

EBBA KOCH

THE COMPLETE **TAJ MAHAL**

and the Riverfront Gardens of Agra

with drawings by Richard André Barraud

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Mughal workers and construction techniques, depicted in the *Akbarnama* (see caption 101).

At the bottom, below the strip of text which tells us about the founding of the fort, labourers clad in white loincloths (*dhoti*) and turbans unload large pebbles (*sang-i ghalula*) brought by boat from Delhi, probably to be used in the foundations. On the left stonemasons (*sangtarash*) split blocks of sandstone by cleaving them like logs with irons; as skilled workmen they are better dressed, in a simpler version of Mughal court attire – a tunic tied at the side with strings, a cloth sash, pants, and a turban. Behind them, a female worker in blouse, skirt and veil, the dress of Indian country women, holds a bowl with sand or lime on her head, while other masons carry long heavy blocks up a timber ramp by means of rope slings attached to thick bamboo poles. Below the ramp, workers lever a block of stone up with a stick. In the middle, oxen carry bags of lime. To the right a scribe notes something in a ledger while an ordinary labourer faces him with one hand outstretched, perhaps negotiating his payment. The ramp leads to the roof level of the gate, where a dome is being raised in concentric rings of brick by masons. To the right workers cup their hands as a water-carrier pours out water from a leather bag. Behind them, a female worker sieves lime, and a supervisor leaning on a stick raises his hand to give an order.

The spandrels of the gate, already finished, show a painted decoration of winged figures holding gazelles: these are *paris*, attendants of Solomon on his flying throne (relatives of the peacock-holding *pari* in the Nur Afshan garden/ Ram Bagh [37]).

II The construction of the Taj Mahal

Upon her grave – may it be illumined until the Day of Resurrection! –
The King of Kings constructed such an edifice

That since Destiny drew the plan of creation
It has not seen such an exalted building.

Abu Talib Kalim, *Padshahnama*, 1630s–40s¹

Shah Jahan's architecture is closely linked to his form of governance. He conceived the Taj Mahal as the most magnificent building of all ages, and as the quintessential mausoleum for his deceased queen, represented not in a haphazard deployment of style but with careful consideration of specific Mughal forms developed over the 16th and 17th centuries. Its overall plan followed, on a much larger scale, the distinctive pattern of the riverfront gardens of Agra (p. 24). For the tomb itself the grandest, and from an orthodox Muslim point of view most daring, variant of a Mughal mausoleum was chosen: the monumental domed structure, which had been used only once before for an imperial burial, in the tomb of Humayun at Delhi (1562–71) [104]. The best builders and craftsmen of the empire were recruited and the finest materials employed. The white marble had to be carted from quarries hundreds of kilometres from Agra, and never before had so much of this precious and prestigious stone been used on an Indian building.

Despite the effort and the logistics that went into the planning and realization of this grand structure, no direct information is given about its architects, or about the details of its construction. It was understood that Shah Jahan was the conceptual force behind the venture: whatever architects were employed were merely agents who realized his designs. The progress of the construction, which went on over a period of twelve years, has to be pieced together from descriptions of the celebrations on the anniversaries of Mumtaz's death (‘urs), held in different parts of the tomb complex. The completed building was worthy to be recorded, not the way in which it was achieved.

Shah Jahan and architecture

Under Shah Jahan the emperor assumed an absolute and centralized authority unparalleled in Mughal history. The hierarchic relationship was confirmed and acted out symbolically in a daily court ceremonial focusing on him. Hand in hand with the regulation of every detail of court life went an ever-increasing formalization of the court arts, which were represented as a necessary instrument of rule. The ruler who exerted himself in the sphere of the arts was sure of the loyalty, obedience and recognition of his subjects, as well as the esteem of rival rulers. This was put into words by the historian Kanbo:

¹⁰¹ The building of the water gate of the Agra fort, painted by Miskina with Sarwan and Tulsi Kurd, from the *Akbarnama*, 1590–95. The fort was begun in 1564 under the supervision of Qasim Khan, *mir barr u bahr* (lord of land and water), chief engineer.

Mughal workers and construction techniques, depicted in the *Akbarnama* (see caption 101).

At the bottom, below the strip of text which tells us about the founding of the fort, labourers clad in white loincloths (*dhoti*) and turbans unload large pebbles (*sang-i ghalula*) brought by boat from Delhi, probably to be used in the foundations. On the left stonemasons (*sangtarash*) split blocks of sandstone by cleaving them like logs with irons; as skilled workmen they are better dressed, in a simpler version of Mughal court attire – a tunic tied at the side with strings, a cloth sash, pants, and a turban. Behind them, a female worker in blouse, skirt and veil, the dress of Indian country women, holds a bowl with sand or lime on her head, while other masons carry long heavy blocks up a timber ramp by means of rope slings attached to thick bamboo poles. Below the ramp, workers lever a block of stone up with a stick. In the middle, oxen carry bags of lime. To the right a scribe notes something in a ledger while an ordinary labourer faces him with one hand outstretched, perhaps negotiating his payment. The ramp leads to the roof level of the gate, where a dome is being raised in concentric rings of brick by masons. To the right workers cup their hands as a water-carrier pours out water from a leather bag. Behind them, a female worker sieves lime, and a supervisor leaning on a stick raises his hand to give order.

The spandrels of the gate, already finished, show a decoration of winged figures holding gazelles: attendants on his flying chariot, and a group of the king's attendants in the garden.

Whenever the highest Wisdom of the Majesty exalted above all [God] – may His proof be exalted everywhere – out of concern for His servants and His countries finds it apt to choose a dynastic family of sultans of the world, He bestows special distinction on the lords of that God-given empire among all other masters of empires with perfect grandeur and majesty, and He gives whatever is necessary for [maintenance] of their rule. [Such matters] may belong [to the category] of beautiful and external things that are not so necessary for overall rule, but that are essential to give full distinction and spectacular display – the more so since it becomes a matter of increase of pomp and power, magnificence and elegance . . . It is evident that the increase of such things creates esteem for the rulers in the eyes [of the people] and augments respect [for the ruler] and [the people's own] dignity in [their] hearts. In this form the execution of divine injunctions and prohibitions, and the enforcement of divine decrees and laws which is the ultimate aim of rulership and kingship, are carried out in a better way.²

Shah Jahan and his advisers structured court proceedings with a rigid ceremonial which he himself followed to the minute in his daily routine. From morning to evening the emperor moved through the palace within the fort from one place of audience to another [see 85]. The most public was his appearance every morning before his assembled subjects in the viewing window or *Jharoka-i Darshan* in the outer wall of the palace [87]; next, he moved to the Hall of Public Audience or *Diwan-i ‘Amm* [83, 84]; then to the Hall of Private Audience or *Diwan-i Khass* [85, 86]; then to the *Shah Burj* [87], for secret councils; and finally to the *zanana*, most remote of all – the palace quarters of the imperial women [81:4, 85]. The appearance in the outer viewing window took place only in the morning at sunrise; the rest of the cycle took place in the morning and again in the afternoon.³ The architectural setting was also standardized: the buildings were specifically designed for their ceremonial purpose, and followed, with slight variations, the same formal pattern – or showed the same components – in all the imperial palaces. Thus the form of a palace building tells us about its function.

In the Islamic world architecture and the arts had long been considered as the immediate expression of the ruler. The great 14th-century Arab historian Ibn Khaldun drew attention to the decisive role Muslim rulers played in the development of architecture and the crafts that expressed their status, and noted that their patronage was echoed by the nobility and the prosperous classes in the cities, the centres of power, religion, learning and culture.⁴ In Europe such ideas manifested themselves widely only in the age of absolutism from the

16th century onwards, when the leading role of the church as patron of the arts was challenged by worldly rulers. Shah Jahan stands out for his consistent use of highly aestheticized form to express his specific state ideology – that centralized authority and hierarchy bring about balance and harmony. A counterpart, if not a follower, in the West would be Louis XIV of France (r. 1643–1715) – himself interested in ‘Oriental rulers’ – whose use of art as an instrument of absolute monarchy was in turn emulated by other European courts.⁵

The political role assigned to the arts, and the emperor’s function as the supreme administrator of his court-led state, meant that Shah Jahan sought to assert as close control over his artists as over his court and administration. Mughal art was regulated as never before or after. All Shah Jahan’s historians agree in saying that he made the personal overseeing of his artists a fixed part of his daily routine, thus acting – with typical perfectionism – as his own artistic director. Architecture was the imperial representational medium par excellence: as the most prestigious and useful art, it could represent the ruler and his state in the eyes of a wider public, and provide an everlasting memorial to his fame:⁶ according to an Arabic saying, ‘Our monuments will tell of us.’ Shah Jahan had a personal interest in architecture (p. 89), and in his endeavour to explore and refine it as an imperial statement he employed a whole team of architects and advisers with whom he himself developed his building projects and established principles of construction. Qazwini writes:

The superintendents of the imperial buildings together with the masterful architects (*mi‘mar-an*) of excellent abilities bring architectural designs (*tar-ha-yi ‘imarat*) before the exalted sight [of the emperor]. And since his most pure mind is inclined entirely towards building (*‘imarat*) – which is the cause of the flourishing of the state and the adornment of the apparent world and which gives value and splendour to the material world – he attends to it fully by creating most of the designs himself and also by making appropriate changes to whatever the architects have thought out.⁷

Shah Jahan’s buildings speak to us ‘with mute eloquence’, as his chief historian, Lahauri, put it in his account of the emperor’s daily planning sessions with his architects:

The mind [of the emperor], brilliant as the sun, pays great attention to lofty edifices and strong buildings, which, as the saying has it – ‘Verily our monuments will tell of us’ – long speak with mute eloquence (*ba-zaban bizabani*) of their master’s high aspiration and sublime authority, and for ages to come are memorials to his love of land development, spreading of ornamentation, and nourishing of purity . . . In this peaceful reign the work of building has reached such a point that it astonishes even the world traveller who is hard to please and the magical masters of this incomparable art.⁸

The principles of construction that underlay the creations of Shah Jahan’s reign were not put down in writing. The Mughals had no written architectural theory. None of the remarkable Sanskrit texts on art and architectural theory, the *shilpa shastras* and *vastu shastras*, was included in Akbar’s extensive programme of translation; true, art theory was hardly a theme elsewhere in the Islamic world, but one would have expected the Mughals to be interested in the ancient Indian textual tradition – the more so since

(like the Muslim dynasties before them) they absorbed Indian traditions into their art and architecture, and even newly revived them. However, the fact that no texts exist does not mean that architectural theory was absent from Mughal thinking, certainly not in the time of Shah Jahan. And the buildings and formal gardens of Shah Jahan express the theories to which they owe their appearance so systematically that we can deduce the theories from the forms.

The strict formalization of construction served to express within each building, as in every other work of art of Shah Jahan, the hierarchy and timeless order of his rule. Particularly noteworthy is the emperor’s own involvement in the organization of history, art and architecture to create his own personal ideology of power.

Shah Jahan was, after Akbar, the most tireless builder of the Mughal dynasty. His historians point out that already as a prince he had shown himself ‘exceedingly fond of laying out gardens and founding buildings’.⁹ He rebuilt the palace complexes in the Agra fort and the Lahore fort, built a new palace and city, Shahjahanabad, in the old Delhi of the sultans, and founded a large number of suburban palaces, country houses and hunting palaces. Of the large formal gardens with which he was involved the most famous are the two Shalimar gardens, one in Kashmir and one at Lahore.¹⁰ He commissioned, or caused others to commission, the construction of more mosques than any other Mughal emperor before him: largest is the Jami‘ Masjid at Delhi; most beautiful is the Moti Masjid in the Agra fort. His enormous building programme also encompassed a number of mausoleums, including the tomb of his father, Jahangir, at Lahore [108], the construction of which was supervised by Nur Jahan; his most ambitious mausoleum project was the Taj Mahal.¹¹

Where the emperor led the way, the members of his family and the great nobles were expected to follow, and at times were even ordered to sponsor buildings conforming to the imperial taste. They were also employed in imperial building projects, in particular Asaf Khan, the father of Mumtaz Mahal and thus Shah Jahan’s father-in-law, who had to write out the emperor’s orders for the builders.¹²

The important position of architecture is reflected in the accounts of the imperial projects by the court historians and in the eulogies composed by the court poets. Shah Jahan supervised his historians personally, so the detailed recording of buildings must have been due to his specific order. While theory and symbolism were expressed by the buildings themselves, the texts provide information about dates, architectural terminology, forms, types and function, and clues to meaning.

Lahauri gives a comprehensive account of the entire complex of the Taj Mahal on the occasion of its formal completion, on the twelfth anniversary of Mumtaz Mahal’s death, on 6 February 1643 (see below, pp. 97–99; translated on pp. 256–57).¹³ Kanbo also provides a detailed description: his observations, in a highly ornate style, are less accurate, but they contain occasional reflections about meaning not found in the official history.¹⁴ The court poets Abu Talib Kalim¹⁵ and Hajji Muhammad Jan Qudsi (d. 1646) wrote descriptive eulogies on the Taj which also help to establish its meaning.¹⁶

The Taj Mahal complex is ‘built architectural theory’: it can be read almost like a literary text when one has mastered the grammar and vocabulary of the architectural language (pp. 104–5). Taken together, building and texts give us a fuller picture than of any other Indian monument of the Islamic period.

Imperial mausoleums – a ‘built tomb’ controversy

The grand dynastic mausoleum is a paradigm of the imperial architecture of the Mughals. Akbar, Jahangir and Shah Jahan built monumental tombs for their fathers, and Shah Jahan in addition raised one for his wife. A great mausoleum was seen as the best memorial to the deceased. Jahangir says in his autobiography: ‘A thousand blessings on a son who has made such a tomb for his father, “That there may remain a memorial to him upon earth.”’¹⁷ The mausoleum was also the favourite building type of the Muslim nobility, for whom erecting a tomb could be a way of establishing ownership of land (p. 28). With their interest in funerary architecture the Mughals continued and developed a tradition established by the earlier sultans of India. No other region of the world brought forth over the centuries so many monumental mausoleums.

Large tombs, however, contradicted both orthodox Islamic and Hindu regulations for how to deal with the dead. For Hindus dead bodies are impure, so a structure over a body is impure as well. The dead should be burned as quickly as possible and their ashes consigned to the purifying waters of one of the holy rivers. In the Islamic tradition, tombs were from the beginning a controversial issue. A large number of *hadis* – recorded sayings and actions of the prophet Muhammad, which with the Qur’an form the basis of Islamic law – declare tombs to be irreligious, heathen, and non-Islamic: they forbid praying at tombs as polytheism, are critical of distinguishing tombs by inscriptions, and speak against raising buildings over tombs because these might give rise to a cult of the dead and to idolatrous worship.¹⁸

For the majority of Muslims the fact that some cemeteries contain the tombs of individuals venerated in Islam sheds a light of sanctity on all. Visiting these tombs (*ziyarat*) is a means of associating oneself with the spiritual power (*barakat*) of the buried person, who is conceived as being present, in a sense, in his tomb. Those in favour of tombs regarded them as legitimate so long as they did not strive for vainglory and pomp. Structures over burials

were seen as a means to ensure paradisiacal conditions for the dead, as promised to the faithful in the Qur’an. They provided protective shade, and their height symbolized closeness to God and Paradise. Specific forms were symbolic: four-sided and eight-sided plans referred to the fourth and eighth stages of Paradise (p. 26), and the dome was at all times a symbol of heaven. Because of its ostentation, however, the dome was the most controversial feature in Muslim funerary architecture.¹⁹ To orthodox eyes, large domed mausoleums were the most objectionable form of monument. This ambivalent attitude towards tombs explains why they could enjoy great popularity in certain periods and in certain regions of the Islamic world while in others they played only a marginal role.

The Mughals were outstanding tomb builders, but at the same time they were also highly aware of the controversial status of funerary structures. Apart from occasional remarks, however, they did not put down the pros and cons in writing: they expressed them in built form. The imperial tombs led the debate, and from Babur to Aurangzeb made opposing statements. This controversy over tombs testifies to the Mughals’ capacity for using architecture and the arts as their specific form of expression.²⁰

The Mughals came to India from Central Asia, where their ancestor Timur had been buried in 1405 at Samarqand in the underground chamber of a splendid tomb with a high double dome, faced with blue and green tiles [102]. Babur, however, the founder of the dynasty, was laid to rest at Kabul some time between 1539 and 1545 under a simple monument consisting of a stone block shaped like a sarcophagus and set on a plinth [103], a form often used for Muslim gravestones [cf. 16]: called by the Mughals *surat-i marqad* or *surat-i qabr* (‘shape of a tomb’),²¹ strictly speaking this is a cenotaph (‘empty tomb’), because the body is not actually enclosed in it. Babur’s monument was open to the sky, perhaps within a stone screen.²² This form of burial in an open enclosure, called *hazira*, demonstrated orthodox minimalism.²³ A generation later, Babur’s son Humayun was buried in a large domed mausoleum at Delhi [104]. These two extremes set the parameters for the funerary architecture of the Mughals.

102 The tomb of Timur, or Gur-i Amir, in Samarqand, 1400–1404. (Photograph taken in 1981)



103 The tomb of Babur at Kabul, in the Bagh-i Baburi. The terrace garden seems to have been laid out in 1589 by Akbar, to enclose an earlier cemetery where the body of Babur, who had died in 1530 at Agra, had been laid to rest. The additions to the tomb demonstrate the desire of later rulers to be associated with the founder of the Mughal dynasty. The stele with the inscription which praises Babur was put up by Jahangir in 1607, while the frame around the stele, the top of Babur’s tomb chest, and the enclosures were added by the Afghan kings in the 20th century (Photograph taken in 2005)





The tomb of Humayun [104, 335] was erected by his son Akbar between 1562 and 1571.²⁴ It was a response to Timur's tomb at Samarqand [102], and at the same time to the tombs of the Delhi sultans, which had reached their apogee with the tomb of Humayun's rival Sher Shah Sur at Sasaram (1545) [105].²⁵ Humayun's tomb was set in the centre of a large *chahar bagh*, and the combination of tomb and formal garden established the prototype for the funerary garden of the Mughals. For the building, the architect, Sayyid Muhammad from Herat and Bukhara – exceptionally known by name – took inspiration from an idea of Humayun's and created an ambitious variant of the typical Timurid ninefold plan or *hasht bihisht* ('eight Paradises': see pp. 26–27) by multiplying the design four times within the overall plan figure [24], to achieve monumentality and

104 above The tomb of Humayun at Delhi, 1562–71, seen from the west. (Photograph taken in 1978)

105 below The tomb of Sher Shah Sur at Sasaram, 1545, seen from the east. (Photograph taken in 1981)



intensify paradisiacal symbolism. He placed the building on a large vaulted podium containing the actual grave: this arrangement of superimposed chambers also went back to Timurid antecedents,²⁶ and was to become the pattern for all monumental Mughal mausoleums. A cenotaph marks the grave in the lower chamber, and a similar cenotaph symbolizes it in the central hall above.

And the architect gave Humayun's tomb a facing of red sandstone and white marble which defines each structural element of the elevation. The highly symbolic colour dualism was derived from earlier Indian practices and was to become a characteristic feature of imperial Mughal architecture (pp. 215–17). With Humayun's tomb the Mughals set an example of successful architectural synthesis and made a grand imperial statement in Delhi, the old capital of the sultans. The monumentality and imperial splendour of the domed mausoleum ignored all orthodox concerns. Also, from the very beginning Humayun's tomb became a place of dynastic cult and was treated like the tomb of a saint. The emperors paid it a pious visitation whenever they came to Delhi and performed a ritual circumambulation (*tawaf*).²⁷ There could be no greater contrast to the simple tomb of Babur, the founder of the dynasty [103].

The tomb of Akbar in the suburbs of Agra, at Sikandra (then called Bihishtabad, or Abode of Paradise), was built by his son Jahangir and completed in 1612/13 [107].²⁸ It is even larger than Humayun's tomb, though of an entirely different shape, for which there is no precedent in Islamic funerary architecture: it consists of receding tiers of pillared sandstone galleries in the style of Indian post-and-lintel constructions. The feature it shares with Humayun's tomb, besides the studied use of red sandstone and white marble, is the vaulted masonry platform with surrounding vaulted bays on which it stands: this is here enriched with Timurid elements such as the tall centrally placed *pishtaqs* (arched niches in rectangular frames) and a vestibule with painted stucco decoration. However, despite its monumentality the mausoleum clearly aims at orthodox



108 The tomb of Jahangir at Shahdara, Lahore, 1628–38. (Photograph taken in 1979)

109 below The tomb of Aurangzeb at Khuldabad near Aurangabad, 1707. (Photograph taken in 1982)

This was used for the imperial family and the nobility: an elaborate example at Agra is the tomb of I'timad-ud-Daula (1622–28), though there the notion of a dome was brought in again in the form of a baldachin [59].

Jahangir's tomb at Lahore [108] was built under the supervision of Nur Jahan between 1628 and 1638. The emperor had willed that his resting place should be according to the Sunni faith in the tradition of Babur's tomb [103], 'without the ornament of a building, and be entrusted to the Divine favour in an open space, so that it may always benefit from the countless clouds of Divine forgiveness without any obstacle'.³² The dilemma of reconciling the imperial wish for an uncovered tomb and an appropriate imperial burial was solved by taking the cue from Akbar's tomb and from platform tombs, by then widely used. Jahangir's mausoleum was an extreme formulation of the type: a monumentalized bare plinth, but accentuated with high minarets at its corners. The marble cenotaph, now lost, was placed on top, open to the elements, to the blessing rain of the clouds as a symbol of divine mercy. The actual burial is again in a vaulted chamber in the platform, reached by a corridor.

Jahangir's contribution to imperial funerary architecture shows him in a new light. He is often portrayed as a hedonist, given to wine, women and artistic refinement. As a patron of architecture, however, he clearly took an active part in the debate on the lawfulness of mausoleums, and found a strikingly ingenious solution to the problem of how to reconcile orthodox considerations with imperial monumentality.

In the Taj Mahal Shah Jahan and his advisers reverted to the grandest possible form of funerary structure, the mausoleum with a dome. It was even to surpass the ancestral tomb of Humayun. There is however a slight bow to orthodoxy, in the use of a railing around the cenotaphs under the dome [233]: the *hazira* ensemble quotes the form of open burial used by Babur, the vault above representing heaven (p. 85).

Shah Jahan's son and successor Aurangzeb was the first Mughal emperor to speak out openly against visiting tombs and against mausoleums over graves. He forbade the roofing of buildings containing tombs, the lime-washing of sepulchres, and the pilgrimage of women to the graves of saints.³³ In this he distanced himself from his own early practice, for at the beginning of his reign

he had raised a monumental tomb for his wife at Aurangabad.³⁴ Popularly called *Bibi-ka Maqbara*, this is a domed white structure inspired by the Taj Mahal. It was built by 'Ata Ullah Rashidi, the eldest son of Ustad Ahmad Lahauri, who has been named as architect of the Taj Mahal (p. 89). Completed in 1660/61, it represents the end of the imperial Mughal mausoleum tradition. Aurangzeb had himself interred at the Dargah (Shrine) of Shaikh Burhan-ud-Din in Khuldabad near Aurangabad under a simple stepped stone slab filled with earth and enclosed by a screen [109], like Babur. Similarly, Shah Jahan's daughter Jahanara, who died in 1681, was buried in the Dargah of Nizam-ud-Din Auliya at Delhi under a marble cenotaph the top of which was planted with grass, with an inscription that says: 'Let nothing cover my tomb save the green grass, for grass suffices well as a covering for the grave of the lowly.'³⁵ The later Mughals were laid to rest in Humayun's tomb or in the *dargahs* of Sufi saints.

The practice of building large tombs was, however, taken up and continued by the regional rulers of India. Even Hindu rajas were infected, and built, if not tombs (for their bodies were cremated and their ashes thrown into sacred rivers), empty structures to their own memory. The *chhatris* (the word can mean a funerary pavilion as well as a kiosk) of the rajas of Bharatpur near Agra, raised in the 19th century, reached monumental proportions.³⁶





108 The tomb of Jahangir at Shahdara, Lahore, 1628–38. (Photograph taken in 1979)

109 below The tomb of Aurangzeb at Khuldabad near Aurangabad, 1707. (Photograph taken in 1982)

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The architects of the Taj Mahal

The identity of the architect or architects of the Taj Mahal is not definitely known, because, as we have seen, the histories of Shah Jahan’s reign emphasize the emperor’s personal involvement. In the Islamic world a building was in the first instance associated with its patron. Several Mughal emperors did go so far as to influence the design of their buildings: Humayun invented new structures for his court (p. 11), and, as we have seen, Jahangir insisted on his own design for his father Akbar’s tomb at Sikandra, rather than that proposed by his architects. Of all Mughal emperors, Shah Jahan showed the greatest interest in building, and he had himself represented as his own architect.

Unlike his painters, who were allowed to sign their works and to include their self-portraits, Shah Jahan’s architects are only mentioned at random, and not a single portrait of a Mughal architect (*mim‘ar*) is known. The supervisors (*sarkar*) of Shah Jahan’s building projects are named more often, but the exact nature of their role in the process is not defined and remains to be established. Only one of the artists who worked at the Taj Mahal is known by name: the calligrapher ‘Abd-ul-Haqq from Shiraz, given the title Amanat Khan (pp. 224–25), who designed the formal Qur’anic inscriptions on the mausoleum [128–131, 224, 350–352]. Because of the high esteem in which the art of writing (as the medium of God’s own word) was held in the Islamic world, he could sign his creations. The dates he inserted into his inscriptions greatly help to establish the history of construction (pp. 99–100).

What is recorded is that the planning of Shah Jahan’s buildings was carried out by a team of architects who worked under his close supervision. He held daily meetings with them, and, Lahauri says, made ‘appropriate alterations to whatever the skilful architects designed after many thoughts, and asked competent questions’.³⁷ The emperor’s historians claim that most of the buildings were designed by his ‘precious self’.³⁸ The credit for his buildings, even for their overall concept, had to go to Shah Jahan as the supreme architect. (Similarly, the work of the artists of Shah Tahmasp of Iran was subsumed in the expertise of their patron, who appeared as ‘the ultimate arbitrator and source of cultural production’.³⁹)

Shah Jahan was in a figurative sense ‘the architect of the workshop of empire and religion’.⁴⁰ The ruler had already been identified with architecture in ancient Mesopotamia: Gudea, ruler of the Sumerian city-state of Lagash (c. 2100 BC), had himself depicted holding on his lap a plan of one of his building projects, a temple.⁴¹ Such parallels might evolve from analogous ambitions in a comparable social setting, but it is not the only instance where Shah Jahan, and his father Jahangir, pursued forms of self-representation which appear like revivals of ancient Near Eastern concepts.⁴²

Two architects are, however, mentioned in connection with the Taj Mahal. One is Ustad Ahmad Lahauri – from Lahore, as his name tells us, like the historian Lahauri. He laid the foundations of the Red Fort at Delhi (1639–48), and was credited by his son, Lutfullah Muhandis – though not in the official chronicles – with building the Taj Mahal. The other is Mir ‘Abd-ul Karim, who had been the favourite architect of Jahangir. Lahauri mentions him as supervisor of the construction of the Taj Mahal, together with the administrator



110 Makramat Khan, supervisor of the construction of the Taj Mahal, seen among courtiers at the presentation of wedding gifts to Dara Shikoh: detail of a painting by Balchand, Mughal, c. 1635, from the *Padshahnama*.

Makramat Khan [110], who later supervised the building of the Red Fort at Delhi.⁴³

The lack of information about the identity of the architect of the Taj Mahal has led to all kinds of fanciful speculation. In the 19th century, local informants of the British fabricated the story of an architect from Turkey named ‘Ustad Isa’, and came up with fictional lists of workmen and materials from all parts of Asia (p. 237). More attractive to the British was the claim of the Spanish Augustinian friar Sebastian Manrique, who saw the Taj under construction in 1640–41, that an Italian goldsmith named ‘Geronimo Veroneo’ had prepared the design (p. 249). Such an outstanding building could surely only have been created with European involvement. Even today speculations about the architect of the Taj Mahal can produce a worldwide echo in the media.⁴⁴

Craftsmen, materials, and construction techniques

CRAFTSMEN

The craftsmen of the Taj Mahal are not named in the histories of Shah Jahan. We learn from Lahauri only that the best artisans came from all over India:

And from all sides and parts of the imperial territories were assembled troop after troop of [skilled] men, stonecutters (*sangtarash*) of smooth work, inlayers (*parchinkar*), and those who do carving in relief (*munabbatkar*), each one an expert in his craft, who started the work together with the other labourers.⁴⁵

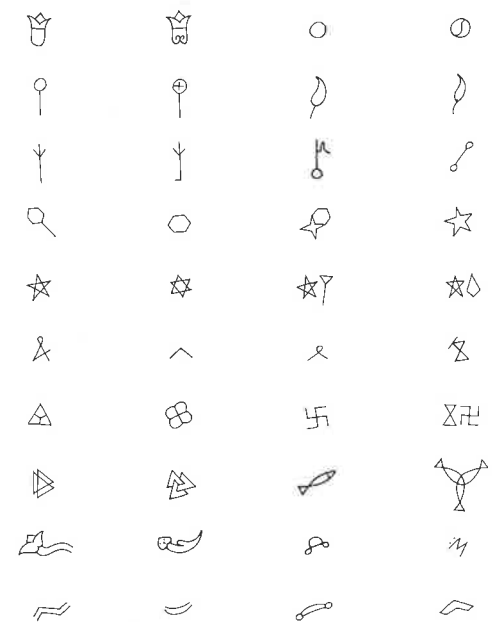
The craftsmen working on the restoration of the Taj Mahal today use techniques that have not changed much since Mughal times [113, 115].

European observers give us unsubstantiated numbers for the workforce employed. Jean-Baptiste Tavernier, who was in Agra in 1640–41 and again in 1665, claimed that ‘twenty thousand men worked unceasingly’ on the tomb for twenty-two years.⁴⁶ Manrique says that a thousand men were employed on it every day.⁴⁷

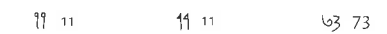
Stonecutters and bricklayers were called, respectively, *sangtarash* and *raj*.⁴⁸ The stonemasons at the Taj Mahal made their contribution known through numerous marks [111]. Most are scratched into the paving of the garden walkways and the slabs facing the walls of the buildings; some appear on the façade of the riverfront terrace. The marks have various shapes: there are graphic symbols such as stars, swastikas, fishes, flowers and intersecting figures, and numerals. There are also incised names, largely Hindu but also Muslim, respectively in Devanagari and in Arabic (Persian) letters [112]; but



Graphic symbols



Numerals



Devanagari inscriptions

क	Ka (first consonant)	वनरसी ५	Vanarsi 5/Banarsi 5
हीरा	Heera	धरामहसा	Dharamhassa/Gharamhassa
हमहर ५	Humhar	धनमहस	Dhanamhass/Ghanamhas
नटा	Natta	परस्रामया २	Parasramayya 2
लोहम	Lohum	हरीदस	Haridus/Haridas
नेता	Neta	हिसा	Hissa/Hinsa
पेमो	Pemay-aj/Pemo [?]	ननठ	Nuntatt
टिटाय	Tiyatay [?]	टीगग	Tigagg [?]

Arabic inscriptions

—	618 (year)	71
رک چارن	Rak Charan [?]	ke darya Jaman
سک چارن	Sak Charan [?]	

111, 112 top and above Masons' marks, and names and inscriptions in the Taj Mahal complex.

113 left Hajji Nizamuddin Naqshbandi, with other stonecarvers, using hammer and point chisel. After working at the Taj Mahal for over forty years, he was still employed on a daily wage when he died in 2005. (Photograph taken in 2001)

men, materials, and construction techniques

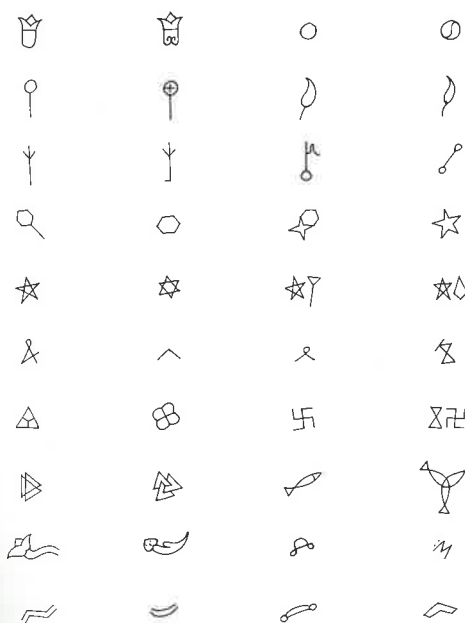
men of the Taj Mahal are not named in the histories of India. We learn from Lahauri only that the best artisans came from India:

From all sides and parts of the imperial territories were gathered troop after troop of [skilled] men, stonemasons, carvers of smooth work, inlayers (parchinkar), and those who worked in relief (munabbatkar), each one an expert in his craft, and they worked together with the other labourers.⁴⁵

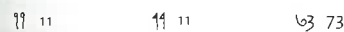
Some workers on the restoration of the Taj Mahal today use tools that have not changed much since Mughal times [113, 115]. The French traveller Jean-Baptiste Tavernier, who was in Agra in 1665, claimed that 'twenty thousand men were employed on the tomb for twenty-two years.'⁴⁶ Manrique estimated that some were employed on it every day.⁴⁷

The workers were called, respectively, sangtarash (stonemasons) and parchinkar (inlayers). Most are scratched into the walls of the mausoleum and the walls facing the walls of the mausoleum on the terraces of the overgrown terrace. The workers used graphic symbols such as stars, triangles, and circles, and numerals, and some used Devanagari letters (113); but

Graphic symbols



Numerals



Devanagari inscriptions

क	Ka (first consonant)	बनरसी ५	Vanarsi 5/Banarsi 5
हीरा	Heera	धरमहसा	Dharamhassa/Gharamhassa
धमरु ५	Humhar	धनमहस	Dhanamhass/Ghanamhas
नटा	Natta	परसराम्या २	Parasramayya 2
लोहम	Lohum	हरीदस	Haridus/Haridas
नेरा	Neta	हिंसा	Hissa/Hinsa
पेमय-अ/पेमो (?)	Pemay-a/Pemo (?)	ननतठ	Nuntatt
तिगग (?)	Tigag (?)	तिगग	Tigag (?)

618
(year)
Rak Charan (?)
Sak Charan (?)
71
ke darya Jaman

names and inscriptions in the Taj

stonecarvers, using hammer and chisel, can be seen today, as damaged or deteriorating pieces are replaced with new work on the pattern of the old under the direction of men such as Hajji Nizamuddin Naqshbandi [113]. He was a follower of the Naqshbandi Sufis, keeping up the old tradition of the involvement of the mystic Sufi brotherhoods in the arts of building.

some of these might be graffiti by later visitors. The masons' marks have been largely ignored by scholars and are still not sufficiently understood.⁴⁹ They are not exclusive to the Taj; the same marks appear on contemporary or earlier Mughal buildings. They seem to denote the contribution of groups of hereditary stonemasons, to establish their wages (they were paid for each gaz, or linear yard, of stone cut).⁵⁰

Stonecarvers (munabbatkar; in modern usage, also sangtarash) had, after the masons, the most important role in the construction.⁵¹ Their work ranged from the carving of simple mouldings to the exquisite depiction of flowering plants in sandstone and marble on the dados of the mausoleum and flanking buildings.

How the carvers worked, squatting over the pieces of stone and using hammers and chisels, can be seen today, as damaged or deteriorating pieces are replaced with new work on the pattern of the old under the direction of men such as Hajji Nizamuddin Naqshbandi [113]. He was a follower of the Naqshbandi Sufis, keeping up the old tradition of the involvement of the mystic Sufi brotherhoods in the arts of building.

Craftsmen in stone inlay were called parchinkar. Simple stone intarsia, the inlay of a shape in one stone into a hollow in a stone of another colour, appears in some parts of the complex. It had been used over the centuries in India, a region abounding in attractive stones, and was known to the Mughals as parchin kari. They used the same term for the highly specialized form of inlay of hard or semi-precious stones into marble. This technique originated in Italy, in Florence. It is called *commesso di pietre dure* (composition of hard stones) – abbreviated to *pietra dura*⁵² – because it involves the inlaying not of a single stone but of many. Extreme skill is needed to saw the stone, such as agate, jasper and heliotrope (bloodstone), into thin



pieces of various sizes and shapes, using bow saws with abrasives [115]. The pieces are fitted together so that the colours and natural markings form the desired image [117], and the composition is then fixed in the cavity with glue and polished, so that the joins become invisible.⁵³

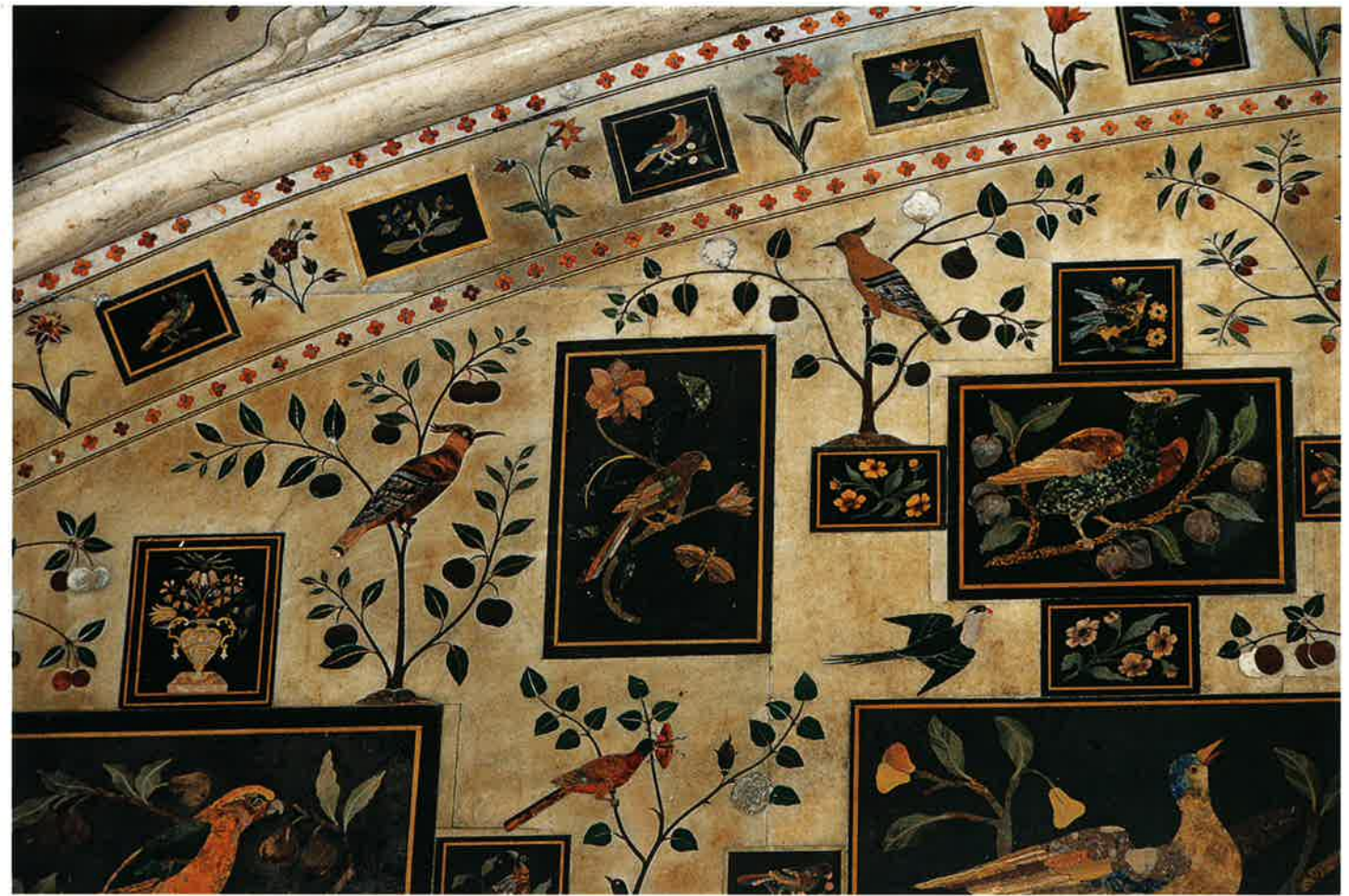
The Mughals knew *pietra dura* from European artists employed at the court and from Italian works which visitors brought as presents for the emperor [114]. (Also brought from Europe were herbals, which inspired the designs of the flowers in *pietra dura* and those



114 above Europeans bringing gifts to Shah Jahan: detail of a painting, Mughal, c. 1650, from the Padshahnama.

115 Inlay-workers in a marble craft shop in Taj Ganj, outside the south gate of the Jilaukhana of the Taj Mahal [cf. 307]. Those in the background are cutting hardstones with bow saws; in the foreground, a craftsman is fitting pieces into a table-top. (Photograph taken in 1997)





116 Detail of the back wall of Shah Jahan's throne in the Diwan-i 'Amm of the Red Fort, Delhi: Florentine *pietra dura* panels, with black backgrounds, are set amidst Mughal *parchin kari* showing flowers and birds. (Photograph taken in 1979)

carved in low relief: p. 218.) Shah Jahan's love for gems was legendary. A group of Italian *pietra dura* tablets with the characteristic Florentine motifs of birds, flowers and flower vases is set in the back wall of his throne in the Diwan-i 'Amm of the Red Fort at Delhi [116]; it is supplemented with bird and floral motifs made by Indian craftsmen, demonstrating the closeness between the Italian and the Mughal work.⁵⁴ The observant François Bernier noted of the Taj Mahal in 1659: 'Everywhere are seen the jasper, and *jachen* [*yashm*] or jade, as well as other stones similar to those that enrich the walls of the Grand Duke's chapel at Florence, and several more of great value and rarity, set in an endless variety of modes, mixed and enched in the slabs of marble which face the body of the wall.'⁵⁵

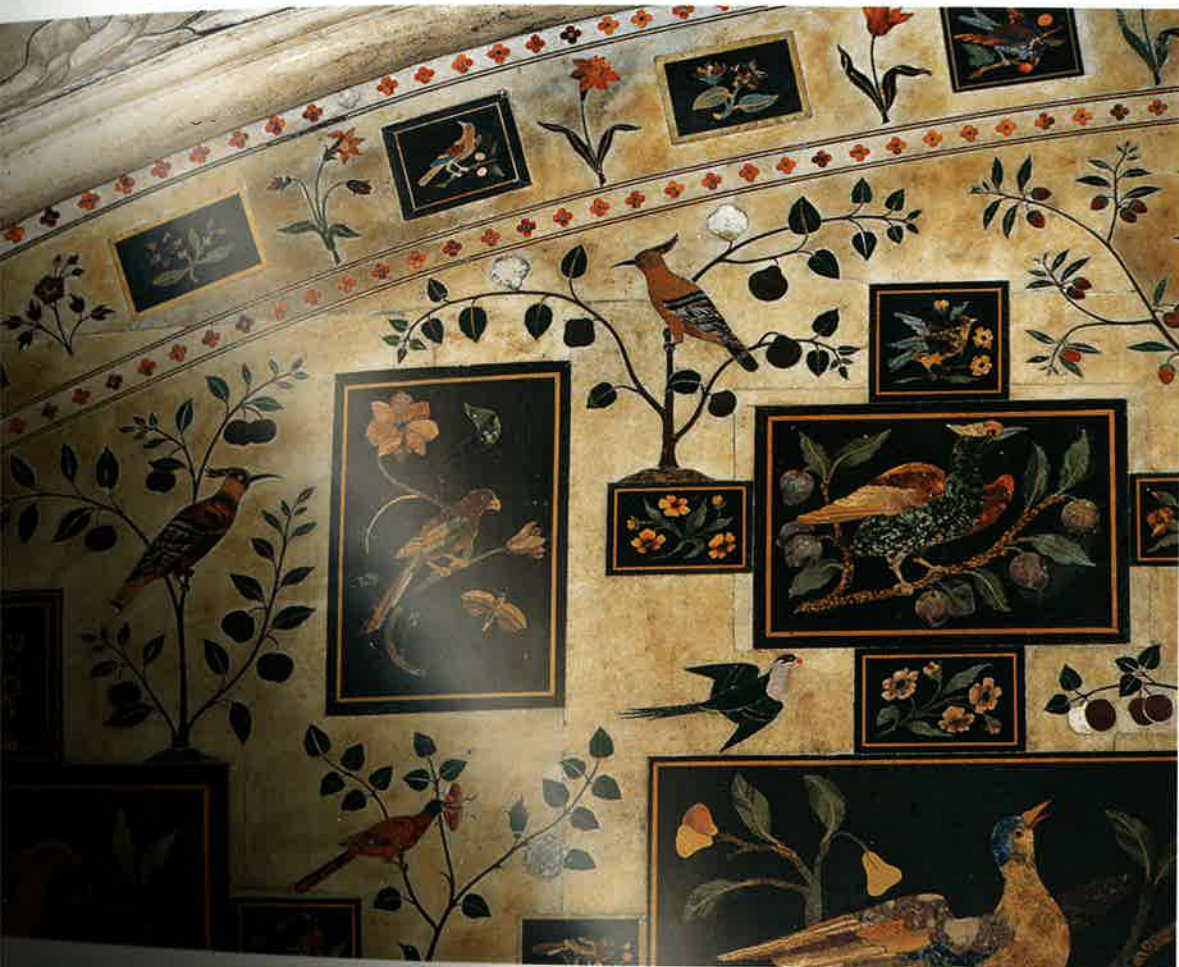
The technique was soon mastered to such perfection by the lapidaries of Shah Jahan that in its complexity, subtlety and elegance their *pietra dura* work far surpasses that of the Italian artists.⁵⁶ The most exquisite inlay appears in the cenotaphs and the surrounding screen in the tomb chamber, the heart of the Taj Mahal [230, 232–244]. H. Voysey, who undertook the first scientific study of the inlaid stones in 1825, noted that 'A single flower in the screen around the tombs, or sarcophagi, contains a hundred stones, each cut to the exact shape necessary, and highly polished; and in the interior alone of the building there are several hundred flowers, each containing a

like number of stones.'⁵⁷ The fineness of the Mughal *pietra dura* flowers was proudly pointed out by Shah Jahan's court poet Kalim:

The inlayer (*naqqar*) has set stone into stone
So [that even] the dark spot of the heart of the *lala* (poppy, tulip)
is without joints or fissures.⁵⁸

The *pietra dura* inlay of the Taj Mahal has been frequently restored because of stones falling out, or being picked out by visitors (p. 251), so Voysey's early investigations are particularly valuable. He identified lapis lazuli or *lajward* (blue), chalcedonic quartzes such as jasper (reddish), heliotrope or bloodstone (dark green spotted with red), agate (brownish red), chalcedony, carnelian or *'aqiq* (brownish red), considered to be a stone of blessing power and therefore frequently used in seals and amulets,⁵⁹ sard (brown cornelian), plasma (a slightly translucent variety of quartz, either green, grey or blue), chlorite (green), jade (nephrite or jadeite), clay slate, yellow and striped marble, and yellow and variegated limestones. The stones occur in the Indian subcontinent and neighbouring countries – lapis lazuli in Afghanistan, and jade in Burma.⁶⁰ When the Taj was under construction, the workshop of the inlay workers may have been to the west of the garden wall, because early 20th-century reports say that pieces of semi-precious stone were found in that area.⁶¹

117 opposite Detail of the *pietra dura* on the platform of the upper cenotaph of Mumtaz Mahal [233]: flower type P (see p. 171), slightly less than actual size (the plant is 30 cm/11 $\frac{3}{16}$ in. tall). The banded, translucent stones are agate, the spotted, opaque ones are jasper, and the greens include chrysoprase.



Wall of Diwan-i-Aam, shown in the Diwan-i-Aam of the Red Fort, Delhi, with black backgrounds, are set amidst flowering flowers and birds. (Photograph taken in 1979)

...with a shade of blue for gents was legendary. ...the characteristic ...of the Red Fort at Delhi ...the Indian and the ...of the Taj ...of the walls of ...and ...

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...of the upper cenotaph of ...slightly less than actual size ...The banded, translucent stones are agate, the ...and the greens include chrysoptase.



Mughal *pietra dura* was closely linked to imperial patronage. At Agra the craft had almost died out by the mid-19th century; it was revived by Dr John Murray, the first photographer of the Taj (p. 251).

MATERIALS

The main construction materials of the Taj Mahal are brick, red sandstone, and white marble. Polished plaster was used as a surface finish.

The **bricks** (*ajir*, *khisht*) for the Taj Mahal were burned in kilns in the surroundings of Agra. The size of Mughal bricks was standardized. From Akbar's period they gradually became smaller, and in Shah Jahan's time they measured 18–19 x 11–12.5 x 2–3 cm (7–7½ x 4¼–5 x ¾–1¼ in.).⁶² That format has traditionally been called *lakhauri* brick, a term which has as yet not been fully explained; one interpretation holds that the name is derived from *lakh*, the Indian term for 100,000, because these bricks were such a common element in building.

The **sandstone** and **marble** – which, as we shall discover, had symbolic significance (pp. 215–17) – were brought from a great distance.

The sandstone (*sang-i surkh*), of a soft reddish to yellowish tint, came from quarries in the region of Fatehpur Sikri, some 40 km (25 miles) west of Agra, and Rupbas, some 45 km (28 miles) south-west of Agra, in a mountain range called the Vindhya system which throughout the centuries furnished building materials to the cities of the adjoining plains [118].⁶³ The sandstone is easily worked and susceptible of the most delicate carving: in the words of Akbar's historian Abu'l Fazl, 'clever workmen chisel it more skilfully than any turner could do with wood'.⁶⁴ Today the road between Jaipur and



Agra is lined with sandstone workshops where large blocks of 'Agra stone' – from the modern quarries of Dholpur and Rupbas – and Jaipur stone are cut into slabs with power saws, and then carved by hand in the traditional manner.

The white marble (*sang-i marmar*) came from quarries at Makrana in Rajasthan, more than 400 km (250 miles) away by road. It is white, streaked with grey or black, which gives it a lively character [215]. It is hard and yet easy to work, capable of taking both fine detail and a high polish, and its translucency makes it react very interestingly to atmospheric changes.⁶⁵ We do not know what



118 above Sandstone bed next to the road from Bari to Rupbas. (Photograph taken in 1993)

119 Marble quarry at Makrana. On the edge of the trench, to the right, are cranes used to raise the cut blocks of stone. (Photograph taken in 2002)

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119 Marble quarry at Makrana. On the edge of the trench, to the right, are cranes used to raise the cut blocks of stone. (Photograph taken in 2002)



120 Cut marble slabs at Makrana transported on a cart drawn by a water-buffalo. (Photograph taken in 2002)

121 below A sandstone pilaster in the 'Fatehpuri Masjid' at the Taj Mahal is splitting because the stone has been laid on edge, with the grain vertical. (Photograph taken in 1997)

the Mughal quarries looked like, but hundreds of quarries in the region of Makrana today probably follow the historical form [119]. Canyon-like trenches, some as deep as 60–65 m (197–214 ft), are cut down from the surface into the bed of marble; blocks are cut manually with hammers, chisels and wedges, and by drilling with steel rods, and then hauled up by cranes.

Makrana was in the territory of the rajas of Amber (Jaipur), and the Rajasthan State Archives contain *farmans* (orders) from Shah Jahan to Raja Jai Singh – from whom the emperor had obtained the site for the Taj Mahal – about the transport of marble to Agra.⁶⁶ Both sandstone and marble were transported on carts drawn by bullocks or water-buffaloes [120]. In 1641 Sebastian Manrique came across such a cortege proceeding to Agra: 'Some of these blocks, which I met on the way . . . were of such unusual size and length that they drew the sweat of many powerful teams of oxen and of fierce-looking, big-horned buffaloes, which were dragging enormous, strongly made wagons, in teams of twenty or thirty animals.'⁶⁷

At the construction site blocks were cleft with the help of iron wedges and sledgehammers, or cut into slabs with metal saws. It is vital that stone be quarried and cut according to its grain – the plane on which it breaks more easily – and laid so that the grain is horizontal. Stone laid against the grain ('edge-bedded') is liable to disintegrate under pressure. Soft sandstone is more vulnerable than marble: it flakes off or splits into layers [121].

Polished plaster (*chuna*, popularly *chunam*) was used as a less expensive alternative to marble facing to give imperial buildings the desired white and shining appearance. When the *chuna* of the 'Shish Mahal' in the Agra fort was analysed its ingredients proved to be 1 part burnt lime, 1 part ground shells, calciferous stone or marble dust, ½ part gum from the babul or neem tree (*Azadirachta indica*), ½ part sugar mixed with the juice of the fruit of the bael (bel) tree (*Aegle marmelos*), and a little white of egg. The mixture was strengthened with plant fibres and applied to the brick walls as a coating; when it was dry, it was polished with a shell (*kauri*) and chalk powder.⁶⁸ The historian of Shah Jahan's later reign,

Muhammad Waris, mentions that a calciferous stone from Gujarat, called *sang-i Patiali* (stone from Patiali) or *sang-i mahtabi* ('moonlight stone'), served as the main ingredient of Shahjahani *chuna*; it was white and soft, and the mixture obtained from it 'could be polished so highly that it reflected all things opposite it like marble'.⁶⁹ Lahauri says that the resulting plaster 'is better than marble-dust plaster in polish and purity'.⁷⁰ Similarly, the perceptive Dutch trader Pelsaert observed about Mughal plaster that it was

very noteworthy, and far superior to anything in our country. They use unslaked lime, which is mixed with milk, gum, and sugar into a thin paste. When the walls have been plastered with lime, they apply this paste, rubbing it with well-designed trowels until it is smooth; then they polish it steadily with agates, perhaps for a whole day, until it is dry and hard, and shines like alabaster, or can even be used as a looking-glass.⁷¹



CONSTRUCTION TECHNIQUES

No architectural drawings are preserved. The only evidence of this type that we have is a few incised patterns on stone slabs re-used in buildings. There is very little written evidence about the actual construction of the Taj Mahal. From accounts of the building of the Red Fort at Delhi, slightly later, we learn that the head of the architects, with his assistants, would first chalk out the plan on the ground. Diggers (*beldar*) would then excavate the foundations.⁷² At the Taj, the greatest technical challenge was to secure the foundations of the terrace in the unstable sands of the riverbank so that it would be able to support the domed mausoleum, of a total height of c. 68 m (223 ft). Kalim, an unlikely but here unique source for technical data, reports – in verse – that this was done by means of wells cased in wood and filled with rubble and iron.

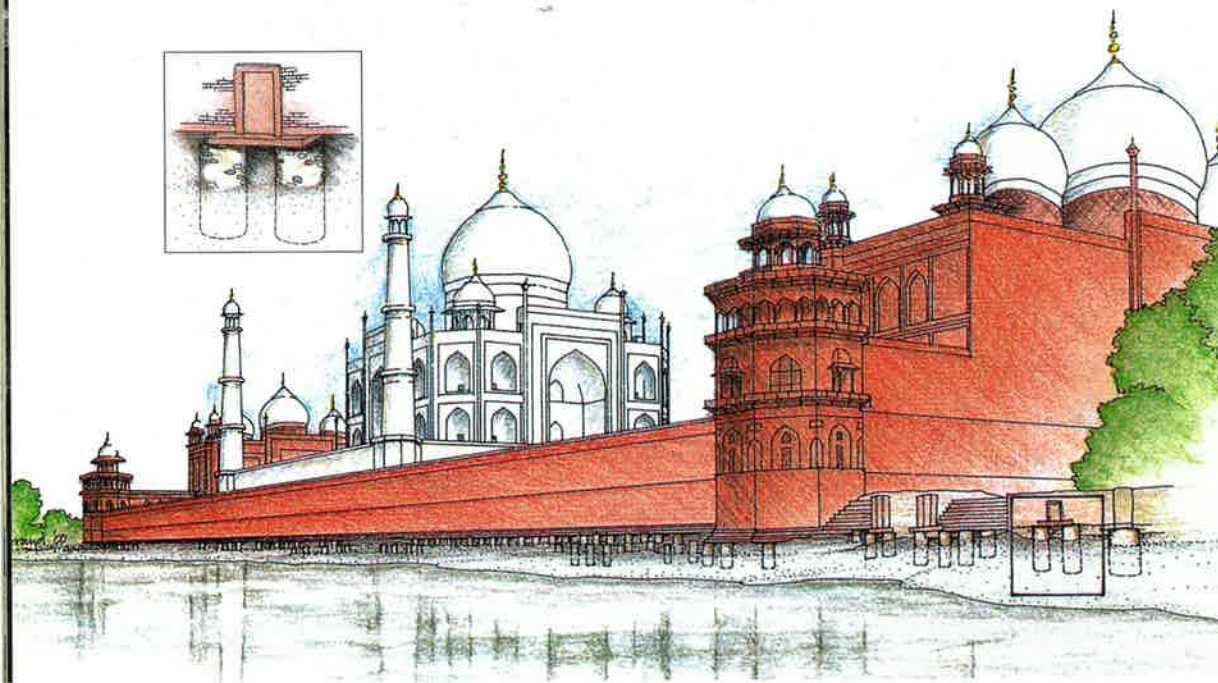
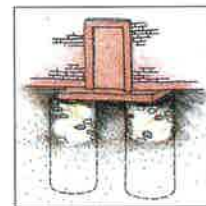
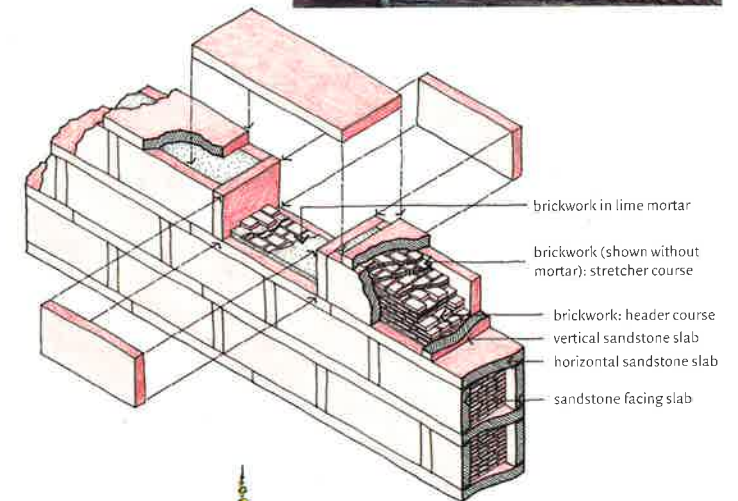
Since there is sand where there is a river, it is difficult to lay down foundations:
 As sand is removed, it fills in again.
 They make a well (*chah*) to manage the work, from wood, and set it firmly into the sand.
 Then they take out the sand from inside it, until solid earth comes from its depth.
 In this well stone and iron are buried until they reach the level of the surface.
 Then another well beside it is emptied of sand and filled in the same way, so that the building may be erected.
 With this good method and powerful concept they raise a mountain from the ground.⁷³

Kalim's description was supported in the 1950s when excavation of the foundations revealed wells filled with rubble, placed at a distance centre-to-centre of 3.76 m (11½ ft) [124, 206].⁷⁴ Foundation wells of this type can be seen exposed in the riverbed in front of several of the gardens on the left bank of the Yamuna – the garden of Jahanara/Zahara Bagh, the Chini-ka Rauza, and the garden of Khwaja Muhammad Zakarya or Wazir Khan. The foundations of the

Taj proved so stable that they did not give way during the great floods of September 1978, when the river level almost reached the top of the platform of the mausoleum.

Lahauri tells us that the foundations were 'built of stone (*sang*) and [watertight] mortar or cement (*saruj*)', and that on them a terrace (*chabutra*) of brick (*ajir*) and mortar (*ahak*) was built, on which the main buildings were placed. Its exterior (*ru-yi kar*), especially the front to the river, was artistically faced with red sandstone.⁷⁵

The facing of supporting walls with red sandstone in the entire complex was effected with a construction technique characteristic of Shahjahani architecture, which can be called 'Mughal bond' [122, 123].⁷⁶ Long sandstone slabs are used: in the Taj they are c. 125–200 cm (c. 49–79 in.) long, 60–80 cm (23½–31 in.) wide, and 10–15 cm (4–6 in.) thick. They are laid alternately horizontally and vertically; alternate vertical slabs run at right angles through the



122 top Mughal bond in the western enclosure wall of the Taj Mahal: two of the facing slabs have come away, exposing the brick within. (Photograph taken in 2001)

123 above The structure of Mughal bond: a core of brick is faced, and tied, with sandstone slabs.

124 left Foundation wells below and beside the river frontage of the Taj Mahal [cf. 206].

opposite 125 Traditional bamboo scaffolding, erected for the repair of the south wing of the madrasa of Ghazi-ud-Din Khan, Delhi. (Photograph taken in 1996)

UES
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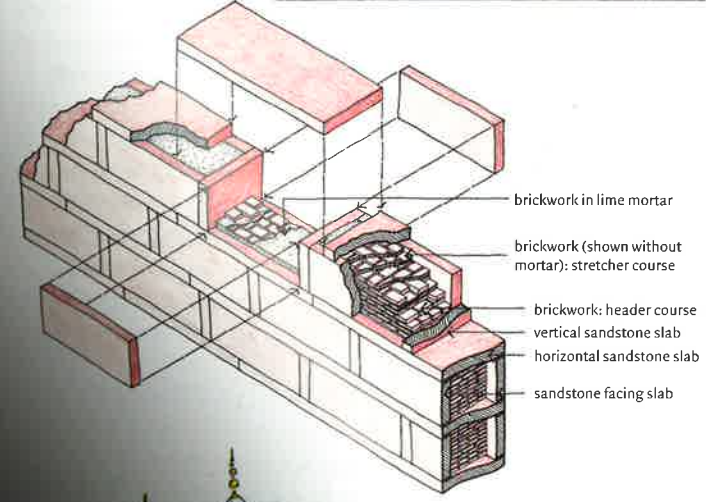
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was supported in the 1950s when excavation
 was filled with rubble, placed at a
 [122, 126].⁷⁴ Foundation
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thickness of the wall and, with the horizontal slabs, form a permanent framework that is filled with rubble or bricks set in mortar.

All buildings of the Taj complex are built of brick. In a typical Shahjahani structure the bricks are laid in horizontal courses composed largely of stretchers, but alternating at times with headers, in a thick bed of mortar made with *kankar*, a nodular limestone.⁷⁷ The walls of the mausoleum are very thick – in places as much as several metres. Vaults are built up in concentric rings of brick courses, set in an even thicker bed of lime mortar [cf. 101]. This construction technique, and the excellent quality of the mortar, gave the masonry the strength necessary to support the curvature of the partly spherical shell of the inner dome and the high bulbous dome above it, which has no inner stiffening walls [221]. The structure of the outer dome is reinforced by a continuous series of relieving arches integrated in the brickwork of the drum.⁷⁸

The brick masonry was faced with marble or sandstone slabs, which were firmly locked together with iron dowels and clamps. All domes of consequence in the Taj complex are faced on the outside with white marble [326]. In the mausoleum, the main inner dome of the tomb chamber is also faced with marble [228, 229], while the inner domes of the side rooms and the rooms of the upper storey are covered with white plaster [250]. (The domes inside the flanking mosque and Mihman Khana are covered with *sgraffito* decoration in red and white plaster [271].)

Tavernier says that all the scaffolding of the Taj Mahal, including the centering for the vaults, was made of brick, removed after completion of the structural work, and that this added greatly to the building costs.⁷⁹ It seems more likely, however, that old masons still working in the traditional techniques are right in thinking that the vaults were built without centering and that the walls were raised with the help of bamboo scaffolding. Such scaffolding is still used today in India [125], even for concrete constructions. We know from miniature paintings of Akbar's time that wooden ramps served to carry up heavy material [101].

The planning, and the logistical and physical manipulation of huge amounts of bricks, thousands of cartloads of stone, and many other materials involved in the creation of the monumental mausoleum, were an amazing work carried out with simple technical means. The construction was essentially completed in twelve years.



Construction history and celebrations of the anniversaries of Mumtaz Mahal's death (*'urs*)

The site chosen for the Taj Mahal lies on the right bank of the Yamuna, on the southern edge of the city [17, 26–29]. The property – one of the riverfront residences of Agra – had belonged to Raja Man Singh of Amber, and had come down to the raja's grandson, Jai Singh. Shah Jahan was drawn to it because, Qazwini says, 'from the point of view of loftiness and pleasantness [it] appeared to be worthy of the burial of that one who dwells in Paradise'.⁸⁰ Jai Singh was prepared to present the property to Shah Jahan, but the emperor, anxious to proceed without a shade of doubt in the sensitive matter of his queen's last resting place, insisted on giving him in exchange four other mansions at Agra.⁸¹

Work on the site had begun by January 1632, when the body of the dead queen arrived from Burhanpur. Her coffin had been accompanied by Shah Shuja^c (the second eldest prince) [2:3], Wazir Khan [2:7, 47], and her chief lady-in-waiting, Satti-un-Nisa Khanum (p. 210), with an entourage of attendants and Qur'an reciters. All along the road food, drink and coins had been distributed among the poor and deserving, to ensure the favours of Heaven for the departed one. At Agra the body of Mumtaz was given a second temporary burial on the construction site, and a small domed building (*gunbad-i mukhtasari*) was quickly raised over it, to protect her chastity, as Kanbo explains, from the eyes of males who were *na-mahram* – those who did not have access to the *haram*, or *zanana*.⁸² The place is thought to be marked by an enclosure in the western area of the garden near the riverfront terrace [146:6]. From other garden foundations of Shah Jahan, such as the Shalimar gardens at Lahore, we know that trees were planted when construction began, so that they would have grown to some height by the time work was completed.⁸³

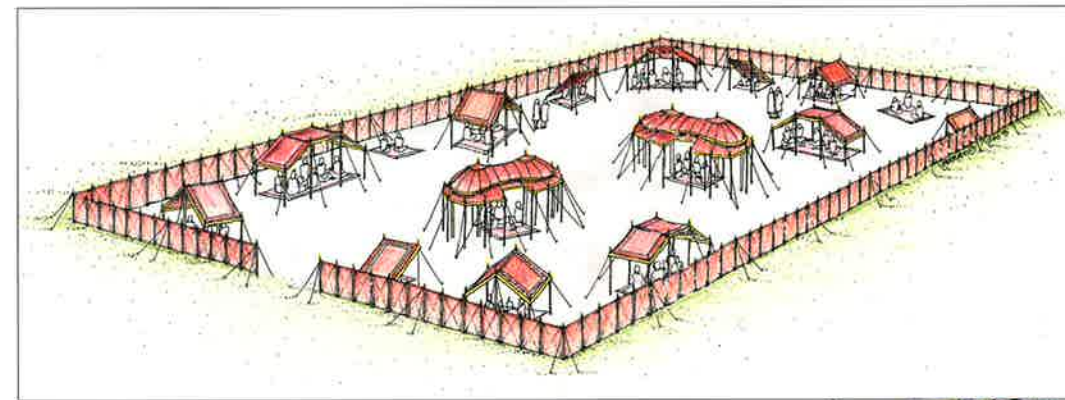
Construction of the Taj Mahal started with the foundations of the riverfront terrace. After that, work seems to have gone on simultaneously over the entire complex. Peter Mundy, in Agra in 1632–33, tells us that 'the building is begun and goes on with excessive labour and cost' and that the surrounding grounds were levelled so as not to hinder the view of the mausoleum as it took shape. He also mentions that the bazaars and caravanserais of 'Tage Gunge' (Taj Ganj) were in the process of being built.⁸⁴

Shah Jahan's historians report on progress only in the initial stages, in describing the celebrations of the first two anniversaries of Mumtaz Mahal's death. This event is called by Indian Muslims '*urs* – literally 'marriage', referring to death as the union of the soul with God – and is intended to ensure the 'lasting tranquillity' of the deceased. Shah Jahan's Iranian historian Jalal-ud-Din Tabataba'i witnessed the first one, and explained what was to him an unfamiliar ceremony: 'They spend one whole night and day in observances – such as keeping awake . . . reciting the Qur'an, the *Fatiha* [the first sura of the Qur'an (p. 229)] and prayers seeking forgiveness for the departed ones, feeding the poor and giving alms to the needy.'⁸⁵

The first 'urs, in the Jilaukhana

The first 'urs of Mumtaz was held on the equivalent of 22 June 1632 (the Muslim calendar is lunar, so the date of the anniversary varies when expressed in the solar 'AD' calendar). Arrangements were made in the courtyard (*sahn*) of the mausoleum, which was later called the Jilaukhana (p. 116). On Shah Jahan's orders, the area was surrounded by tent enclosures and covered with fine floor-coverings (*gustardani*) and carpets (*farsh*), and sumptuous audience tents surrounded by awnings (*shamiyana*) of gold brocaded velvet were set up [126]. Here the emperor held an assembly for high and low, for his great *amirs* and *mansabdars*, men of religion, scholars, the elite of Agra, and ordinary citizens. He himself retired to spend the whole night praying for God's forgiveness of the soul of Mumtaz, having asked his father-in-law, Asaf Khan, and the Iranian ambassador, Muhammad 'Ali Beg, who happened to be at court, to preside over the gathering. Everyone was seated according to his rank, and after they had recited the *Fatiha* and other *suras* of the Qur'an, and offered prayers for the soul of Mumtaz, they were served exquisite refreshments from the imperial kitchen – 'beverages, sweetmeats and other tidbits, confections, fruits, aromatic essences and pan' (the popular Indian betelnut preparation). At the end of the gathering, 50,000 rupees were distributed to needy and deserving men.

After the assembly of the men, another was held for the women. It too was open to high and low, but it differed in that the imperial women walked around the tomb to honour the deceased. The same amount of alms, 50,000 rupees, was distributed to needy women.



126 Reconstruction of the tent setting of the first 'urs of Mumtaz Mahal, in 1632, on the site of the forecourt of the Taj Mahal.

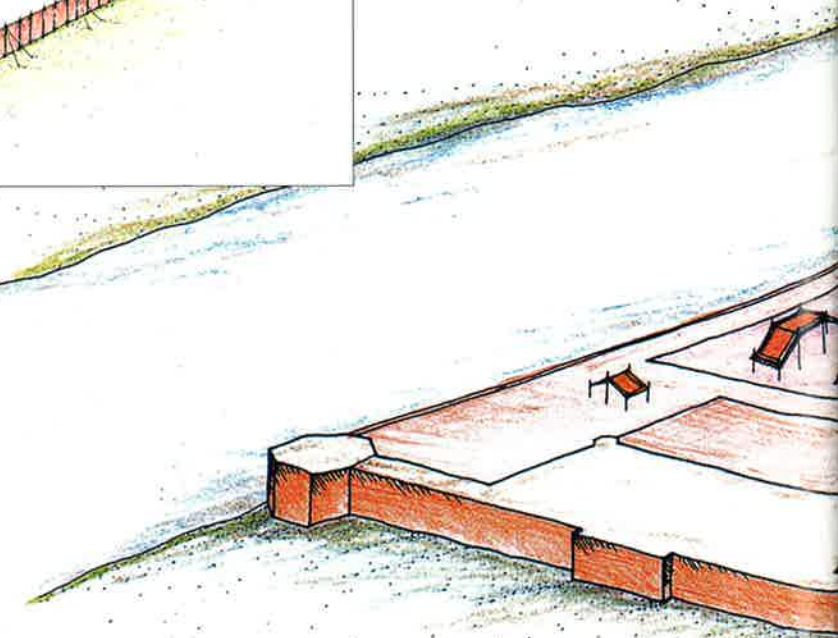
Shah Jahan decreed that on every subsequent 'urs his financial department should provide for charity 100,000 rupees (twice 50,000) when he was in the city, and if he was not present, 50,000 rupees. The figure of 100,000 rupees was a substantial sum: it corresponds to 2 per cent of the total construction costs of the Taj Mahal.

The second 'urs, on the riverfront terrace and the platform of the mausoleum

The celebrations for the second death anniversary took place on 26 May 1633 on the riverfront terrace and on the white marble platform of the mausoleum, which housed the lower tomb chamber [cf. 217]. Arrangements were made to seat 1,000 participants. The paved surfaces were covered with carpets, on which were set large audience tents surrounded by awnings [127].

Bibadal Khan, superintendent of the imperial goldsmiths, had with his artisans completed a screen of pure gold decorated with inscriptions and floral designs in enamel work, as well as golden globes and lamps to hang around it. It had cost 600,000 rupees, almost 12 per cent of the cost of the entire mausoleum complex. The screen was installed around the upper cenotaph, which had been set on the platform over which the domed hall was to be raised. Peter Mundy noted in 1633 that 'There is alreadye about her Tombe a raille of gold'.⁸⁶ The golden screen was replaced in 1643 by the present marble screen with inlay work [230, 232], probably so as not to attract robbers.

In the evening the emperor, the princes, Princess Jahanara, and the imperial women arrived. They would have come by boat to the stepped landing below the terrace – visible in older photographs [206]



127 right Reconstruction of the tent setting of the second 'urs of Mumtaz Mahal, in 1633, on the riverfront terrace, with the golden railing around the cenotaph.

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– and would have ascended temporary stairs to one of the postern doors near the towers, eventually reaching the Tahkhana, the gallery under the terrace (p. 148). They performed the ritual walk around the tomb to honour it, and said prayers for Mumtaz Mahal. Big assemblies were entertained as in the previous year, but now on the riverfront terrace. The emperor presented eminent religious men and Qur'an reciters, who had come from all parts of the empire, with garments and money. He also gave out charity to needy men and women, though – perhaps because of the special treatment of the religious sector – he only distributed 50,000 rupees, the amount designated for 'urs celebrations in his absence.⁸⁷ He observed this practice also in later celebrations of the death anniversary.

Subsequent progress

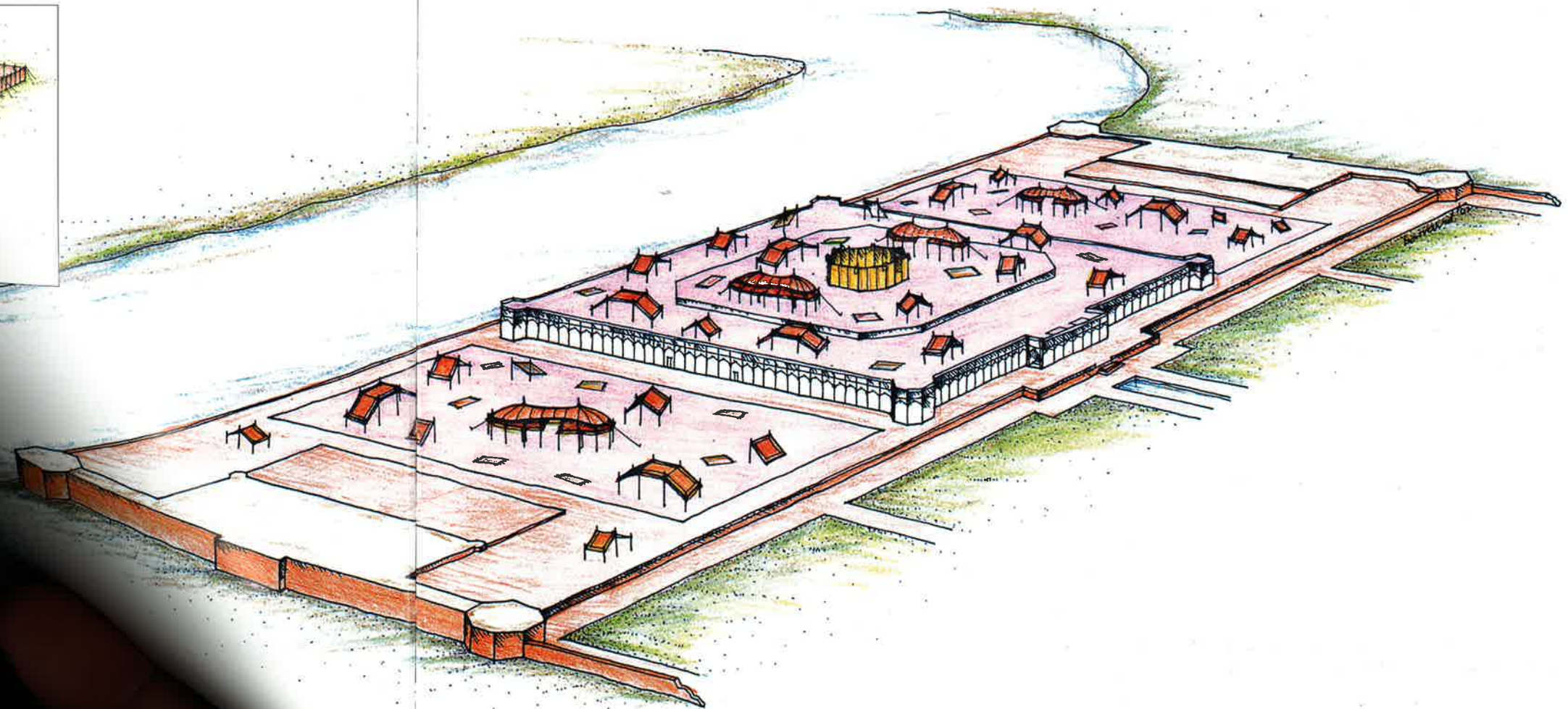
The celebrations in the following years are mentioned only intermittently and briefly, with no information about the construction until the twelfth 'urs, on 17 Zi'l Qa'da 1052 or 6 February 1643, when the complex was officially completed.⁸⁸ Progress can however be deduced from dated signatures of the calligrapher Amanat Khan, who created the inscriptions on the bands dividing the floors and framing the arches of the mausoleum and the great gate. The main inscriptions are passages from the Qur'an, hence in Arabic, and in formal sulus script (p. 224). Amanat Khan's signatures are in Persian, in naskh script, inserted in small letters at the end. All inscriptions read from right to left.⁸⁹

The earliest dated signature appears inside the mausoleum at the end of the inscription band which surrounds the tomb chamber,



128 Detail of the inscriptions above the south arch in the tomb chamber of the Taj Mahal. The signature of Amanat Khan and the date 1045 (AD 1635/36) appear at the left below the upper band of sulus script; they are in naskh script, in cartouches; the date appears at the far left. (Photograph taken in 1981)

above the left spandrel of the south arch [128]. It reads 'Written by the son of Qasim as-Shirazi, 'Abd-ul-Haqq, with the title Amanat Khan, in the year 1045 Hijri' (AD 1635/36). The second date appears outside, in the west pishtaq, at the bottom of the left leg of the





129 Inscription with the date 1046 (AD 1636/37) in the west pishtaq of the mausoleum. (Photograph taken in 2000)



130 right Inscription with the date 1048 (AD 1638/39) framing the south arch in the tomb chamber of the mausoleum. (Photograph taken in 1981)

131 Inscription with the date 1057 (AD 1647/48) on the north pishtaq of the great gate. (Photograph taken in 1996)



inscription surrounding the arched opening in the back wall [129]: it reads 'In the year 1046' (AD 1636/37). In December 1637, according to both Lahauri and Kanbo, Amanat Khan was granted an elephant – the ultimate Mughal status symbol – for inscriptions inside the domed hall of the mausoleum.⁹⁰ The third date is inside again, at the bottom of the left leg of the band framing the south arch [130]: it reads 'Finished with His [i.e. God's] help; written by the humble faqir Amanat Khan as-Shirazi, in the year one thousand and forty eight Hijri, and the twelfth of His Majesty's auspicious accession'. This tells us that the main body of the mausoleum and its marble facing were completed in 1638/39.

In 1640–41 Manrique saw the Taj Mahal under construction and the garden being planted.⁹¹

Lahauri and Kanbo report that the entire building was completed at the twelfth 'urs of Mumtaz Mahal, in 1643, and on that occasion they give a detailed description of all parts of the complex, including the subsidiary structures⁹² (translated on pp. 256–57). Work on the decoration, however, seems to have gone on for several more years, at least to 1647/48. The last dated signature of Amanat Khan appears on the north (garden) front of the great gate, at the bottom of the left leg of the rectangular inscriptional frame of the large arch [131]; it reads: 'Finished with His help, the Most High, 1057' – AD 1647/48.

Expenditure and maintenance

The cost of construction of the entire complex, including materials and labour, had been estimated in 1631 as 20–40 lakhs of rupees; in the end it cost 50 lakhs or 5,000,000 rupees.⁹³ A sense of what such a figure meant is given by the fact that in 1637–39 an Indian servant of the Dutch East India Company in Agra earned 3 rupees a month or a little more, and a *mansabdar* of 20 zat (p. 28) 750 rupees a month.⁹⁴

To finance the upkeep of the complex, Shah Jahan established an endowment (*waqf*) of 3 lakhs or 300,000 rupees. One-third came from the annual revenues from thirty villages of the district of Agra, and the other two-thirds came from the income of the bazaars and caravanserais which formed the southern part of the Taj Mahal complex.⁹⁵ In 1691 Aurangzeb ordered the governors of every province to send 2,000 rupees 'as a standing practice' (yearly?) to Khwaja Khidmat Khan, whom he had installed as caretaker.⁹⁶ Since the Mughal empire at the time had twenty-one provinces, the additional amount came to 42,000 rupees.

The *waqf* covered all the necessary repairs of the buildings, the annual charities, and the monthly salaries and expenses for food and

Construction history and anniversaries of Mumtaz Mahal's death

17 June 1631: temporary burial of Mumtaz Mahal in the Zainabad garden at Burhanpur

June–December 1631: selection of and negotiation for the site of the funerary complex at Agra

mid-December 1631: body of Mumtaz brought from Burhanpur to Agra

January 1632: laying of the foundations of the Taj Mahal

8 January 1632: second burial of Mumtaz in a 'small domed building' on the construction site, next to the riverfront terrace

22 June 1632: ceremonies of the first anniversary of Mumtaz Mahal's death ('urs) in the Jilaukhana

26 May 1633: ceremonies of the second 'urs, on the white marble platform of the mausoleum which contains the third and final burial of Mumtaz, with installation of a gold screen around the upper cenotaph, made by the court goldsmith Bibadal Khan

1635/36: dated signature of the calligrapher Amanat Khan in the domed hall of the mausoleum, on the inscription band above the south arch

1636/37: date written by Amanat Khan at the bottom of the left leg of the calligraphic frame of the arched opening in the back wall of the west pishtaq of the mausoleum

1638/39: dated signature of Amanat Khan at the bottom of the left leg of the calligraphic frame of the south arch in the domed hall of the mausoleum

1640–41: Manrique observes the construction nearing completion and the planting of the garden

1643: officially recorded completion of construction

1647/48: dated signature of Amanat Khan at the bottom of the left leg of the calligraphic frame of the north arch of the great gate

December 1652: Prince Aurangzeb writes to Shah Jahan about repairs needed because of leakage in various parts of the mausoleum, the mosque and the Mihman Khana

IV The paradisiacal house of the queen

... the exalted mausoleum which imitates the gardens of Rizwan [the guardian of Paradise], and gives an impression of the holy abodes ...

‘Abd-ul-Hamid Lahauri, *Padshahnama*, 1630s–54’

For the Mughals the meaning of a building was as important as its form. The Taj Mahal was conceived in post-Platonic terms, which prevailed in the world-view of the Mughal court. The entire potential of Mughal architecture was put into the service of creating a replica here on earth of the paradisiacal house of Mumtaz. As a material expression of an otherworldly building it had to be realized in what Shah Jahan and his builders considered ideal architecture. The abstract planning was, however, clothed in a sensuous garment. The materials used in the facing of the buildings expressed symbolic values, and they also evoked emotions by interacting with the atmosphere; and the aesthetics of a differentiated application of architectural ornament speak directly to the viewer. The mathematical planning provided the correct structure of the ideal concept, accessible to the initiate; the facing of the buildings and their decoration appealed to the senses of the observer. Surface and ornament are our most immediate window into the meaning of the Taj Mahal.

It is this fusion of the intellectual and the sensuous that has made the Taj Mahal so successful over the centuries, thus achieving the project's other object, to be an enduring monument to Shah Jahan as emperor and architect.

THE SYMBOLISM OF WHITE MARBLE AND RED SANDSTONE

The most readily noticed aspect of the buildings of the Taj Mahal complex is the differentiation in their colour [333]. White is reserved for the mausoleum, as the most important structure: the white marble inlaid with *pietra dura* reacts to changes in the light and enhances its mystical and mythical aura. Red is the colour of all the subsidiary structures; their important elements, such as domes and façades, may be ennobled with a facing of white marble and with marble inlay. This hierarchically graded colour dualism is a general feature of imperial Mughal architecture. In this the Mughals elaborated a practice which had already been adopted by the Delhi sultans [334], and which conforms to older Indian concepts, laid down in the *shastras* (theoretical Sanskrit texts about art and building). The *Vishnudharmottara-purana*, an authoritative compilation composed probably in the 8th century, recommended white stones for buildings of Brahmins, the priestly caste, and red ones for those of the *kshatriyas*, the warrior caste:² ‘White, it would

333 *opposite* The mausoleum, its platform and the minarets, of white marble, are framed by structures of red sandstone with honorific marble accents. (Photograph taken in 1985)

334 A pre-Mughal application of red sandstone facing highlighted with white marble: the ‘Ala’i Darwaza of ‘Ala-ud-Din Khalji, of 1311, in the complex of the Quwwat-ul Islam Mosque and Qutb Minar at Delhi. (Photograph taken in 1979)

seem, is opposed to red as the purity of the Brahmin is opposed to the ruling power of the Kshatriya.’³ The synthesis of the two colours had an auspicious connotation. By using white and red in their buildings the Mughals identified themselves with the two highest levels of the Indian social system. Until Aurangzeb, the emperors were concerned to define themselves as rulers in Hindu terms as well: the orthodox Muslim historian Badauni criticized Akbar for letting himself be addressed as an incarnation, ‘like Rama, Krishna and other infidel kings’.⁴

The role of red sandstone (*sang-i surkh*) and white marble (*sang-i marmar*) changed in the course of Mughal architecture. Akbar’s builders preferred red sandstone. They valued it not only because it was considered appropriate for the Indian ruling class but also because of its imperial connotation within the Mughal tradition: red was the exclusive colour of imperial tents [126, 127].⁵ Another



attraction was its integrative faculty: since its overall red hue absorbed stylistic clashes between the various building traditions that were brought together in the great Akbari architectural synthesis, it expressed imperial unification.⁶ In residential buildings of Akbar's period white marble was used only as ornament. Funerary architecture made more use of marble accents. The tomb of Humayun [104, 335] demonstrates a purposeful handling of the two colours: marble inlay underlines the role of each structural element in the elevation, and the crowning dome is clad in marble. The tomb of Shaikh Salim Chishti at Fatehpur Sikri is entirely faced with white marble, expressing the spiritual position of Akbar's favourite mystic [336].⁷ The colour white had strong associations with purity, goodness and spirituality in the Islamic tradition, too, and a white tomb reflected the spirituality and faith of the person buried in it.⁸

Under Jahangir white marble was employed more frequently. As before, the hierarchic use of colour dualism manifested itself especially in funerary architecture. Akbar's tomb is topped by a marble gallery surrounding the upper cenotaph [106, 107]. The white rooftop court 'floats' over the terraced structure, as if belonging

with the surrounding marble cupolas to a different sphere. The tomb of I'timad-ud-Daula, Nur Jahan's father and Pillar of the Empire, is entirely faced with marble, further ennobled by inlay of coloured marbles and semi-precious stones [58-60] – in this a direct precursor of the Taj Mahal.

In Shah Jahan's reign, Lahauri tells us, 'the value of the arts has changed, and the divine care has adopted a new method of embellishing the world[.] in place of the old [sandstone buildings], sky-touching mansions of marble were built which reflect like the mirror of Alexander and are pure like the heart of spiritual persons'.⁹ Marble became the facing of imperial palace buildings [83, 86, 88] – or if not marble, a coating of white polished plaster which looked like marble (p. 95). The studied use of white marble and red

335 below The south-east corner of the tomb of Humayun, Delhi, 1562-71. White marble accentuates the elements of the building clad in red sandstone. (Photograph taken in 1980)

336 opposite The white marble tomb of Shaikh Salim Chishti, 1580/81, in the courtyard of the red sandstone Jami' Masjid at Fatehpur Sikri. (Photograph taken in 1978)



complexity and technique to underline the hierarchical importance of the architectural area or building where they occur [337].)

Flowers

The naturalistic plant and flower depictions of the mausoleum bring a long involvement of the Mughals with botanical studies to its monumental apogee. The close observation of the visual world had been a continued interest of the Mughal dynasty. It was first expressed in words, in Babur's descriptions of plants, trees and animals in his autobiography, and was then given visual expression by the painters of Akbar and Jahangir. For models, the Mughals turned to the arts of Europe: they based studies of flowers and plants, including those

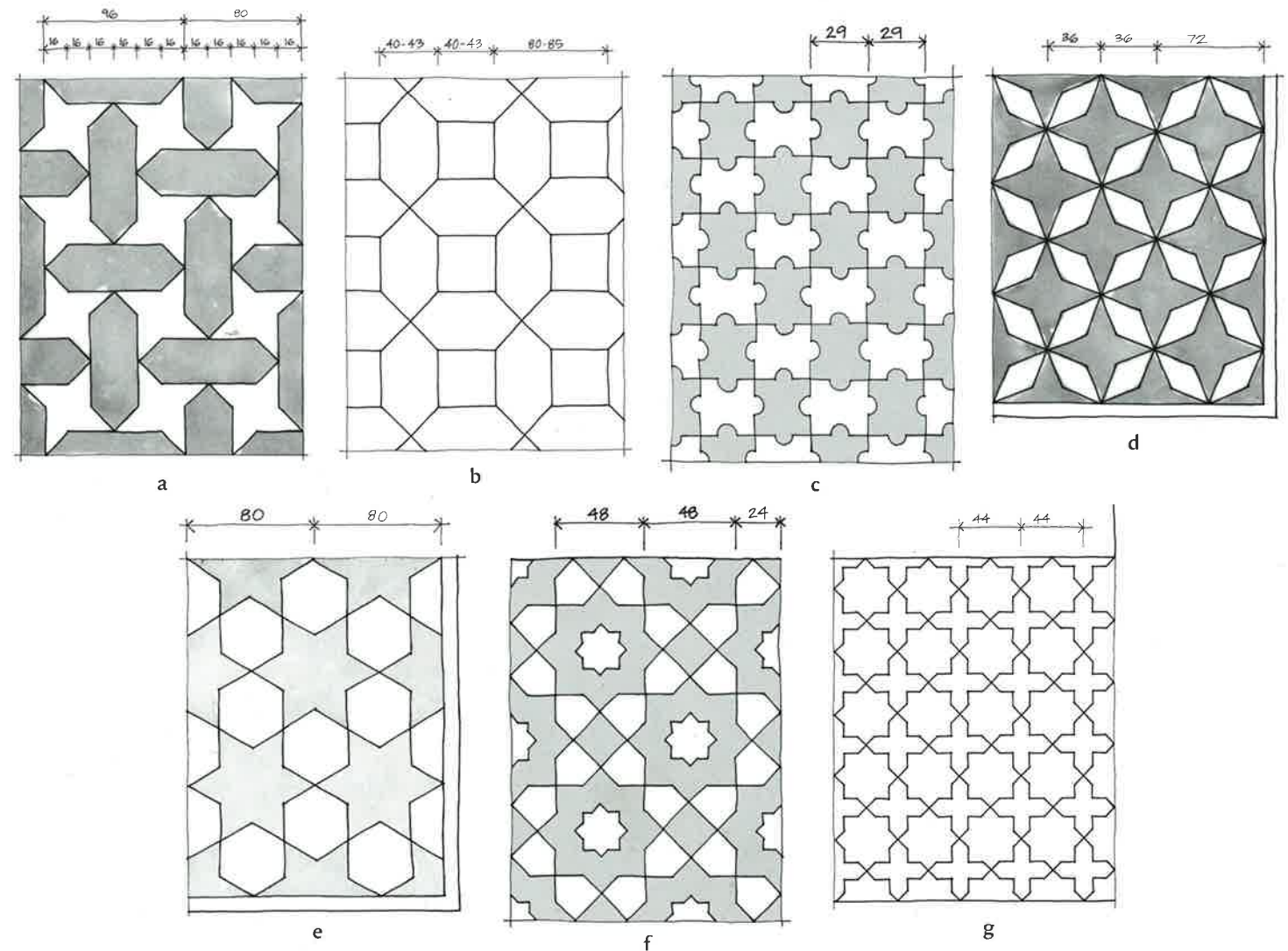
native to their own environment, on the illustrations in European scientific herbals.¹² Jahangir's and Shah Jahan's painters knew and used the great herbals of the later 16th and early 17th centuries, such as *Rariorum plantarum historia . . .* by Charles de L'Écluse (Carolus Clusius) (1601), Mathias de L'Obel's *Plantarum seu stirpium historia . . .* (1576), and Rembert Dodoens' *Stirpium historiae pemptades sex* (1583) – all printed in Antwerp – as well as the French florilegium of Pierre Vallet, *Le Jardin du roy très chrestian Henry IV* (1608) [340].¹³

The Mughal artists were led by Ustad Mansur, Jahangir's outstanding painter of natural history subjects, with his famous tulips (c. 1620) [342]. From the herbals' system of depiction they adopted the symmetrical composition, the use of front and side views of blossoms, the progression from bud to full bloom on one plant, and the arrangement of the blossoms to display the botanical details of stamen and carpels [341]. This was combined with a sense of movement in the petals, leaves and stems which was also typical of herbal illustration of the period. A group of such flower studies by artists of Shah Jahan's period appears in the album which Prince Dara Shikoh presented to his wife Nadira Banu Begam in 1641/42 [194].¹⁴

The flower studies of the painters were transferred by Shah Jahan's craftsmen to marble and sandstone relief and to *pietra dura*. They handled their models quite freely, however, juxtaposing botanical species with imaginary flowering plants or creating hybrids of the two. These were perhaps meant to represent a realistic-looking

337 Geometric patterns (*girih bandi*) of paving as one moves through the Taj Mahal complex (measurements are given in cm; c. 80 cm/32 in. = 1 *gaz*):

- a platforms in front of the great gate on the garden side and of the southern galleries, and platform of the riverfront terrace, in red and buff sandstone
- b all walkways of the garden, in red sandstone
- c platforms in front of the garden-wall pavilions, in white marble and red sandstone
- d around the platform of the mausoleum, in white marble and red sandstone
- e platforms in front of the mosque and Mihman Khana, in red and buff sandstone
- f platforms of tanks in front of the mosque and Mihman Khana, in red and buff sandstone
- g tomb chamber in the mausoleum and octagonal corner chambers: star and cross pattern of black marble inlaid in white marble



technique to underline the hierarchical importance of the natural area or building where they occur [337].)

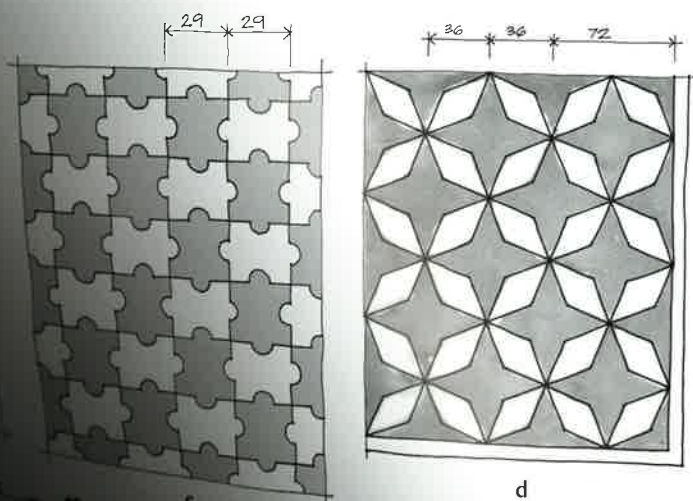
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but unworldly paradisiacal species, outside the laws of nature. The flowers also relate to the imperial realm: similar flowers appear at the same time on the dados of several palace buildings in the Agra fort – close to nature in the Shah Burj, freer in the Diwan-i Khass, and in *pietra dura* in the jharoka of the Diwan-i 'Amm. Particular favourites in all media – painting, relief, and inlay work – are flowers inspired by the martagon lily, crown imperial and tulip [341, 344, 345]. The most spectacular naturalistic plant and flower representation was achieved in *pietra dura*. The aim was to obtain effects similar to painting. Again Kalim tells us of the desired effect:

Pictures become manifest from every stone.
In its mirror behold the image of a flower garden.¹⁵

Flower vases

Vases filled with flowers in marble relief appear as dado decoration of the central tomb chamber [230, 339]. Their placement there tells us

338 below Flower vase and butterflies, with an inscription freely after Isaiah 40:6, 8: 'All flesh is grass, oh human being, it does not bring fame! And your beauty is like a flower': engraving by Claes Jansz. Vischer, Flemish, 1635.

339 below right Flower vase that appears in the dados on the eight corners of the tomb chamber. The European model is flattened, and the loose arrangement of its flowers is turned to perfect Shahjahani mirror symmetry on both sides of the central iris. At the same time, the Mughal flowers are much more dynamic, shooting out of the vase. (Photograph taken in 1992)



that they were more highly valued than the single flowers arrayed in 'beds' on the outer dado zones. Like those, their naturalism and shape are inspired by the arts of contemporary Europe, where by the 17th century vases of flowers had become a favourite subject of painting, engraving and decoration [338].¹⁶ Implied in the depiction of flower vases and still-life with flowers was, especially in the Low Countries, a *vanitas* theme – the idea of the transitoriness of human life and of earthly things, which, like the beauty of the flowers, will not last.¹⁷ We do not know whether the Mughals were familiar with this symbolism, but it gives the eschatological meaning of the flower decoration of the Taj Mahal an additional facet.

The shape of the vases of the Taj Mahal and their flower arrangements follows the European form very closely. The Mughals were not worried about borrowing from other traditions: they saw this as deigning to use an offering from a foreign cultural region for their own artistic purposes (p. 68). And the European elements that met with continuous success were those that could give a new expression to artistic or literary concepts already familiar to the Mughals. This is also true of the vases. Vases filled with flowers have a long tradition in Muslim culture, and in an Indian context their attraction was heightened because they related to the pot with overflowing plants, *purna-ghata*, the ancient symbol of prosperity and wellbeing [347].¹⁸ The vases thus had a multiple 'identity' which gave them the universal quality sought by Shah Jahan's artists.

The prestigious vase motif is most spectacularly and most naturalistically expressed in marble in the tomb chamber [230, 339].



340 above Martagon lily, from Pierre Vallet, *Le Jardin du roy très chrestian Henry IV*, 1608.

341 above right Martagon lily, from the *Small Clive Album*, Mughal, late 17th or 18th century. The artist followed Vallet's model closely, only leaving out the butterfly.

342 right Himalayan tulips, painted by Mansur, Mughal, c. 1620.





Flowers in the mausoleum

343 Flower type X (with bending stalks supporting pairs of blossoms except at the top, where one of each pair is left out so as to create reverse symmetry) on the dado in one of the cruciform rooms. (Photograph taken in 1997)

344 below left Flower type C (with blossoms inspired by tulips) on the north pishtaq. (Photograph taken in 1995)

345 below Flower type R (double-tiered crown imperial, *Fritillaria imperialis*) on the platform of the upper cenotaph of Shah Jahan. (Photograph taken in 1992)



Vase elements also appear, as an ennobling accent, in the garden-wall pavilions [198] and in the towers, where they are integrated into the brackets of the topping *chhatris*. Monumental flower vases in red sandstone create a spectacular effect on the river frontage of the terrace [208, 209]: here, on the only external façade of the Taj Mahal complex, the elite imagery of the tomb chamber was projected to the outside world.

Plant colonnettes

The flower vases of the tomb chamber are set off by engaged marble colonnettes which grow out of pots, overflowing with fully sculpted acanthus leaves, another reference to the Indian auspicious symbol of the *purna-ghata* or *purna-kalasha* [346, 347]. The bases and capitals of the colonnettes are formed of interlocking acanthus scrolls and leaves. Their shafts, in their shape and naturalistic acanthus decoration, refer to the larger form of the baluster column, which by then had made its exclusive appearance in the ceremonial architecture of Shah Jahan [133].¹⁹ As its Mughal term, *sarw andam*, 'cypress-bodied', indicates, the baluster column was meant to represent a tree or plant. Its actual shape, with acanthus decoration, was again taken from European engravings, probably prints from the circle of Dürer where the column features prominently to frame portraits of kings and holy personages.



In the miniature versions of the colonnettes of the Taj, their plant character is intensified by a unique decoration of flowering creepers, carrying blossoms in the shape of the ever-popular lily with curved-back petals ('martagon lily'), which increases the 'naturalistic' character of the decoration. The combination of cypress-shaped column and creeper evokes in turn an ancient motif of Persian art and poetry, the cypress entangled by a blooming tree [58], symbolizing the lover and the beloved. The poet Kalim, in praising the vegetation of Kashmir, says, 'Wherever a young tree raised its stature, a vine entangled it like a lover.'²⁰ The symbolically highly charged colonnettes intensify the 'garden room' aspect of the interior of the mausoleum.

Flowers as a symbol of Mughal kingship

The flowers and plants of the Taj Mahal were intended to evoke perfect paradisiacal bloom. At the same time, they have a definite political significance. This is demonstrated by the cenotaphs of Shah Jahan, on which flowers were given preference over inscriptions [233, 243, 246, 349]. Unlike those of Mumtaz, where large individual flowers appear only on the platforms, both of Shah Jahan's memorials are covered with floral motifs and individual flowering plants. They are in keeping with the overall concept of the mausoleum as paradisiacal garden house; but they also conform



346 far left Engaged corner colonnette in the tomb chamber of the mausoleum, with plant decoration growing out of a pot with overhanging leaves. (Photograph taken in 1981)

347 left A baluster column standing on a pot with overhanging leaves, the Indian symbol of the 'vase of plenty' (*purna-ghata*): part of the frame of a statue of Vishnu from eastern India, 11th–12th century. (Photograph taken in 1979)

348 opposite Shah Jahan portrayed among flowers as the Spring of the Empire: detail of a painting by Payag, Mughal, c. 1640, from the *Padshahnama*. The complete scene depicts the emperor when still Prince Khurram, being presented by his father Jahangir with a turban ornament, but this is propaganda in retrospect: the setting in this, Shah Jahan's official history, is that of his own time, and the message his own.

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to the programme of his court settings, where paradisiacal bloom expressed imperial propaganda. The writers and poets of Shah Jahan eulogized him as the 'the spring of the flower garden of justice and generosity': he was the renewer, the mujaddid, under whose rule 'Hindustan has become the rose garden of the earth and his reign which is the cradle of prosperity has become the spring season of the age in which the days and nights are young'.²¹

The image of the garden and its flowers was the main metaphor of Shah Jahan's imperial symbolism: it stood not only for himself and his good government but also for his court and his family. In Shahjahani rhetoric the emperor was an 'erect cypress of the garden of the caliphate';²² his court was the 'adornment of the meadow of pomp';²³ his marriage to Mumtaz Mahal 'grafted that new flower (gul) of the garden of chastity and perfection (gulshan-i iffat-u-kamal) [Mumtaz] onto that new plant (nihal) of the garden of dignity and splendour (hadika-i jah-u-jalal) [Shah Jahan]';²⁴ his eldest daughter, Jahanara, was 'the noble palm-tree of the orchard of magnificence and excellent fruit of the plant of grandeur';²⁵ his eldest son, Dara Shikoh, was 'the first flower of this royal garden';²⁶ and Mumtaz's death turned the world into a garden with thorns:

Like nightingales we should weep in this garden
For smiles fade too quickly from the face.²⁷

349 Detail of the lower cenotaph of Shah Jahan. Poppies alternate with lily-like flowers; at the left end is the only inscription, the emperor's epitaph, written in Persian, in nasta'liq script. (Photograph taken in 2001)



THE INSCRIPTIONS

The religious prohibition against figural representation in Islam, and the great appreciation of script as the medium in which God's revealed word was materialized in the holy book, the Qur'an, are the reasons why inscriptions became a predominant element of the decoration of religious buildings in the Islamic world. These inscriptions are aesthetically attractive, but not easily readable: some are placed in obscure areas, others are too high and too far away to be read, and most are so intricately composed that the ordinary visitor would not be able to decipher them. However, the mere existence of the Word of God on the walls of a building served as a visible representation of supernatural reality and had a sanctifying and uplifting effect. For literate Muslims who had memorized the entire Qur'an during their elementary education, it often sufficed to decipher a single word or phrase in order to recognize from which sura or chapter the passage came.²⁸

These inscriptions were not randomly chosen but expressed thematic programmes, a religious iconography of words which represents the Islamic counterpart to figural decoration in Christian churches. For those who understood them, they were the key to the deeper symbolic message of a building.²⁹ Mausoleums were, in spite of their unorthodoxy, considered as religious buildings, and were often decorated with Qur'anic epigraphy. This was perhaps even meant to counterbalance the unorthodoxy of the structure.

The Taj Mahal displays the largest inscripational programme in the Islamic world: it has twenty-five Qur'anic inscriptions, of which fourteen are complete suras. The inscriptions appear on three of the four major buildings only – the great gate, the mausoleum, and the mosque. In keeping with the overall aesthetic systematization which governs the Taj Mahal, they follow a unified scheme, appearing as elegant bands of black inlaid letters on the rectangular white marble frames that surround the *pishtaq*s and arched niches [224, 230, 351, 352]. In addition, the mosque has an arched inscripational band around the *mihrab*, and black inlaid inscriptions cover the two cenotaphs of Mumtaz Mahal [246, 350]; the two cenotaphs of Shah Jahan bear only a brief epitaph [244, 349].

All formal Qur'anic inscriptions are in Arabic and written in large and elaborate *sulus* script, the 'mother' of the cursive styles of writing, which was in the 17th century the predominant calligraphic style for architectural epigraphs. The vertical stems of the letters are elongated and produce, with long horizontal lines which may be drawn across several words, the effect of latticework [350]. The epitaphs on the memorials of Mumtaz Mahal and Shah Jahan are in Persian, the official language of the Mughal empire, and styled for Mumtaz in *naskh* (the normal script, simpler than *sulus*) and for Shah Jahan in the elegant *nasta'liq* script (written with connected 'hanging' letters).³⁰

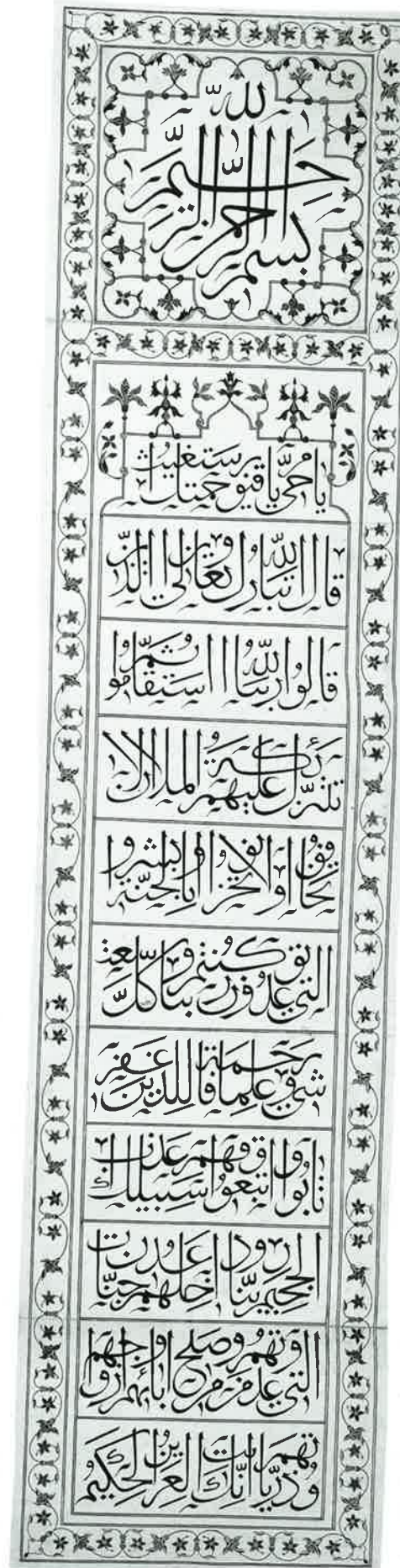
In Persian also are the four historical inscriptions, consisting of dates and dated signatures of the calligrapher, integrated in small letters into the ends of Qur'anic inscriptions on the mausoleum and the great gate [128–131]. They contain the dates 1045 (1635/36), 1046 (1636/37), 1048 (1638/39) and 1057 (1647/48), and two carry the signature of the calligrapher 'Abd-ul-Haqq from Shiraz, who signed variously as 'son of Qasim as-Shirazi' 'Abd-ul-Haqq, with the title Amanat Khan' (1635/36), and 'Amanat Khan as-Shirazi' (1638/39). He created the inscriptions of Akbar's mausoleum at Sikandra and probably those of the Chini-ka Rauza at Agra (p. 43) and, in 1632,

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was given the title Amanat Khan ('Lord of Trust') by Shah Jahan. Amanat Khan was the only artist of the Taj Mahal who was allowed to reveal his identity for posterity (pp. 99–100). It demonstrates the high regard the emperor had for the artist, and that the art of writing, which because of its religious connotations was held in highest esteem in the Islamic world, also had a special status at his court.

It has been established that the theme of the inscriptional programme of the Taj Mahal was an eschatological one: all the complete suras, or passages from suras, speak in one way or another of the Day of Judgment, divine mercy, and Paradise promised to the faithful.³¹ It has been argued on this basis that the Taj Mahal was meant to be a symbolic replica of the Throne of God on the Day of Judgment as expressed in a mystical diagram by Ibn al 'Arabi.³² One of the many points which speak against this hypothesis is that the famous Throne verse (sura 2, verse 255) extolling God's majesty³³ is absent from the inscriptional programme.³⁴

When all the components of the Taj Mahal are seen together there is no doubt that the inscriptional programme ensures on the intellectual religious level, with God's own words, the overall symbolism of the mausoleum and its setting as the house prepared for Mumtaz in Paradise.³⁵

The most programmatic sura is 89, al-Fajr, 'Daybreak', which is placed on the outer façade of the great gate [351]:

In the Name of God, the Lord of Mercy, the Giver of Mercy
[1] By the Daybreak, [2] by the Ten Nights, [3] by the even and the odd, [4] by the passing night – [5] is this oath strong enough for a rational person?

[6] Have you [Prophet] considered how your Lord dealt with the people of 'Ad, [7] of Iram, the city of lofty pillars, [8] whose like has never been built in any land? [9] and the Thamud, who hewed into the rocks in the valley [10] and the mighty and powerful Pharaoh? [11] All of them committed excesses in their lands, [12] and spread corruption there: [13] your Lord let a scourge of punishment loose on them. [14] Your Lord is always watchful.

[15] The nature of man is that, when his Lord tries him through honour and blessings, he says, 'My Lord has honoured me', [16] but when He tries him through the restriction of his provision, he says, 'My Lord has humiliated me.' [17] No indeed! You [people] do not honour orphans, [18] you do not urge one another to feed the poor, [19] you consume inheritance greedily, [20] and you love wealth with a passion. [21] No indeed! When the earth is pounded to dust, pounded and pounded, [22] when your Lord comes with the angels, rank upon rank, [23] when Hell is that day brought near – on that day man will take heed,

350 left Top of the upper cenotaph of Mumtaz Mahal: Company drawing by an Agra or Delhi artist for Maria, Lady Nugent, c. 1812. The Qur'anic inscription, in sulus script, includes verse 30 of sura 41 and verses 7 and 8 of sura 40, which promise Paradise and claim the everlasting gardens for those who follow the right path, 'together with their righteous ancestors, spouses, and offspring'.

overleaf

351 The southern, outward-facing, pishtaqs of the great gate is framed by sura 89 of the Qur'an, which concludes by inviting the believers into Paradise. (Photograph taken in 1992)



352 The south-western arch in the tomb chamber of the mausoleum is surrounded by an inscription band with sura 76 of the Qur'an, *al-Insan*, 'Man'. Beginning top right is verse 13, 'They will sit on couches, feeling neither scorching heat nor biting cold.' (Photograph taken in 1981)

but what good will that be to him then? [24] He will say: 'Would that I had provided for this life to come!' [25] On that Day, no-one will punish as He punishes, and no-one will bind as He binds. [27] [But] you, soul at peace: [28] return to your Lord well pleased and well pleasing; [29] go in among My servants, [30] and into My Garden [Paradise].³⁶

The special features of Paradise are evoked in the inscriptions of the mausoleum. Around the door within the east *pishtaq* is placed the entire sura 98, *al-Bayina*, 'The Clear Evidence', the last two verses of which say

[7] Those who believe and do good deeds are the best of creation. [8] Their reward is with their Lord: Gardens of everlasting bliss graced with flowing streams. God is well pleased with them and they with Him. All this is for those who stand in awe of their Lord.

The arch of the south-west niche of the central tomb chamber is surrounded by the second half of sura 76, *al-Insan*, 'Man' [352], which contains the verses

[11] So God will save them from the woes of that Day, give them radiance and gladness, [12] and reward them for their steadfastness with a Garden and with silken robes. [13] They will sit on couches, feeling neither scorching heat nor biting cold, [14] with shady [branches] spread above them and clusters of fruit hanging close at hand.

On the upper cenotaph of Mumtaz verse 30 of sura 41, *Ha Mim* or *al-Fussilat*, '[Verses] Made Distinct', occurs twice – on the top [350], and on the south end continued on the west side:

As for those who say, 'Our Lord Is God', and take the straight path towards Him, the angels come down to them and say, 'Have no fear or grief, but rejoice in the good news of Paradise, which you have been promised.'

The appearance of this passage twice indicates that it must have been considered as particularly powerful to ensure divine forgiveness and paradisiacal reward for Mumtaz Mahal.

SOUND AS AN EXPRESSION OF ETERNITY

In the interior of the mausoleum even sound had to evoke eternity. The dome of the tomb chamber holds a tone for almost half a minute, as the musician Paul Horn demonstrated in a night session with his flute on 25 April 1968. He was inspired by the tomb attendant who habitually calls out to demonstrate the remarkable acoustics: 'I never heard anything so beautiful. Each tone hung suspended in space for 28 seconds and the acoustics are so perfect that you couldn't tell when his voice stopped and the echo took over. Also the individual tone didn't spread as in other great halls, but remained pure and round to the very end.'³⁷ For the Austrian artist Bernhard Leitner (who creates installations with moving sound producing the effect of space), Horn's simple flute melody continuing by itself inside the dome generates the impression of timeless sound: 'The room never ends. Even without sound time is inherent in this space. The silence is tension-filled. The space finds its meaning in an unearthly, infinite silence.'³⁸

The acoustics of the Taj Mahal were first described in 1836 by Captain Sleeman, an early British observer of the Taj Mahal (pp. 105, 240):

of all the complicated music ever heard upon earth, that of a flute blown gently in the vault below, where the remains of the Emperor and his consort repose, as the sound rises to the dome amidst a hundred arched alcoves around, and descends in heavenly reverberation upon those who sit or recline upon the cenotaphs above the vault, is, perhaps the finest to an inartificial ear. We feel as if it were from heaven, and breathed by angels; it is to the ear what the building itself is to the eye; but unhappily, it cannot, like the building live in our recollections. All that we



352 The south-western arch in the tomb chamber of the mausoleum is surrounded by an inscription band with sura 76 of the Qur'an, *al-Insan*, 'Man'. Beginning top right is verse 13, 'They will sit on couches, feeling neither scorching heat nor biting cold.' (Photograph taken in 1981)

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... of the complicated music ever heard upon earth, that of those who recline in the vault below, where the remains of the departed repose, as the sound rises to the dome and descends in those who sit or recline upon the floor, perhaps the finest to an inartificial ear, and breathed by angels; it is to the eye; but unhappily, it is to our recollections. All that we

can, in after life, remember is that it was heavenly, and produced heavenly emotions.³⁹

The echo also impressed the American writer Bayard Taylor, who was at Agra in 1853: 'The dome of the Taj contains an echo more sweet, pure and prolonged than that of the Baptistery of Pisa, which is the finest in Europe. A single musical note, uttered by the voice, floats and soars overhead in a long, delicious undulation, fading away so slowly that you hear it after it is silent as you see, or seem to see, a lark you have been watching after it is swallowed up in the blue vault of heaven.'⁴⁰

The echo of the dome still intrigues all visitors, who react to it according to their sensibilities. All sorts of experiments have been undertaken. Florentia Sale (p. 240) complained in 1832-33 that the 'shouting and blowing of horns seem to me to partake of bad taste, although I will allow that Single Notes from a Bugle allowed to die away have a fine effect'. Guidebooks of the 19th century even made recommendations for how to obtain a satisfying result. According to the anonymous mid-century *Handbook*, 'A very pleasing effect is obtained by fastening a small musical box on a pole and elevating it up the dome'.⁴¹ Keene's *Handbook for Visitors to Agra* (1899) advised that 'Visitors will be disappointed with the celebrated echo of this dome if they attempt to play or sing any complicated melodies or roudades in it. The echo is so quick that it catches the notes and runs them into one another, so as to produce a most distressing discord, unless the notes chosen be such as form a natural harmony. The chord of seventh produces a very beautiful effect.'⁴² The devastating effect which the echo can have has been explored in recent years by Indian visitors through shouting and screaming in the dome.

FUNERARY AND COMMEMORATIVE RITES

When Mumtaz was buried first at Burhanpur, Shah Jahan visited her tomb every Friday, the holy day of the Muslim week, and said the first and briefest sura of the Qur'an, the *Fatiha*,⁴³ which is the customary prayer on such occasions, intended to give comfort to the soul of the departed:

- [1] In the name of God, the Lord of Mercy, the Giver of Mercy!
- [2] Praise belongs to God, Lord of the Worlds, [3] the Lord of Mercy, the Giver of Mercy, [4] Master of the Day of Judgement.
- [5] It is You we worship; it is You we ask for help. [6] Guide us to the straight path: [7] the path of those You have blessed, those who incur no anger and who have not gone astray.

After Mumtaz had been laid to rest in the Taj Mahal, whenever he visited it he would say the *Fatiha*, and he also appointed Qur'an reciters to sit in the mausoleum day and night, taking turns to read from the holy book to ask divine forgiveness for the departed queen.⁴⁴ The reciters and the tomb attendants had their quarters in the *Khawasspuras* [156-158] and were paid from the endowment that Shah Jahan established for the upkeep of the tomb (p. 100).

The mausoleum was furnished with carpets, chandeliers, 'and other ornaments of that kind'.⁴⁵ From the historian Khafi Khan we know that Shah Jahan had a *chadar* (sheet) made of pearls (p. 232) to be placed on Mumtaz's cenotaph every Friday and on the anniversary of her death, the *'urs*, which was celebrated with much funerary pomp, especially in the first years after her death, with

assemblies, prayers, banquets for the family, nobles and religious men, and feeding of the poor and giving alms (pp. 97-99).

The aim of prayer and good deeds was, as the historian Tabataba'i is at pains to point out, 'to secure greater repose and lasting tranquillity for those who have taken up residence in the nearness of divine mercy', 'to obtain divine forgiveness for the departed'.⁴⁶ (His explanation was perhaps intended to calm the concerns of the orthodox about prayers at tombs leading to the worship of the dead, which they considered as a form of idolatry.) 'Urs celebrations are still held annually at the Taj Mahal for Shah Jahan and Mumtaz Mahal on the anniversary of the emperor's death, 26 and 27 Rajab, the seventh month of the Muslim calendar.⁴⁷

In India, the tomb of an outstanding personage was and still is treated like the tomb of a Muslim saint. The Mughals developed a ritual of imperial visits of the tombs of their ancestors, in particular that of Humayun, the foundation mausoleum of the dynasty at Delhi [104].⁴⁸ According to the English merchant William Finch, who was at Agra in 1610, Akbar's tomb [107] was when still under construction already 'much worshipped both by the Moores [Muslims] and Gentiles [Hindus], holding him for a great saint. . . . Every one approaching neere makes his reverence and puts off his shoes, bringing in his hand some sweete smelling flowers to bestrew the carpets or to adorne the tombe.'⁴⁹ The account of a visit to Akbar's tomb by an Iranian delegation in 1621 tells us more about the practices of such a visiting ritual. The envoys removed their shoes at the main gate, and offered their obeisance to the tomb with the ceremonial gestures due to an emperor there and again inside the *pishtaq* of the mausoleum. They recited the *Fatiha*, and were presented 'on behalf of the illumined mausoleum' with a robe of honour (*khil'at*). If the tomb personified the one who was buried in it, the concern of orthodox circles was not without foundation. After the official part was over the Iranians were entertained with a picnic around the pool (in front of the southern *pishtaq*?), the party sitting on carpets and under tents brought especially from the imperial establishment. The conversation included a discussion of the architecture and Jahangir's involvement in the tomb's design.⁵⁰

The Taj Mahal has long been regarded as a place of pilgrimage by Indian Muslims, and even Hindus include it in their pious visits of sacred sites in the region of Braj, of the cities of Mathura and Vrindavan. When early British observers wrote down their impressions of the architecture of the mausoleum they also noted the behaviour of domestic visitors. Lady Nugent in 1812 mentions in her journal that 'the natives are proud of it, and hold it in great veneration. Many make pilgrimages to it. . . .'⁵¹ Lord Hastings, who came to the Taj Mahal as Governor-General of Bengal in 1815, was impressed when the soldiers of his body guard 'on approaching the tombs touched the pavement with their foreheads'. He donated 'a new silver tissue canopy, with proper standard-poles to be raised over the monuments' (i.e. the cenotaphs) to replace the ragged old one, to gratify the sentiments of the attendants.⁵²

Visitors take off their shoes before they enter the mausoleum and, until the present railing closed off the screen, would lay the traditional offerings of money and flowers on the cenotaphs (cf. 246). In the early 21st century I have even seen Westerners praying in the tomb chamber.