
Svāti	37–19
Skandasvāti	19–12
Mṛgendra Śātakarṇi	12–9
Kuntala Śātakarṇi	9–1
Śātakarṇi III	1–0
Pulumāvi I	0–36 CE
Gaurakṛṣṇa	36–61
Hala	61–66
Maṇḍalaka (Puttālka, Pulumāvi II)	69–71
Purindraśeṇa	71–76
Sundara Śātakarṇi	76–77
Chakora Śātakarṇi	77–78
Śivasvāti	78–106
Gautamiputra Śātakarṇi	106–130
Pulumāvi III (Vaśiṣṭhiputra)	130–158
Śivaśri (Śātakarṇi)	158–165
Śivaskanda Śātakarṇi	165–172
Śri Yajña Śātakarṇi	172–201
Vijaya Śātakarṇi	201–207
Chandra Śri Śātakarṇi	207–217
Pulumāvi IV	217–224

Source: (Nagaraju 1981)

TABLE 2: THE GENEALOGY OF THE VĀKĀṬAKAS

Vindhyaśakti I (ca. 250–275 CE)	
Pravira alias Pravaraṣeṇa I (ca. 275–335 CE)	
The Nandivardhana branch or The Eastern Vākāṭakas	The Vatsagulma branch or The Western Vākāṭakas
Gautamiputra I	Sarvaṣeṇa I (ca. 325–355 CE)
I	
Rudraṣeṇa I (ca. 335–355 CE)	
Pr̥thiviṣeṇa I (ca. 355–385 CE)	Vindhyaśakti II alias Vindhyaṣeṇa (ca. 355–400 CE)
Rudraṣeṇa II (ca. 385–395 CE)	
(Yuvarāja) Divākaraṣeṇa (ca. 395–410 CE)	Pravaraṣeṇa II (ca. 400–425 CE)
Dāmodaraṣeṇa (ca. 410–420 CE)	
Pravaraṣeṇa II (ca. 420–455 CE)	Sarvaṣeṇa II (ca. 425–455 CE)
Narendraṣeṇa (ca. 455–480 CE)	Devaṣeṇa (ca. 455–480 CE)
Pr̥thiviṣeṇa II (ca. 480–500/505 CE)	Hariṣeṇa (ca. 480–510 CE)

Source: (Shastri 1997, 212)

TABLE 3: THE 'REVISED VĀKĀṬAKA CHRONOLOGY' BY SPINK

NANDIVARDHAN BRANCH approx. reigns		
Rudrasena II	385-390	(allows for year 5 inscr.)
Prabhavatigupta	390-405	(estimated 15 yr regency)
Daqmodarasena	405-410	(as brother's reign was long)
Pravarasena II	410-445	(allows for year 32 inscr.)
Narendrasena	445-455	(no evidence on length)
Prithvisena II	455-475	(allows for year 17 inscr)
VATSAGULMA BRANCH takes full control c. 475 or earlier		
Hariṣeṇa	460-477	Devasena ruling 458
Sarvaṣeṇa III	478-483	Died before 486

Source: (W. M. Spink 2005, 166)

TABLE 4: RE-NUMERATING THE *UPĀŚRAYAS* AND TEMPLES OF AJANTA

S.No.	ASI No.	<i>Śailagrha</i> type		Counter
		Before c. 466 CE	After c. 466 CE	
1.	Cave 1	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
2.	Cave 2	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
3.	Cave 3	Non-existent	<i>Upāśraya?</i>	1
4.	Cave 4	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
5.	Cave 5	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
6.	Cave 6L	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
7.	Cave 6U	<i>Upāśraya</i>	<i>Maṇḍapa</i>	+1 (add)
8.	Cave 7	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
9.	Cave 8	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
10.	Cave 9	Temple	Unchanged	1
11.	Cave 10	Temple	Unchanged	1
12.	Cave 11	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
13.	Cave 12	<i>Upāśraya</i>	Unchanged	1
14.	Cave 13	<i>Upāśraya</i>	Unchanged	1
15.	Cave 14	<i>Upāśraya?</i>	<i>Maṇḍapa</i>	1
16.	Cave 15	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
17.	Cave 15A	<i>Upāśraya</i>	Unchanged	+1 (add)
18.	Cave 16	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
19.	Cave 17	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
20.	Cave 18	<i>Podhī/cistern</i>	Unchanged	-1 (subtract)
21.	Cave 19	Temple	Temple	1
22.	Cave 20	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
23.	Cave 21	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
24.	Cave 22	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
25.	Cave 23	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
26.	Cave 24	<i>Upāśraya</i>	<i>Maṇḍapa</i>	1
27.	Cave 25	<i>Upāśraya</i> adjunct	?	-1 (subtract)
28.	Cave 26	Temple	Unchanged	1
29.	Cave 27	<i>Upāśraya</i> adjunct	<i>Maṇḍapa</i>	-1 (subtract)
30.	Cave 28	Non-existent	<i>Maṇḍapa?</i>	1
31.	Cave 29	Non-existent	Temple	1
Total <i>śailagrhas</i>				28

Note: The counting is done by adding Cave Upper 6 (incorrectly regarded as part of Lower 6) and Cave 15A (rediscovered in 1952) to the sum total, and by deducting Caves 25 and 27 that, we know now, are only adjuncts. (cf. Table 6)

TABLE 5: THE MAINSTREAM BUDDHIST SCHOOLS

- I. STHĀVIRAVĀDA
 - A. Pudgalavāda (ca. 280 BCE)
 - 1. Vatsiputriya
 - 2. Dharmottariya
 - 3. Bhadrāyaniya
 - 4. Sammitiya
 - 5. Sannagārika
 - B. Sarvāstivāda
 - 1. Mūlasarvāstivāda
 - 2. Sautrāntika
 - C. Vibhajjavāda
 - 1. Mahīśāsaka (after 232 BCE)
 - 2. Dharmaguptaka (after 232 BCE)
 - 3. Kāśyapiya (after 232 BCE)
 - 4. Theravāda (ca. 240 BCE)
 - 5. Mahāvihāravāsin
 - 6. Abhayagirivāsin
 - 7. Jetavanīyas
- II. MAHĀSĀMĀGHĪKA OR MAHĀSĀNGHĪKA
 - A. Kaukkuṭika
 - 1. Bahuśrutīya (late 3rd c. BCE)
 - 2. Prajñāptivāda (late 3rd c. BCE)
 - B. Ekavyavahārika or Lokottaravāda
 - C. Caitya
 - D. Purvaśaila
 - E. Aparāśaila
- III. MAHĀYĀNA SCHOOLS OF BUDDHISM
 - A. Yogāchāra
 - B. Mādhyamaka

**TABLE 6: THE UPĀŚRAYAS, STUPA-TEMPLES, AND ADAPTED MAṆḌAPAS
OF AJANTA**

S.No.	ASI No.	Śailagr̥ha type		Counter
		Pre-circa 466 CE	Post-circa 466 CE	
1.	Cave 1	Upāśraya	Maṇḍapa	1
2.	Cave 2	Upāśraya	Maṇḍapa	1
3.	Cave 3	Non-existent	Upāśraya?	1
4.	Cave 4	Upāśraya	Maṇḍapa	1
5.	Cave 5	Upāśraya	Maṇḍapa	1
6.	Cave 6L	Upāśraya	Maṇḍapa	1
7.	Cave 6U	Upāśraya	Maṇḍapa	+1 (add)
8.	Cave 7	Upāśraya	Maṇḍapa	1
9.	Cave 8	Upāśraya	Maṇḍapa	1
10.	Cave 9	Temple	Unchanged	1
11.	Cave 10	Temple	Unchanged	1
12.	Cave 11	Upāśraya	Maṇḍapa	1
13.	Cave 12	Upāśraya	Unchanged	1
14.	Cave 13	Upāśraya	Unchanged	1
15.	Cave 14	Upāśraya?	Maṇḍapa	1
16.	Cave 15	Upāśraya	Maṇḍapa	1
17.	Cave 15A	Upāśraya	Unchanged	+1 (add)
18.	Cave 16	Upāśraya	Maṇḍapa	1
19.	Cave 17	Upāśraya	Maṇḍapa	1
20.	Cave 18	Podhī/cistern	Unchanged	-1 (subtract)
21.	Cave 19	Temple	Temple	1
22.	Cave 20	Upāśraya	Maṇḍapa	1
23.	Cave 21	Upāśraya	Maṇḍapa	1
24.	Cave 22	Upāśraya	Maṇḍapa	1
25.	Cave 23	Upāśraya	Maṇḍapa	1
26.	Cave 24	Upāśraya	Maṇḍapa	1
27.	Cave 25	Upāśraya adjunct	?	-1 (subtract)
28.	Cave 26	Temple	Unchanged	1
29.	Cave 27	Upāśraya adjunct	Maṇḍapa	-1 (subtract)
30.	Cave 28	Non-existent	Maṇḍapa?	1
31.	Cave 29	Non-existent	Temple	1
		Total śailagr̥has		28

Note: The table shows Upāśrayas (purely residential halls) as different from temples. At the drafting table in circa 461 CE, there were just three types of Śailagr̥has: Upāśrayas, temples, and podhīs. Maṇḍapas did not exist then. However, all the Upāśrayas were not conceived in c. 461 CE; a few were planned later. (cf. Table 4)

TABLE 7: NEW CLASSIFICATION OF THE AJANTĀ CAVES

Classification of the Ajantā caves						
Sātavāhana period (late 3rd c. BCE– 2nd c. BCE)*		Vākāṭaka period (ca. 462–80 CE)**				
Residen- tial	Temple	Planned together (460–61 CE; begun 462–64 CE)			Planned later	
		Residential		Tem- ple	Residential	Temple
		Residential (up to 465 CE)	Converted to temples (from 466 CE)			
Caves 12, 13, 15A, (26A?)	Caves 9, 10	Caves 1, 2, 4, 5, lower 6, 7, 8, 11, 15, 16, 17, 18, 20, 21, 23, 24, Ghaṭotkacha. Total: 17	Caves 1, 2, 4, 6 upper, 6 lower, 7, 8, 11, 15, 16, 17, 20, 21, 23, 24, 27, Ghaṭotkacha. Total: 17	Caves 19, 26	462 CE: 25, 27 464 CE: up- per 6 477 CE: 3, 14, 22, 28	477 CE: Cave 29

* Source: S. Nagaraju

** Source: Walter M. Spink

Reproduced from (Singh 2012, 48).

TABLE 8: IDENTICAL DIMENSIONS OF SOME 5TH C. MAṆḌAPAS OF AJANTA

Identical dimensions of some caves								
Cave No.	Front court		Porch			Hall		
	Width	Depth	Width	Depth	Height	Width	Depth	Height
Cave 1	53	24	60	9	13	60 front aisle 66 rear aisle	66	13
Cave 1 before expansion	60	20	60	12	No data	60	60	No data
Cave 16	53	20	66	10	13	66	66	13
Cave 17	53	20	57	10	13	58 front aisle 66 rear aisle	66	13
Cave 24	60	24	60	12	No data	60	60	No data

All data in round figures. Source: author. Measurements in feet and inches.

Reproduced from (Singh 2012, 49).

**TABLE 9: EARLIER SAṄGHĀRĀMAS—THE UPĀŚRAYAS WITH STŪPA OR
IMAGE SHRINES**

Site/ Cave No.	Shrine type	Circa	Remarks
Karāḍ, 11 & 16	Stūpa-shrine	100BCE-100CE	—
Nāgārjunakoṇḍā, Site 6	Stūpa & image-shrine	1 st -2 nd c. CE	—
Junnar Ganesh Pahāḍ, 7	Stūpa or image-shrine	110 CE	—
Nāsik, 17	Image-shrine	110 CE	image later?
Kuḍā, 9	Stūpa-shrine	150 CE	—
Nāsik, 20	Image-shrine	170 CE	image later?
Junnar Manmoḍī, 2	Image-shrine	170 CE	—
Kuḍā, 15	Stūpa-shrine	240 CE	—
Kuḍā, 1	Stūpa-shrine	250-300 CE	—
Kuḍā, 1, 6	Stūpa-shrine	310 CE	—
Mahāḍ, 8	Image-shrine	310 CE	Portable?
Śailārwaḍī, 5	Stūpa-shrine	300 CE	—
Ajantā, 8	Image-shrine	461-478 CE	Portable, 466CE

Note: The list is not exhaustive. The stūpa temples without residential cells are not included. Source of dates: (Nagaraaju 1981).

TABLE 10: AJANTA CAVE TEMPLES AND THEIR ADJUNCTS IN C. 461 CE

Stūpa temples	Adjunct halls of residence
Caves 9 and 10	Initially: caves 12, 13, and 15A Later: cave 8 (Lower 6, 11, 14, and 15?)
Cave 26	Caves 21, 23, 24, 25, 27 (28?)
Cave 19	Caves 16, 17, 20
For community in general	Caves 1, 2, 3, 4, 5, Upper 6, 6, 7, 14, 15, 22, and 28

Note: *The above data is conjectural. Since c. 466 CE, many adjuncts were transformed into temples. Hence, they were no longer adjuncts to any temples.*

TABLE 11: CAVE 26-COMPLEX—EARLY CHRONOLOGY (INCLUDING CAVES 25 AND 27)

Sequence	Year (c. CE)	Cave	Phase	Description (compare with Spink's Time Chart – Spink, <i>Ajantā</i> , IV (2009), fig. 39).
I	462 Quarter II–III	26	I	Upper half excavated to full depth, work halted to excavate Cave 25 on right outer wall.
II	462 Quarter IV	25	I	Door faced south. Hall like Cave 13 with two cells on each of the other three walls. During excavation eastern cells or their ceilings were damaged. Work halted.
			II	Cave re-oriented towards east (ravine) with changes in layout. Eastern cells to be removed except for doors to provide the hall with double openings. The rock on eastern side of cliff removed to create frontcourt. Need for spacious hall felt.
			III	Present layout and appearance including hall, veranda, and frontcourt from this phase. Many traces of Phases I–II obliterated. Merging of earlier hall and outer court to create a larger hall and veranda. Spacious courtyard located above Cave 26-LRW. Hall planned with cells, the veranda without. Eastern wall and double doors (Phase II) removed incompletely (remains of eastern wall now look like partially preserved parapet or enclosure). Remains of corners near floor level indicate cells removed on east. Double doors indicated in ground plan (Gill) and report (Burgess). Work relating to courtyard mostly completed. Intended floor level reached in outer courtyard only. Hall incomplete. Planned cells abolished for fear of damaging vault of <i>caityagrha</i> on south. Abandonment of work. Cave 27 planned as substitute.
III	463 Quarter I	27	I	Started symmetrically on south. Astylar hall. Significant distance from <i>caityagrha</i> to allow for outer court. Mostly completed except for a few cells.
IV	463 Quarter II–III	26	II	Cistern and lower half largely completed, including main gateway to complex, main courtyard, veranda and lower half of <i>caityagrha</i> (octagonal pillars suggest this early date).
V	464–65		III	Cells added on either end of veranda.
VI	464–65	26-LRW	I	Although astylar, cannot have been initiated earlier. The <i>caityagrha</i> 's northern cell on the veranda forced its western cell to be carved on the side rather than the centre of western wall. For more adaptations see (see Spink's volumes.)
VII	464–65	26-LLW	I	Although astylar, cannot have been initiated earlier than the <i>caityagrha</i> 's cell on the south of the veranda, which forced it to be pushed further south, causing asymmetrical disposition at the complex <i>vis-à-vis</i> the counterpart Cave 26-LRW. Further adaptations followed (see Spink's volumes.)
VIII	464–65	25	IV	Work re-started with new plans 1. Inconvenient entrance through 'left door' replaced by staircase from court of Cave 24. 2. Floor to be finalized. A cell (later shrine) had been carved on the left outer wall of Cave 24 beneath court of Cave 25. Floor lowered while saving ceiling of cell (or shrine) underneath. Result: monolithic platform on courtyard. 3. Cell excavated on southern wall of veranda; cell on opposite end no option because of Cave 24. 4. Attempt to convert the veranda-end cells into vestibule by adding inner cells; workers break through Cave 26- <i>caityagrha</i> 's vault, created gaping hole; all work on Cave 25 abandoned.
IX	477	27	IV	Attempt to add shrine to cave. As Cave 28 was being excavated to the south, the shrine could not be planned on that side, opposite the façade of the <i>lena</i> . Shrine excavated on the western (right) wall. Not completed before the site fell into chaos after death of King Hariṣeṇa (see Spink's volumes).

(Source: R. K. Singh, *South Asian Studies* 2012, 28.1, p. 64)

TABLE 12: BUDDHIST UPOṢATHAS

Upoṣathas, observance day, or festivals	Tithi	Date in CE	Description
upoṣatha/ Observance Day	Full moon, new moon, and quarter moon days		The four monthly holy days which continue to be observed in Theravada countries - the new moon, full moon, and quarter moon days. Known in Sri Lanka as Poya Day.
Buddhist new year	First day of Caitra		First full moon of the first month depending on calendars of different countries.
Magha Puja/ Sangha Day	Jyestha Purnima	Usually in February	Varies in different countries and calendars; Commemorates the spontaneous gathering of 1250 arahants, to whom the Buddha gave the exhortation on the basis of the discipline (Ovada Patimokkha).
Vaiśākha Puja (Wesak)/ Buddha Day/ Buddha jayanti	Vaiśākha pūrṇimā	Usually in May	Commemorates the birth, enlightenment and passing away of the Buddha.
Asalha Puja/ Dhamma Day	Āṣāḍha pūrṇimā	Usually in July	Commemorates the Buddha's first discourse, given to the five <i>samanas</i> in the Deer Park at Sarnath, near Varanasi. The traditional Rainy-Season Retreat (Vassā) begins on the next day.
Next day of Asalha Puja	Āṣāḍha śukla pratipada	July 16	3-month's rains retreat season (Vassā) for the monastic order.
Guru Purnima		July 16	Observed by Hindu devotees and Buddhist disciples
Pavarana Day	Margasirsa Purnima	Usually in October	This marks the end of the three-month Vassā-retreat. In the following month, lay people may offer the Kathina.
Kathina Ceremony (Robe offering ceremony)	Any day of Śrāvaṇa	Is held on any convenient date within one month of the conclusion of the Vāsa Retreat	It is the time of the year when new robes and other requisites may be offered by the laity to the monks.
Anapanasati Day		Usually in November	

TABLE 13: CAVE 26—ARCHAEO-ASTRONOMICAL DATA

The *tīthis* of the Dhamma Day/ Āṣāḍha Pūrṇimās (372-392 Śaka Era = 450-470 CE), and the sunrise angles at Ajanta on the Dhamma Day

A. <i>Tīthis</i> of Dhamma Day or Āṣāḍha Pūrṇimā and the start dates of <i>caturmāsa/ varṣāvāsa</i> from 372 to 392 Śaka Era				B. Conversion of A in Julian era, 450 to 470 CE				Azimuth sunrise angles at Ajanta
Śaka Samvat or Śaka Era (SE)	<i>Māsa</i>	<i>Tīthi</i> of the first full moon	Start of <i>caturmāsa</i> (<i>varṣāvāsa</i>)	Julian Year	Month	Date	Day	E-NE
372 SE	Āṣāḍha	15	16	450 CE	June	11	Sun	65°
373 SE	Āṣāḍha	15	16	451 CE	June	30	Sat	65°
374 SE	Āṣāḍha	15	16	452 CE	June	18	Wed	64°
375 SE	Āṣāḍha	15	16	453 CE	June	7	Sun	65°
376 SE	Āṣāḍha	15	16	454 CE	June	26	Sat	64°
377 SE	Āṣāḍha	14	15	455 CE	June	15	Wed	65°
378 SE	Adhika Āṣāḍha	15	16	456 CE	June	4	Mon	66°
379 SE	Āṣāḍha	15	16	457 CE	June	23	Sun	64°
380 SE	Āṣāḍha	15	16	458 CE	June	12	Thurs	65°
381 SE	Jyeṣṭha	15	16	459 CE	June	2	Tue	66°
382 SE	Āṣāḍha	14	15	460 CE	June	19	Sun	64°
383 SE	Āṣāḍha	14	15	461 CE	June	8	Thurs	65°
384 SE	Āṣāḍha	14	15	462 CE	June	27	Wed	65°
385 SE	Āṣāḍha	15	16	463 CE	June	17	Mon	65°
386 SE	Āṣāḍha	14	15	464 CE	June	5	Fri	65°
387 SE	Āṣāḍha	15	16	465 CE	June	24	Thurs	64°
388 SE	Āṣāḍha	15	16	466 CE	June	14	Tue	65°

389 SE	Jyeṣṭha	15	16	467 CE	June	3	Sat	66°
390 SE	Āṣāḍha	15	16	468 CE	June	21	Fri	64°
391 SE	Āṣāḍha	15	16	469 CE	June	10	Tue	65°
392 SE	Āṣāḍha	15	16	470 CE	June	29	Mon	65°

Notes:

1. The frontcourt of Cave 26 is measured 64.46° E-NE (Spink)
2. The nave of the cave is measured 63° E-NE (Singh)
3. On Dhamma Day (14 Āṣāḍha, 383 SE = 8 June 461 CE), the sunrise angle is 64°-66°.
4. Spink's data for sun's angle on summer solstice (21 June): 67.71° E-NE (does not match with the results returned by astronomical calculators software programmes)
5. Sources acknowledged in Table 15.

TABLE 14: BUDDHIST YEAR CALENDAR AFTER XUANZANG'S DESCRIPTIONS

	<i>Māsa</i> (Amanta Saka Era)	Julian months (Gregorian/ Christian Era)	From		To		The two divisions of seasons		<i>Āturmāsa</i>
							Division I	Division II	
1.	Chaitra	March-April	16 th day of	1 st month	15 th day of	2 nd month	Spring	Hot season	
2.	Vaiśākha	April-May	16 th day of	2 nd month	15 th day of	3 rd month			
3.	Jyeṣṭha	May-June	16 th day of	3 rd month	15 th day of	4 th month			
4.	Āṣāḍha	June-July	16 th day of	4 th month	15 th day of	5 th month	Summer		
5.	Śrāvaṇa	July-Aug	16 th day of	5 th month	15 th day of	6 th month		Wet season	<i>Varṣāvāsa</i> I
6.	Bhādrapada	Aug-Sept	16 th day of	6 th month	15 th day of	7 th month			<i>Varṣāvāsa</i> II
7.	Āśvayuja	Sept-Oct	16 th day of	7 th month	15 th day of	8 th month	Autumn		
8.	Kārttika	Oct-Nov	16 th day of	8 th month	15 th day of	9 th month			
9.	Mārgaśīrṣa	Nov-Dec	16 th day of	9 th month	15 th day of	10 th month		Cold season	
10.	Puṣya	Dec-Jan	16 th day of	10 th month	15 th day of	11 th month	Winter		
11.	Māgha	Jan-Feb	16 th day of	11 th month	15 th day of	12 th month			
12.	Phālguna	Feb-March	16 th day of	12 th month	15 th day of	1 st month			

Source: Table prepared by R. K. Singh based on Xuanzang's descriptions of the Indian calendar 'according to the holy doctrine of Tathāgata' (Xuanzang 1884, 72-73).

TABLE 15: CAVE 26—FURTHER ARCHAEO-ASTRONOMICAL DATA

AJANTA CAVE 26: LUNISOLAR DATA FOR AD 460s INDICATING CONNECTION WITH THE MORNING SUN OF DHAMMA DAY AND THE START OF VASA SEASON										
Tithis of Dhamma Day or Asalha Puja and start of Varsavasa or Caturmasa				Sunrise on plateau		Entry of the first rays in nave			Nave azimuth	Alignment gap
A. Asadha purnimas		B. Next day: start of caturmasa and varsavasa		C. Hr: min	D. Azimuth	E. Elevation	F. Hr: min: sec	G. Azimuth	H. Azimuth	I. Degrees
Shalivahana Saka (amanta)	Julian dates	Shalivana Saka (amanta)	Julian dates							
Saka 382 Asadha sukla 15	AD 460 June 19 Sun	Saka 382 Asadha krsna 1	AD 460 June 20 Mon	05:47	64°	7.03°	06:21:32	67.38°	64.46° E-NE	2.92°
Saka 383 Asadha sukla 15	AD 461 June 08 Thurs	Saka 383 Asadha Krsna 1	AD 461 June 09 Fri	05:53	65°	7.03°	06:20:17	68.09°	64.46° E-NE	3.63°
Saka 384 Asadha sukla 15	AD 462 June 27 Wed	Saka 384 Asadha Krsna 1	AD 462 June 28 Thurs	05:47	65°	7.03°	06:23:17	67.42°	64.46° E-NE	2.96°
Saka 385 Asadha sukla 15	AD 463 June 17 Mon	Saka 385 Asadha Krsna 1	AD 463 June 18 Tue	05:49	65°	7.03°	06:21:04	67.46°	64.46° E-NE	3°
Saka 386 Asadha sukla 15	AD 464 June 05 Fri	Saka 386 Asadha Krsna 1	AD 464 June 06 Sat	05:46	65°	7.03°	06:20:15	68.39°	64.46° E-NE	3.93°
Saka 387 Asadha sukla 15	AD 465 June 24 Thurs	Saka 387 Asadha Krsna 1	AD 465 June 25 Fri	05:48	64°	7.03°	06:22:35	67.35°	64.46° E-NE	2.89°
Saka 388 Asadha sukla 15	AD 466 June 14 Tues	Saka 388 Asadha Krsna 1	AD 466 June 15 Wed	05:46	65°	7.03°	06:20:42	67.60°	64.46° E-NE	4.89°
Saka 389 Jyestha sukla 15	AD 467 June 03 Sat	Saka 389 Jyestha Krsna 1	AD 467 June 04 Sun	05:46	66°	7.03°	06:20:21	68.75°	64.46° E-NE	4.29°
Saka 390 Asadha sukla 15	AD 468 June 21 Fri	Saka 390 Asadha Krsna 1	AD 468 June 22 Sat	05:47	64°	7.03°	06:21:58	67.37°	64.46° E-NE	2.91°
Saka 391 Asadha sukla 15	AD 469 June 10 Tues	Saka 391 Asadha Krsna 1	AD 469 June 11 Wed	05:46	65°	7.03°	06:20:23	67.89°	64.46° E-NE	3.43°
Sources										
A & B: Online calculators (1) Pancanga (version 3.13) --- Perl version --- February, 2004; by M. YANO and M. FUSHIMI, <http://www.cc.kyoto-su.ac.jp/~yanom/pancanga/>, accessed on July 2, 2013 (2) NASA GSFC <http://eclipse.gsfc.nasa.gov/phase/phases0401.html>, accessed on 2 July 2013.										
C & D: Online calculator, Timeanddate.com, <http://timeanddate.com/s/2dwa>, accessed on 2 July, 2013.										
E & H: Prof. Walter M. Spink (University of Michigan) and Prof. Kenneth Malville (University of Colorado, Boulder)										
F & G: PSA Algorithm Sun's Position Calculator, <http://www.pveducation.org/pvc/drom/properties-of-sunlight/sun-position-high-accuracy>, accessed on 2 July 2013; and NREL's Solar Position Algorithm (SPA), MIDC SPA Calculator, <http://www.nrel.gov/midc/solpos/SPA.html>, accessed on 2 July										
<p>Asalha Puja Day (Dhamma Day): Asalha Puja means to pay homage to the Buddha on the full moon day of Asadha month (approximately July, but mostly June in 5th century). It commemorates the Buddha's first teaching: the turning of the wheel of the Dhamma (Dhammacakkappavattana Sutta) to the</p> <p>In Shalivana Saka Era the new year is called the Gudi Padava still followed in Maharashtra. It is Southern Amant calendar, which is Caitradi. The first day of the year begins from sukla paksa, and each month of the Shalivahana calendar ends with the no-moon day.</p> <p>Ajanta Lat 20°33'9.94"N; Long 75°42'0.69"E</p>										

TABLE 16: CAVE 11—TENTATIVE CHRONOLOGY

Circa (CE)	Developments
462	<p>Original conception and plan</p> <ul style="list-style-type: none"> • Floor level was higher up: about 2 feet in the porch and 1.5 feet in the hall • The porch was no so wide • Windows were not planned • All pillars were square • No cells planned on side walls of the porch • <i>Ćandraśilās</i> planned before cell doorways (removed and recreated in c. 466-467 CE) • A-mode door fittings in cell doorways • 12 cells originally planned, 3 each on the left, rear, and right walls • No plan for any shrine, painting, or images
462-65	Excavation according to the above plan except for the major adaptation of adding an extra cell on the rear interior wall in order to partially compensate for the now-unachievable right wall cells
466	<p>The site-authorities (Saṅgha?) conceive Buddha shrines for many <i>upāśrayas</i>; the first chisels for the shrine were hammered here as well as in caves 16, 17, and Lower 6.</p> <p>Massive adaptations planned for the conversion of many <i>upāśrayas</i> into temples. In this cave the job list included</p> <ul style="list-style-type: none"> • The transformation of a rear cell into the shrine, for which the cell nearest to the line of axis was chosen • 'Suvithi' (picture galleries) • Windows for lighting the <i>suvithis</i> • Decoration of the doorway (<i>simha-dvara</i> theme chosen)
466- 467	<p>The porch</p> <ul style="list-style-type: none"> • Cells added on side walls

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- Lions envisaged below the door jambs
 - Even the sill of the doorway cut down
 - The porch floor cut down for revealing the lions
 - Plain *adhiṣṭhāna* exposed at the base of the eastern axial pillar
 - Improvised counterpart with mouldings exposed at the base of the western axial pillar
 - Near the pilasters, monolithic benches carved from the mass of uncut rock
 - Safety enclosure excavated on either side of the axis, between two pillars
 - Right windows carved, its two pillars display the latest circular style

The hall

- The left cell on the rear wall excavated
- Floor level cut down significantly for:
- Emulating the 'improved' *adhiṣṭhānas* on the porch pillar (western axial pillar) inside the hall. (For this, the square pillars are made octagonal. In the process *purnakalasa* or *ghāṭapallava* motifs added for pillar capitals.)
- Adding floor beams below and between the pillars.
- Adding a bench along the interior right wall.
- The interior floor was lowered in this order: front aisle, left aisle, right aisle, rear right aisle, rear left aisle. Evidence: the *śāndraśilās* were unthinkingly removed from the first cell on left wall and the right cell on the rear wall.
- Square step added before the second cell on left of the rear wall
- A new cell was added on the far left of the rear wall. A crude *śāndraśilā* was attempted before it.
- Improved *śāndraśilā* was added before the central cell on the left wall.
- The best *śāndraśilās* are added before the right cell of the left wall.
- Axial focus to the shrine: during the floor re-cutting a low-relief square frame is retained before the shrine doorway
- Wooden doors not yet fitted anywhere in the cave

The shrine

	<ul style="list-style-type: none"> • The newly conceived shrine was made possible by removing the central cell on the hall's rear wall. • The shrine Buddha image is yet akin those planned for Caves Lower 6, 16, and 17.
468	<ul style="list-style-type: none"> • A+ mode door fitting added to the shrine. • The shrine with the Buddha image is plastered with lime.
469	<ul style="list-style-type: none"> • B mode door fittings added to the central doorway. • The shrine walls and the Buddha image is painted.
471-476	<ul style="list-style-type: none"> • The Buddha image is put to worship. • The shrine image and the front part of the shrine ceiling re-painted • The <i>vyala</i> behind the Buddha's shrine carved and painted • Paintings on porch: ceiling, the Bodhisattvas flanking the main doorway, Dipankar Buddha and Astabhaya themes, 'Buddha preaching in a <i>maṇḍapa</i>' on the left outer wall • The hall is lime-painted (ceiling and walls) • Hooks for garlands placed everywhere including the shrine, aisles, hall, and the porch and interior pillars
477	<p>Maharaja Hariṣeṇa dies. Change in political conditions (affects the site's patronage.</p> <ul style="list-style-type: none"> • A stupa was being carved at the back of the shrine Buddha image before Hariṣeṇa's death. • After the death, this work is halted, never to be resumed again. • The original patrons (and the Saṅgha) flee from the site.
478-480	<p>Period of Disruption</p> <ul style="list-style-type: none"> • Intrusive paintings: • Interior walls: Preaching Buddha enthroned in the <i>pralambapadasana</i> on lion thrones with flanking <i>vyalas</i> and attendant Bodhisattvas. • Rear interior wall: Mahapratiharya theme on rear wall flanking the shrine doorway. • Porch and interior walls: isolated Buddha images in <i>padmāsana</i> or <i>pralambapadasana</i> wherever space was still available • The doors to the main doorway was never fitted out.

TABLE 17: EVOLUTION OF THE 'PORCH-END-VESTIBULES-WITH-INNER-CELLS'

Stage I: the 'wasted areas' of the side-walls of porches were utilized for making more cells.
Stage II: the cells were converted into vestibules by the removal of the front walls.
Stage III: if the front wall was thick enough, enough matrix of rock was retained for the creation of columns on these vestibules. Simultaneously, an inner cell was excavated on the rear walls of the newly created vestibules.
Stage IV: multiple inner cells were created on the rear and side walls of the vestibules, wherever space permitted.
Stage V: in the caves where the porches had not been excavated by circa 466 CE, fresh pillared vestibules with inner cells were created from scratch. Consequently the columns of these vestibules are thicker than in the earlier stages.

TABLE 18: CAVE 19—ARHAEO-ASTRONOMICAL DATA

Hours and angles of the morning sun at Ajantā in winters

Date	Hour of sunrise		Azimuth sunrise		Course of the sun after entry in Cave 19		
	On plateau*	In Cave 19+	On plateau	In Cave 19§	After 1 hour	After 2 hours	After 3 hours
1 Nov	6:30 AM	7:10 AM	105°	117°	129°	141°	153°
30 Nov	6:48 AM	7:28 AM	113°	125°	137°	149°	161°
1 Dec	6:48 AM	7:28 AM	113°	125°	137°	149°	161°
31 Dec	7:04 AM	7:44 AM	114°	126°	138°	150°	162°
1 Jan	7:05 AM	7:45 AM	114°	126°	138°	150°	162°
31 Jan	7:05 AM	7:45 AM	109°	121°	133°	145°	157°

Notes:

* The sunrise first happens on the plains or the plateau. In the caves, which are carved on the slopes (ghats) the sunrise would reach later. Approximately 40-minute's delay is considered for the calculation above. Precise timings can also be calculated based on the method used in Table 15 for Cave 26.

+ Source: The online calculator of Time and Date.com; place selected: Jalgaon (60 km from Ajantā).

§ For the change in the sun's trajectory after sunrise, approximately 12° per hour is considered. Precise angle/ declination on azimuth can also be calculated based on the method used in Table 15 for Cave 26.

TABLE 19: CAVE 19—FURTHER ARCHAEO-ASTRONOMICAL DATA

The course of the morning sun at Ajanta in winters

Month	Sun's trajectory (for interior of Cave 19) from sunrise up to 3 hours	
	Sunrise angle	Angle after 3 hours
Nov	Min. 117°	Max. 161°
Dec	Min. 125°	Max. 162°
Jan	Min. 126°	Max. 157°

Source: Author. Data redacted from Table 18.

TABLE 20: CAVE 19—DRAFT CHRONOLOGY

Circa (CE)	Developments
462–63	Upper parts of the temple including the eaves, arch, vault of the interior, upper part of the stupa, and plain triforium are defined
464	Lower half of the interior highly incomplete
465	Exterior: <i>śāndraśilās</i> and residential cells excavated on outer walls that were hitherto blank
466	Exterior: earlier cells converted to vestibules; width expanded
467	Interior: lower parts of the stupa and columns defined with capitals
469–70	Recession
	Interior: on columns, the corners of the square bases are added with dwarfs; stupa is added with Buddha a standing Buddha image and attendant Bodhisattvas
	Vestibules: steps created before the cell doorways. Question unanswered: why cells were not added on rear walls of the vestibules?
470–71	Paintings: façade, hall, and walls are painted. (Why no narratives? Why only hundreds of seated Buddhas in <i>dharmaśakra-pravartana</i> , <i>bhumīsparśa</i> , and <i>dhyānī mudrās</i> ?) <i>Ācāryagṛha</i> dedicated
	Vestibules: inner cells carved on side walls
472–74	Hiatus
476	Vestibules: niches carved inside the inner cells
	<i>Toraṇa-dvāra</i> : <i>padmāsana</i> Buddhas carved on the left and right outer walls

	Interior: <i>padmāsana</i> Buddhas carved on the triforium and capitals? Painted: date?) Nāgarāja image carved?
477-78	<i>Bhadrāsana</i> Buddhas carved in court shrines. Court shrines painted
478-80	Sculptural intrusions on façade frames and pilaster bases.