Candi, space and landscape : a study on the distribution, orientation and spatial organization of Central Javanese temple remains

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Candi Space and Landscape:

A Study on the Distribution, Orientation and Spatial Organization of Central Javanese Temple Remains

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Acknowledgements

My wish to research the relationship between Ancient Javanese architecture and its natural environment is probably born in 1993. That summer, I made a trip to Indonesia to complete the writing of my BA dissertation. There, on the upper slopes of the ever-clouded Ungaran volcano, looking at the sulfurous spring that runs between the shrines of Gedong Songo, I experienced the *genius loci* of Central Javanese architects.
After my BA, I did many things and had many jobs, not all of them being archaeology-related. Nevertheless, when I finally arrived in Leiden to enroll as a PhD student, the subject naturally imposed itself upon me. Here is the result, a thesis exploring the notion of space in ancient Central Java, from the lay-out of the temple plan to the interrelationship between built and natural landscape.
I would like to thank all those who accompanied me along this path, family members, friends, colleagues and scholars. My first thought goes to my partner, Olivier Merveille, who witnessed my enlightenment at Gedong Songo and kicked me every time I was tempted to give up. To my two little girls, Leïla and Shanti who made things a bit more complicated, especially once they found the on/off button of my computer, but brought so much joy in my life.
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Finally, I would like to thank my colleagues Dr. Julian Millie and Dr. William Southworth for having taken the trouble to correct my English, and Francine Brinkgreve for the translation of the summary into Dutch.

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Spelling

Sanskrit words, personal names, and place names, when they occur in an Indian context have been transliterated according to Monier Williams' system, with the difference that *ṛi*, *ś* and *sh* are transliterated *ṛ*, *ś* and *ṣ* (Monier Williams 1974).

Sanskrit and Old Javanese words, personal names and place names, when they occur in Old Javanese context, have been transliterated according to the spelling system used by Zoetmulder in his *Old Javanese-English Dictionary* (Zoetmulder 1982).

Indonesian words, personal names and place names are written in accordance with modern Indonesian spelling, except for names of authors, which are spelled as they are found in the respective publications.

Finally, for site names, I have retained the spelling used in the lists given to me by the Indonesian Centre for Preservation of Historical Heritage (Unit Pelaksana Teknis Balai Pelestarian Peninggalan Purbakala), without an attempt to standardize it. Thus, one will read *Arjuna* (with a), but *Loro Jonggrang* (with o's).

Note on the plans

All plans are mine, except where a specific source is mentioned. The reader should nevertheless be aware that they are not archaeological plans and that they have been drawn to fit the format of the present book.

Plans presented here are architectural reconstruction: they do not include deformations undergone by the structures. Furthermore, given the number of temples covered, I had to develop a method of quick drawing, which means that not all the components of the plan have been measured. For each temple, dimensions of the base (at original ground level), the edge of the platform, the temple body (at the base of the foot) and the *cella* have been measured on the four sides. Other parts have been measured on one side only (usually the southern side, except if its state of preservation was not sufficient). Complementary measurements have been taken on the other sides only when necessary.

For plans of large religious complexes – namely Loro Jonggrang, Plaosan, and Sewu – I have used plans of the Indonesian Centre for Preservation of Historical Heritage as background, but details of the shrines are mine.

CHAPTER 1

Introduction: Aims, Background and Methodology

Central Javanese temples were not built anywhere and anyhow, quite the contrary: their position within the landscape and their architectural design was determined by a series of socio-cultural, religious and economical factors. The starting idea for this book was that an analysis of the possible correlations between temple distribution, natural surroundings and architectural design would provide valuable clues as to how Central Javanese people structured the space around them, what factors were at work behind this structure and how the religious landscape[1] thus created developed.

The choice of focusing on religious architecture was dictated by the type of data available: the region has yielded very few material traces of settlement sites clearly attributable to the Hindu-Buddhist period.[2] It is nevertheless hoped that the present book, which gives much thought to the relationship between temples and settlements, will provide a good basis for archaeologists to identify settlement areas and develop excavation programs aimed at uncovering non-religious sites.

The choice of this approach, geographically-broad rather than site-specific, spatial rather than chronological, was of course guided by my own background and interests, but it also responds to a need in the field of Central Javanese archaeology. In the past, most of the works dealing with architectural remains were stylistic studies (Vogler 1949; Williams 1981), inventories (Verbeek 1891; Krom 1914a; Bosch 1915a), general architectural studies (Krom 1923; Chihara 1996) or monographs focusing on a limited set of temples, if not on a single monument (see Krom, Erp 1920; Blom 1935; Dumarçay 1977; 1981; 1993). In most of theses works, chronology was a main concern, whereas little attention was given to the occupation of the territory. The main exception is the recent thesis of Mundarjito (Mundarjito 2002), a work focusing on the relationship between archaeological sites and ecological resources in the districts of Sleman and Bantul (Yogyakarta). There was thus a need for research on temple remains that would complete Mundarjito's pioneer work, a study that would consider the region in its totality and focus on the spatial aspect, locating all the temple remains of Central Java within in a landscape, and, possibly, help to put the Hindu-Buddhist polities of Central Java on a map.

Therefore, my study takes into consideration all the temple remains of the core districts of Central Java, but only from the point of view of their distribution, orientation and spatial organization. Its chronological scope is the Central Javanese

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1 I use here C. Tilley and C. Crumley's definition of landscape as "the material manifestation of the relation between humans and their natural environment" (Tilley 1994:10; Crumley 1994:6). See later p.16

2 Archaeological excavations have focused on the direct surroundings of temples and monasteries. Ceramic surveys, susceptible to revealed settlement sites, have only been carried out in the north eastern part of Central Java (around Demak and Kudus).

The high density of population known in most of the districts of Central Java, the frequency of floods, *lahar* and *banjir*, the extensive wet-rice cultivation (with fields under water most of the year) and the absence of a fixed harvest period makes the planning and carrying out of ceramic surveys difficult and time-consuming – far beyond the time to be devoted to research within the limited context of a PhD. Besides, local ceramic is largely unknown – and thus non datable; baked at low temperature, it rarely resists exposure to heavy monsoon rains.

period (8th-10th century)[3] and it is geographically restricted to the central districts of the province of Central Java. Although I initially intended to cover the whole region, I quickly realized that given the extent of the territory, this would have required far more resources than those available to a single archaeologist in the four year frame of a PhD project. I therefore decided to focus on to the most important area in the history of the Central Javanese kingdoms, that is to say the plain of Yogyakarta, the Progo valley and the region around Mounts Merbabu-Merapi.[4] This area is of critical interest for a number of reasons: it is the cradle of the Central Javanese civilization, the vast majority of the temples were built there, and its contrasting topography introduces an interesting dichotomy between fertile plains and mountain peaks.

Previous Research on Central Javanese Temple Remains

Central Java is by no means a blank page in the history of archaeological research on monuments, and the present study is strongly indebted to the work of both Dutch and Indonesian archaeologists. The chapters focusing on temple distribution in particular could not have been written without the reports and inventories produced during the colonial period. Of the remains that were then visible, many have now disappeared. Without the descriptions published by Dutch travellers, civil servants and scholars, essential information would have been lost, and our view of the territory of the Central Javanese kingdoms would have been far less comprehensive.

As for the chapters exploring temple planning, they are largely based on ground plans drawn by the Dutch and Indonesian architects, engineers and archaeologists who have cleaned, preserved and restored Central Javanese temples, thereby saving them from the ravages of complete destruction and looting.

Colonial Era

Interest in Central Javanese antiquities was already noticeable during the 18th century. While villagers living near temples were often using archaeological remains as stone quarries, some temple sites must have been – as they still are today – regarded as "powerful" for the purposes of meditation. Certain antiquities were endowed with value as *pusaka* or magical artefacts (Lunsingh Scheurleer 2007). Javanese people were by no way insensitive to the Hindu-Buddhist remains of Central Java and considered them as places of interest. Testimony for this is found in several accounts of visits to ruined Hindu-Buddhist shrines, for example the visit to Borobudur by a crown prince of Yogyakarta shortly before 1758, or the tour of Prambanan related in the Sĕrat Cĕnthini, a Javanese text from the 19th century (Krom 1923 I: 335; Day 2002: 130-131).

In the 18th century the first Dutch official accounts of Central Javanese antiquities[5] were written and, in 1778, the *Bataviaasch Genootschap van Kunsten en*

[3] The history of the Old Javanese kingdoms is traditionally divided into two periods, the Central Javanese and the East Javanese, during which the epicentre of power was located respectively in Central and East Java. The shift is usually dated to around 928 A.D., being the date after which inscriptions are almost exclusively found in East Java.

[4] In terms of modern administrative divisions, it represents the Special Province of Yogyakarta (Daerah Istimewa Yogyakarta), and the districts (*kabupaten*) of Klaten, Magelang, Semarang and Boyolali in the Province of Central Java (Jawa Tengah).

[5] A description of Loro Jonggrang, for example, was written by C.A. Lons in 1733 (Leemans 1855: 10-12).

Wetenschappen was founded (Feestbundel 1778-1928; Groot 2006), a society that played an essential role in the development of archaeological research on Java.

From the early 19th century and notably after the pioneering work of Sir Thomas S. Raffles (Raffles 1817), the study of Ancient Javanese history and its material remains developed considerably among Western scholars. Nevertheless, the Dutch government proved slow to take official steps to promote the archaeological exploration of the monuments of Java. It is only in 1840 that the colonial government asked the district heads to collect data concerning antiquities found in their region and to send this information to the *Bataviaasch Genootschap* (Swieten, Kinderen 1862:516). In 1844, F. Junghuhn published the first list of the known temples (Junghuhn 1844).

In the early 1850s, a new impulse was given to "East Indian" studies by the publication of J.F.G. Brumund's *Indiana* (Brumund 1854) and the creation of an institute devoted to the languages and cultures of the Indonesian archipelago (Simons 1853:6). The *Koninklijk Instituut voor de Taal-, Land- en Volkenkunde van Néêrlandsch Indië* (KITLV) was linked to the Delft Institute, created in 1842, where would-be colonial officers for the Dutch Indies were trained (Simons 1853:6). Besides fields of learning that were directly useful for the exercise of colonial power, such as languages and geography, the KITLV also devoted time to the study of ancient history, including epigraphy and archaeology.

The development of scientific knowledge about ancient Javanese history necessitated a systematic inventory of the places of archaeological importance. In 1860, the *Bataviaasch Genootschap* sent a new circular to the district heads, requesting them to communicate lists of antiquities under their administration. In April 1862, J.F.G. Brumund was given the charge of travelling through Java and of drawing up an archaeological inventory (Swieten, Kinderen 1862:515ff). Unfortunately, the Dutchman died in Magelang in March 1863 before he was able to fulfil his mission (Verbeek 1891:2).[6] The same year, R.H.T. Friederich arrived in Java with the task of collecting inscriptions and continuing J.F.G. Brumund's mission. It was one of his travelling companions, N.W. Hoepermans, who finally produced the first inventory of the archaeological sites of Central Java (Verbeek 1891:2) – though it remained unpublished at the time.[7]

The end of the 19th century was a flourishing period for Javanese archaeology. On the one hand, the *Bataviaasch Genootschap*, now led by J.L.A. Brandes, worried by the state of preservation of certain monuments, including Borobudur, urged the colonial government to invest in archaeological research and restoration work (Krom 1923 I: 24). On the other hand, a dynamic, private archaeological society was set up in Yogyakarta in 1885 with J.W. IJzerman as president. In 1887, W.P. Groeneveldt, helped by J.L.A. Brandes, published a *Catologus der Archaeologische Verzameling* (Groeneveldt, Brandes 1887). One year earlier, in 1886, the *Bataviaasch Genootschap* asked R.D.M. Verbeek to investigate antiquities while he was taking part in a geographical survey of the Mojokerto area, in East Java (Verbeek 1891:4). In the following years, he extended his research to the whole island, publishing in 1891 his *Oudheden van Java*, the first official inventory of the antiquities of Java.

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[6] The work done by J.F.G. Brumund between April 1862 and his death in March 1863 was published in 1868 in the *Verhandelingen van het Bataviaasch Genootschap* (Brumund 1868).

[7] N.W. Hoepermans' inventory was finally published in 1913 by the *Oudheidkundige Dienst* (Hoepermans 1913).

Although temple remains were inventoried, cleaned and occasionally excavated and restored,[8] the Dutch Indies did not possess any official archaeological service before the 20th century. It was only in 1901 that the government decided to create such an organ.

The new archaeological service was named *Commissie in Nederlandsch-Indië voor Oudheidkundig Onderzoek op Java en Madura*. According to its official decree, its task was to describe the antiquities of Java and Madura, to draw and photograph them (and possibly to make castings of sculptures and inscriptions) and to prevent their decay (Brandes 1901:1). Under J.L.A. Brandes' leadership, the commission continued with restoration projects, among others at Borobudur, at Mendut and Pawon (Bernet Kempers 1978:49-69), and developed considerably the knowledge of Javanese art history through J.L.A. Brandes' studies on style, ornamentation and iconography (e.g. Brandes 1902; 1904).

From the death of J.L.A. Brandes' in 1905 until the year 1910, the position of head of the *Oudheidkundige Commissie* remained vacant. Consequently, its archaeological activities were slowed down and efforts were focused on the restoration of Borobudur, which was able to go on thanks to the setting up of an independent commission (in 1900) and to the dedication of T. van Erp.

As an inventory of the monuments had already been published in 1891 (Verbeek 1891), the commission decided to concentrate on sculptures, making inventories of collections and loose pieces everywhere on the island. This work was carried on by Knebel, who published his results in various articles in the *Rapporten van de Commissie in Nederlandsch-Indië voor Oudheidkundig Onderzoek op Java en Madoera*, from 1904 to 1911 (Knebel 1909a; 1909b; 1910a; 1910b; 1910c; 1911a and 1911b). From 1912 to 1913, this work was continued by Sell (Sell 1912a; 1912b; 1913).

In 1910, N.J. Krom was named president of the *Commissie voor Oudheidkundig Onderzoek*. With his appointment, interest for non-Javanese antiquities grew.[9] In 1912, he published his *Inventaris der oudheden in de Padangsche bovenlanden* (Krom 1912c). In Central Java, restoration work was initiated at *candi* Ngawen (Bernet Kempers 1978:187).

In 1914, the *Oudheidkundige Commissie* became officially the *Oudheidkundige Dienst in Nederlandsch-Indië*. This was not a mere name change, but brought also a modification of the aim and task of the archaeological service: its competences were extended to "non-Hindu" antiquities and included not only Java and Madura, but the entire territory of the Dutch Indies.

Java, however, was bustling with archaeological activities. It soon appeared necessary to establish an up-to-date list of monuments, including an-up-to date bibliography and references to the numerous photographs taken either by the *Commissie* or by the *Oudheidkundige Dienst*. The new inventory was compiled in Batavia, firstly under the supervision of N.J. Krom, and following him of F.D.K.

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[8] Limited excavation work was carried out, for example, at Borobudur, where it led to the discovery of a first base, hidden by a later adjunct, or at Loro Jonggrang and Ijo, where the temple pit was excavated (IJzerman 1891; Bernet Kempers 1978:69, 114). At the same time, Mendut underwent a first phase of restoration between 1896 and 1901 (Bernet Kempers 1978:54).

[9] During the 19th century, official archaeological research focused on Java, even though some individuals had already drawn attention to Sumatran antiquities, as R.D.M. Verbeek did in his *Hindoe-ruïnen bij Moera-Takoes* (Verbeek, Van Delden, Groeneveldt 1880).

Bosch (Krom 1914a; Bosch 1915).[10] Although both scholars had fieldwork experience, their inventory is first of all a compilation of written sources. Its name is eloquent in this regard: *Inventarisatie der Hindoe-oudheden op den grondslag van Dr. R.D.M. Verbeek's Oudheden van Java samengesteld op het Oudheidkundig Bureau*. The work started by N.J. Krom and F.D.K. Bosch in 1914-1915 was completed in 1923 by M.A. Muusses, who listed the sites of the *residenties* Pasoeroean, Besoeki and Madoera (Muusses 1923).

The newly gathered information would enable N.J. Krom to publish, in 1923, his *Inleiding tot de Hindoe-Javaansche Kunst*, a book that is still a necessary reference for those interested in ancient Java, being even now the only work to offer a complete overview of the evolution of the architecture of the Hindu Javanese period.

The work of the *Oudheidkundige Dienst* was not limited to the inventory of monuments: temple preservation became one of its main tasks. Under the supervision of N.J. Krom and his successors, numerous temples were consolidated and restored. The harsh criticisms of the early restorations at Mendut (1896-1904), Pawon (1903) and Loro Jonggrang (1918-1926), and the general satisfaction with van Erp's work at Borobudur, led to a sharp debate on the necessity for restoration and, finally, to the adoption of a reconstruction technique already well-known in Mediterranean archaeology but new for Southeast Asia: anastylosis. From now on, the use of new stones would be limited to the bare minimum, the aim being to rebuild the monuments with the original stones after careful study and measurement of both *in situ* remains and the loose architectural elements. Numerous shrines were then rebuilt, among others at Gedong Songo, Ngawen, Badut, Merak, Kalasan, Sari, Plaosan and Loro Jonggrang. Archaeological excavations, though, were in most cases limited to necessary restoration, and the emphasis on rebuilding became more strongly felt in the 1930s, when, due to the economic crisis, money was badly lacking.

Post-War Period

During the Second World War and the subsequent war of independence, the work of the *Oudheidkundige Dienst* was considerably slowed down; the heads of the *Oudheidkundige Dienst*, all of them Dutch, were dismissed, and only restoration work was carried on, with limited funds and mixed results (Bernet Kempers 1978:78).

From 1947 to 1953, A.J. Bernet Kempers became the head of the *Oudheidkundige Dienst*, renamed *Dinas Purbakala Republik Indonesia*. In 1953, the function was taken over, for the first time in history, by an Indonesian scholar, R. Soekmono. The *Dinas Purbakala* lacked qualified staff and finances. Between 1956 and 1965 the focus was, once again, on restoration rather than on research (Soejono 1987:213). And, indeed, the most urgent problem facing Indonesian archaeologists had a well-known name: Borobudur. Already in 1955, the young *Dinas Purbakala* understood that the task of restoring the world-famous monument was too huge for its own means. The first approach for assistance was then made to UNESCO, but in vain. An international team was finally set up in 1965; its work lasted until 1976 and involved technicians and scientists from Indonesia, France, the Netherlands and Japan (Dumarçay 1977; Bernet Kempers 1978:212-215).

International cooperation was not limited to the restoration of Borobudur; archaeological research also benefited from it, with the commencement of two joint projects between the *Dinas Purbakala* and the University of Pennsylvania, at Ratu

[10] In 1915, F.D.K. Bosch succeeded Krom as the head of the *Oudheidkundige Dienst*.

Boko and in the district of Rembang, in northern Central Java (Asmar, Bronson 1973; Asmar, Bronson, Mundarjito, Christie 1975).

The growth of archaeological activities led, in 1975, to the division of the former *Dinas Purbakala* into two distinct institutes, a centre for archaeological research, focusing on survey and excavations, and a centre for the preservation of historical heritage. The first heads of the newly created institutes were respectively Satyawati Suleiman and Uka Tjandrasasmita (Bernet Kempers 1978:87). After 1977, R.P. Soejono, Haris Sukendar, Hasan Ambary and Tony Djubiantono succeeded Suleiman as heads of the centre for archaeological reasearch.

This chronological overview of research on Central Javanese temple remains would be incomplete without mentioning the French architect Jacques Dumarçay, from the Ecole française d'Extrême-Orient, whose name will often appear in this work. He dedicated more than 30 years of his life to the study of Central Javanese architecture. His work on the construction techniques and building stages of Central Javanese temples helped in retracing the technical evolution of Hindu-Buddhist architecture and revealed how often and how deeply Central Javanese monuments were modified.

Historical Background: Dynastic History and State Organization

Before going further and discussing my methods of investigation, I would like to present the historical background of the Central Javanese period and, on this basis, explain why I make so little reference to dates, kings and events throughout this thesis.

Early Southeast Asia: Indian migrants, Indianization and Cultural Convergence

Commercial exchanges between India, Southeast Asia and China led, during the 2d and 3d centuries A.D., to the development and enrichment of early Southeast Asian polities, such as Funan, in the Mekong delta, and Lin-yi, in present-day Central Vietnam (Higham 1996:298-304). In Java, the presence of Indian and Indian-like artefacts is attested at the proto-historical graveyard of Batujaya (West Java, 2nd to 5th centuries A.D.) (Manguin, Agustijanto 2006a, 2006b; Higham 1996:303).

By the 5th century A.D., the maritime route passing through the Strait of Malacca became the main trade route between India and China (Higham 1996; Taylor 1992). Contacts between civilizations, and particularly between India and Southeast Asia, intensified, resulting in the emergence of new kingdoms all over Southeast Asia, from Burma to Bali, and in the appropriation by local societies of an Indian language, writing system and religions, along with the re-articulation of Indian culture to fit Southeast Asian realities (Wolters 1999). To what extent Indian ideas and techniques were transformed is not precisely known, and the process of transmission is also not clear, but there is no doubt that Southeast Asian cultures were affected deeply and on a long-term basis by their contacts with India.

Due to the important role played by Indian culture during the very period in which early Southeast Asian polities transformed into true states, it was first thought that state formation in the region was due to the presence of Indian migrants, either traders who settled along the coasts or warriors in search of new territories.[11] This view was

[11] See, among others, Krom 1923:45. For a more complete discussion about the *vaiśya* and *kṣatriya* theories, see: Kulke 1990:9-12; Wisseman Christie 1995:236-237.

first refuted by J.C. van Leur, who, in his 1934 thesis, introduced the concept of Indianization. It was later adopted by F.D.K. Bosch and I. Mabbett (Leur 1934; 1955; Bosch 1961a; Mabbett 1977a; 1977b; Kulke 1990; Vickery 1998). According to this theory, Southeast Asian societies were no more passive spectators, but true actors in the creation of new, Indianized states. In order to legitimize their position, local kings themselves summoned Indian Brahmins to come to Southeast Asia and become their political advisors and ritual specialists.

Nevertheless, the term "Indianization" in itself denotes an Indocentric view of Southeast Asian history. It downplays the role of local societies in their own development, as if they were lacking the tools to transform chiefdoms into states and had to call on India for help (Kulke 1990:13). This problem, already underlined by De Casparis (1983:3), has been highlighted by archaeological discoveries made in mainland Southeast Asia during the last 20 years (see Higham 1989; 1996). These findings showed that the region was a centre of cultural progress and not some backward province, notably so in comparison with South India. This reality led H. Kulke to formulate the hypothesis that cultural convergence between South India and Southeast Asia, rather than domination by one culture of the other, was the key to understanding the mutation of Southeast Asian polities (Kulke 1990:15).

In any case, the exact process of state formation and the introduction of Indian elements into Southeast Asian cultures is still a matter of debate. Conscious of their Indocentric flavour, I have avoided the use of the terms "Indianization" or "Indianized States". Instead, I have opted for the adjective "Hindu-Buddhist", even though it emphasizes the role played by imported religions to the detriment of local beliefs.

Dynastic History of Central Java: The Old and New Hypotheses

On the island of Java, the first tangible traces of a kingdom are the rock inscriptions of King Pūrṇavarman of Tārūma[12] (West Java) dating from *c.*450 (Sarkar 1971-1972:I,1-12), but most of the remains of early states are to be found in Central Java.

From the 8th to the early 10th century the region around the mountains of Merapi and Sumbing, in Central Java, was the centre of powerful kingdoms that built Hindu and Buddhist monuments as prestigious as *candi* Borobudur. Nevertheless, retracing the dynastic history of those kingdoms is not an easy task. Inscriptions, which constitute the main source of information, are scarce (about 200 for a period of two centuries). Moreover, most Central Javanese inscriptions are primarily concerned with details of land grants and not, as in the case of Khmer panegyrics, with royal genealogy. Gaps and uncertainties are therefore numerous and only the very broad lines of Central Javanese dynastic history are known with a decent level of certainty.

The first Central Javanese king to leave an inscription is king Sañjaya of Mataram who, in 732, consecrated a *lingga* at Canggal.[13] However, less than 50 years later, the kingdom founded by this Hindu prince appears to have been ruled by Buddhist kings from the Śailendra dynasty.[14] Around 850, power seems to have fallen again into the hands of a Hindu ruler.[15] A vast programme of temple building was then undertaken, the last one in Central Javanese history.[16] In one century, the Javanese civilization

[12] The name is spelled Tārūma in the Ci-Aruten inscription and Tārumā in the inscription of Jambu.
[13] Inscription of Sañjaya (also named inscription of Gunung Wukir), see Sarkar 1971-72, I, n° III.
[14] Inscription of Kalasan, see Sarkar 1971-72, I: n° 5.
[15] Inscriptions of Tulang Air (850 A.D.), see Sarkar 1971-72, I: n°16-17.
[16] This historical reconstruction is mainly based on Krom 1931; Casparis 1950; 1956; Coedès 1964.

gave to the world Borobudur and Loro Jonggrang, two masterpieces reflecting a refined art brought to a level of superb mastery. Besides those constructions, more than 200 smaller temples were scattered over the region, from the Dieng plateau and the slopes of Mount Ungaran to the banks of the Progo River and the plain of Yogyakarta.

In the first half of the 10th century, the epicentre of the Javanese civilization moved to the eastern part of the island (Krom 1931:206; Boechari 1997). For more than four centuries after this date, kings resided and built their temples in East Java. In contrast to Central Java, the Eastern Javanese period is relatively well known, since it left not only inscriptions but also manuscripts of historical character. Central Java was not to become powerful again until several centuries later, through the impetus given by Islam.

Achieving deeper understanding of the details of this history is a more delicate task. Difficulties arise not only from the scarcity and the nature of the inscriptions, but also from Javanese royal titulature: to name a ruler, inscriptions can use his consecration name (such as Indra Sanggrāmadhanañjaya), his royal title (*śrī mahārāja*) or his apanage title (which differs for each king, for example *rake* Pikatan), not often accompanied by his personal name (*dyaḥ* Salaḍū in the case of *rake* Pikatan). In such conditions, it cannot always be clearly determined precisely who is being referred to. Two inscriptions, however, throw some light on this rather confusing picture, namely the Mantyāsiḥ I inscription (907 A.D.), also known as "Balitung's list", and the Wanua Tĕngaḥ III inscription (908 A.D.), discovered in the 1980s.[17] The two records give a list of the kings who preceded Balitung on the throne of Mataram. Unfortunately, the lists do not correspond entirely.

In his *Hindoe-Javaansche geschiedenis*, N.J. Krom was of the opinion that the main dynasty of Central Java was a Hindu one, but that the line of Hindu kings had been interrupted by the rule of one or two Buddhist rulers. Kings belonging to this "Śailendra *interregnum*" were *rake* Panangkaran (who issued the inscription of Kalasan in 778 A.D.) and Indra Sanggrāmadhanañjaya, mentioned in the inscription of Kĕlurak (782 A.D.), but not listed in the Mantyāsiḥ I inscription. Using Balitung's list and the inscriptions contemporary with the different rulers, N.J. Krom reconstituted the list of Javanese kings as follows (Krom 1931:95-196):

Apanage title	*Other names*
Ratu Sañjaya	
Rake Panangkaran / Paṇaṃkaraṇa	
Rake Panunggalan	
Rake Warak	
Rake Garung	Samaratungga?
Rake Pikatan	Samaratungga?
Rake Kayuwangi	Sajjanotsawatungga
Rake Watuhumalang	
Rake Watukura	Balitung
Rake Hino	Dakṣa
Rake Layang	Tulodong
Rake Pangkaja	Wawa

Twenty years later, in his ground-breaking thesis, J.G. de Casparis gave a rather different picture (Casparis 1950). Taking up again an idea already expressed by van

[17] For translation and bibliography of the Mantyāsiḥ I and Wanua Tĕngaḥ III inscriptions, see Sarkar 1971-72, II: n° LXX and Wisseman Christie 2002-04: n° 152, 161.

Naerssen (Naerssen 1947), De Casparis considered that the inscription of Kalasan refers not to one, but to two kings, a vassal king named Paṇaṃkaraṇa and his Śailendra suzerain, whose personal name is not mentioned in the inscription. For J.G. de Casparis, the Śailendras were a powerful dynasty, which ruled over Central Java from *c.* 775 A.D. to *c.* 832 A.D. It is only around 838/842 that a Hindu prince from Sañjaya's lineage regained full control of the region. For De Casparis, Central Javanese dynastic history between 732 and 882 A.D. can be summarized as follows (Casparis 1950:133; 1958:20):

Sañjaya family	*Śailendra* family
Ratu Sañjaya (*c.*732-760) *Rakai* Panangkaran (*c.*760-780) *Rakai* Panunggalan (*c.*780-800) *Rakai* Warak (*c.*800-819) *Rakai* Garung (*c.* 819-838) *Rakai* Pikatan (*c.* 838/842-856) *Rakai* Kayuwangi (*c.* 851-882)	Viṣṇu Dharmatungga (*c.* 775-782) Indra Sanggrāmadhanañjaya (*c.* 782-812) Samaratungga (*c.* 812-832)

One of the merits of De Casparis' hypothesis was its explanation of why the Sanggrāmadhanañjaya, mentioned in the Kĕlurak inscription, was not listed by Balitung: the Mantyāsiḥ I inscription would only mention rulers from the Sañjaya dynasty, avoiding invocation of the memory of the Śailendra domination. Although de Casparis sensed a rivalry between both dynasties, he did not consider Central Java as a battlefield for religious wars. Rather, he drew attention to the fact that intermarriage between the two lines did exist, and showed that Buddhism and Hinduism co-existed peacefully (Casparis 1950:131).

Although he repeated and developed his Sañjayava *versus* Śailendra theory in 1956 (Casparis 1956), the hypothesis would never be approved of unanimously by the scholarly community. In a 1958 paper, R.M.N. Poerbatjaraka questioned the very existence of separate Sañjaya and Śailendra dynasties. He equated the kings mentioned in Balitung's list (and thought to be from the Sañjaya dynasty) with kings called Śailendra in other inscriptions.[18] For him, Balitung's list, written in the Old Javanese language, would use Javanese names and titles, while Sanskrit names would be mentioned in Sanskrit inscriptions (Poerbatjaraka 1958:263).

The discovery, in the 1980s, of a second royal list from the reign of Balitung, the Wanua Tĕngaḥ III inscription, shattered the reconstruction of Central Javanese history (Kusen 1994; Wisseman Christie 2001). Although it was written only one year after the Mantyāsiḥ I inscription, Wanua Tĕngaḥ III mentions more royal names, adding new kings in between those known through the Mantyāsiḥ I inscription. Furthermore, the inscription makes no reference whatsoever to dynasties, and does not mention any family relationship between one ruler and the next, showing the limited state of our understanding of lineage and succession during the Central Javanese period.

In the light of the Wanua Tĕngaḥ III inscription, J. Wisseman Christie proposes the following historical framework (Wisseman Christie 2001:32-47):

[18] In Java, the name Śailendra is mentioned in the inscriptions of Kalasan (778 A.D.), Kĕlurak (782 A.D.), Abhayagiriwihāra (792-793 A.D.) and Kayumwungan (824 A.D.). It is also mentioned in inscriptions found in the Malay Peninsula and in India (Wisseman Christie, 2002-04: n°7).

Phase I:	Foundation	(716-746)	*ratu* Sañjaya
Phase II:	Expansion and consolidation	(746-827)	*rake* Panangkarana *dyaḥ* Pañcapaṇa =? Indra Sanggrāmadhanamjaya *rake* Panaraban/Panunggalan =? Dharmmottunggadewa *rake* Warak *dyaḥ* Manara =? Samarattungga *dyaḥ* Gula
Phase III:	New directions and Eastward expansion	(828-885)	*rake* Garung *rake* Pikatan *dyaḥ* Salaḍū *rake* Kayuwangi *dyaḥ* Lokapāla
Phase IV:	Political turbulence	(885-898)	*dyaḥ* Tagwas *rake* Panumwangan *dyaḥ* Dewendra *rake* Gurunwangi *dyaḥ* Bhadra *rake* Wungkal Humalang *dyaḥ* Jbang
Phase V:	Stabilization and growing East Javanese influence	(898-910)	*rake* Watukura *dyaḥ* Balitung

Although it provides a basic chronological framework, the Wanua Tĕngaḥ III inscription is far from being a solution to all the problems of Central Javanese chronology. It does not, for example, mention a Śailendra dynasty, neither does it use Sanskrit names. Do some of the kings listed in the Wanua Tĕngaḥ III inscription belong to the Śailendra dynasty? Not everybody would answer this question in the affirmative. Boechari, Kusen and Wisseman Christie, following in this the single dynasty theory of Poerbatjaraka, have tried to equate the Śailendra kings known through Sanskrit inscriptions with the various *rake* listed in the Wanua Tĕngaḥ III record (Poerbatjaraka 1958:263; Kusen 1988; 1994; Boechari 1989; 1990; Wisseman Christie 2001:34-35). Hence Wisseman Christie's identification of *rake* Panangkaran with Indra Sanggrāmadhanamjaya, *rake* Panaraban with Dharmmottunggadewa, and *rake* Warak with Samarattungga (Wisseman Christie 2001:35) .[19] As for R. Jordaan he has strongly opposed the single dynasty model, insisting on the existence of evidences in inscritpions and Chinese records showing that they were at least two centres of power in Central Java (Jordaan 2003:3). Besides, the problem of the existence of a Sañjaya dynasty remains: we know, from a series of inscriptions, that at least three kings of Central Java claimed to belong to a Śailendra dynasty,[20] but there is no mention in any inscription of a *Sañjayavaṃśa*.

State Organization in Central Java

Although during the first half of the 20th century and directly after World War II, scholarly emphasis lay mainly on dynastic history, the 1960s have seen interest in economic, political and administrative history growing considerably. Influenced by the decolonization process and the intellectual trends which have marked the disciplines of sociology and anthropology, historians have proposed contrasting

[19] J. Sundberg, without dismissing the single dynasty theory, has rightly noticed that the Wissmeman Christie's argument is specious, since there are no royal administrative inscriptions from the reigns of Panangkarana, Panaraban and Warak that would come to confirm that Javanese titles were used in the more prosaic Javanese language inscriptions (Sundberg 2006:21).

[20] These kings are known as Sanggrāmadhanamjaya (Kĕlurak - 782 A.D.), Dharmmottungadewa (Abhayagiriwihāra - 792-793 A.D.) and Samarottungadewa (Kayumwungan - 824 A.D.). See Sarkar 1971-72, I: n° 6, 6a and 10.

analyses of Central Javanese statehood, oscillating between a centralized kingdom and a mosaic of inter-connected, though independent polities (Heine-Geldern 1942:21; Weber 1978:53; Kulke 1986; Wisseman Christie 1986).

The overstated picture of a unified state ruled over by a powerful *mahārāja* was questioned by, among others, Boechari and H. van Naerssen. Both scholars insisted on the multiplicity of centres that would have characterized the Central Javanese period. For Boechari, the kingdom was divided into autonomous areas governed by *raka*s who could act independently from the king (Boechari 1963). For his part, H. van Naerssen insisted on the existence, at least until 873 A.D., of several independent rulers (Naerssen 1976:297-298; 1977:38-40).

The reflection on the nature of Central Javanese states led Wolters to formulate his *maṇḍala*-theory. According to him, Ancient Javanese states were organized as *maṇḍala* (Wolters 1982:16-32). At the centre, a *mahārāja* claims hegemony over surrounding vassals, while the latter enjoy substantial independence. Such a *maṇḍala* state would have been a rather unstable political construction with fluctuating boundaries; petty rulers came in and out the *mahārāja*'s sphere of influence, according to their own interests of the time.

These theories, both the centralized state and the *maṇḍala* model, have received strong criticism (Wisseman Christie 1986). On the one hand relationships between central government and local communities seem to have been of a more complex than presented in the *maṇḍala* model. On the other hands these relations seem to have evolved over time – whereas the state of the *maṇḍala* is of a rather static nature.

The state apparatus seems to have been quite limited and, according to the inscriptions, the *raka* were the only level of administration between the *mahārāja* and the villages (Casparis 1986:51, 56-59; Wisseman Christie 1986:70). There are no traces of the multiple-tiered administration of centralized states. Nevertheless, the authority of the centre was not purely ritual, as suggested by the *maṇḍala* theory: the *mahārāja* was directly entitled to levy taxes and transfer tax rights. However, neither the *mahārāja* nor the *raka* held rights over land: most of the land ownership remained in the hands of villagers; the king's rights were mainly limited to its produce (Wisseman Christie 1992:182).

Some *watěk*s - the main administrative division of the Central Javanese period - appear to have evolved out of the old independent chiefdoms - sometimes quite recently, such as the *watěk* of Halu. These newly incorporated territories, where the power of the local ruler – the *raka* – was probably still strong, seems to have remained geographical units for a while (Wisseman Christie 1986:70), whereas a process of geographical disintegration was already on its way in other parts of the region. At all events, by the second half of the 9th century, the territories under the jurisdiction of the different *watěk* no longer formed a geographical unit. *Watěk* holdings had become highly dispersed and, by that time, *raka*s were certainly not ruling over autonomous, potentially independent regions as formulated in the *maṇḍala* model (Wisseman Christie 1986:70-71).

The picture created from all this, therefore, is neither one of a strongly centralized state helped by a multiple-tier administration, nor that of a mosaic of independent states. Unfortunately, no satisfying alternative model – i.e. a model that would account for the relative autonomy of village communities, the role of the *raka* over time and the growing importance of the central administration – has been formulated yet.

Chronology of Central Javanese Monuments: Absence of Consensus

Another major and recurring problem of Central Javanese archaeology is dating temples. There is, in this matter, little consensus among scholars – and there are almost no certainties. Specialists agree on one thing: the vast majority of the remains of Central Java date back to the Central Javanese period. In other words: they were built between the 8th and the middle of the 10th century. Nevertheless, almost everything else is open to debate, commencing with the starting date of the Central Javanese period. D. Chihara and R. Soekmono proposed the second half of the 7th century (Chihara 1996:91; Soekmono 1979:458-459), but other scholars usually prefer the date of 732 A.D., which corresponds to the earliest dated inscription of Central Java, the inscription of Canggal (Williams 1981; Dumarçay 1993).[21]

Where other sources are lacking, the association of a temple with a dated inscription is the only way to ascribe an absolute dating to the building. However, using inscriptions to date Central Javanese temples can be quite tricky. In contrast to the Khmer tradition, Central Javanese stone inscriptions are not carved on doorjambs, but on movable slabs.[22] Almost none of them has ever been found *in situ*, that is to say, in direct physical proximity to a construction.

Dating a temple is made even more complex by the numerous restorations, rebuildings and transformations undergone by some structures. Neither Borobudur, Sewu, Sojiwan nor Kalasan - to cite but a few of the best-known temples - was built in one phase. Before associating a temple with an inscription, one should question the epigraphic record and determine with precision what is being dated by the inscription: the foundation of the shrine, a restoration, a land donation, etc. Two temples nicely exemplify the complexity of dating Central Javanese temples on the basis of inscriptions: *candi* Gunung Wukir and *candi* Kalasan.

Candi Gunung Wukir is usually associated with the inscription of Canggal,[23] which was found on the Gunung Wukir hill.[24] The geographic proximity with *candi* Gunung Wukir and the mention, in the inscription, of a *śaiwa* sanctuary on a hill (which nicely fits *candi* Gunung Wukir) makes the association highly probable. Therefore, remains of *candi* Gunung Wukir were thought to date back to 732 A.D., corresponding to the date mentioned on the stone slab. The temple was then used to define an early Central Javanese architectural tradition, characterized by the use of square, flat mouldings (Soekmono 1979:472; Williams 1981:38). Nevertheless, on the basis of a study of building techniques, Dumarçay was able to show that the temple underwent restoration work at a later time, probably around the mid-9th century (Dumarçay 1993:80). The temple visible today should not, therefore, be used to exemplify an 8th century tradition.

A similar process is witnessed at *candi* Kalasan, which is associated with the inscription of Kalasan (778 A.D.). The latter record was discovered several hundred meters from the temple, beside the railway tracks (Brandes 1886a:240), in an area

[21] The inscription of Tukmas is thought to be earlier. It is dated on paleographical grounds around the mid 7th century A.D. (Wisseman Christie 2002-04: n°1).

[22] This is true for the dated stone inscriptions, most of which record the foundation of and donations to temples. Undated, short inscriptions have however been found on temple walls, at Borobudur and Plaosan for example. For the latter, see de Casparis 1958.

[23] For a transcription and English translation of the Canggal inscription, see Sarkar 1971-72, I: n°III.

[24] The exact location of the main fragment is not known, but the corner was found during excavations of the temple's remains (Bernet Kempers 1938:18).

where there are found several other Buddhist remains. Even if the association of the Kalasan inscription with *candi* Kalasan is correct, and that is already questionable, it is clear from the text that it relates to the temple foundation. In 1940, Dutch archaeologists dismantled part of the temple and discovered that the present-day remains covered an older shrine (Bernet Kempers 1940:20). Further research showed also that the temple visible nowadays was remodelled after construction (Bernet Kempers 1982:49-53). As in the case of *candi* Gunung Wukir, the inscription refers to the temple foundation, that is to say to the original *candi* Kalasan. Therefore, even if indeed the inscription relates to *candi* Kalasan, temples showing similarities with Kalasan should not be dated to *c*. 778 A.D., but must be related to the second or third building phase of *candi* Kalasan.

Scholars studying Central Javanese art and archaeology have tried to come up with a relative chronology of the temples, locating each construction in a logical sequence according to changes in their ornamentation (Vogler 1949; 1952; 1953), mouldings (Soekmono 1979; Williams 1981) or building techniques (Dumarçay 1981; 1993). Nevertheless, their different approaches have sometime led to strikingly different results.

E.B. Vogler proposed a division of the architectural history of Central Java into five different phases, the first two phases being hypothetical (since no building from those stages could have been preserved up to the present), that last one corresponding with the East Javanese period (Vogler 1953).

Phase III	*760-812 A.D.*	*Candi* Arjuna, Semar, Gatotkaca, Borobudur, Pawon, Mendut, Kalasan, Sari, Lumbung, Sewu.
Phase IV	*812-838 A.D.*	Ngawen.
	838-898 A.D.	Puntadewa, Gedong Songo C, Plaosan, Sojiwan.
	898-928 A.D.	Loro Jonggrang.
Phase V	*928 A.D.-*	Sembodro, Ratna (Gedong Songo I), Gunung Wukir, Pringapus, Srikandi, Gedong Songo A and B.

In contrast, R. Soekmono, in his *Archaeology of Central Java before 800 A.D.*, proposes more ancient datings and a different chronological sequence. *Candi* Arjuna, placed by E.B. Vogler early in the period from 760 to 812 A.D., is ascribed a date between 650 and 730 A.D. by R. Soekmono (Vogler 1953:269; Soekmono 1979:466, 472). In a similar way, *candi* Srikandi is considered by R. Soekmono as one of the earliest temples of Central Java, together with *candi* Arjuna, while E.B. Vogler was of the opinion that it was a late monument, contemporary with the East Javanese period (Vogler 1953:272; Soekmono 1979:466, 472)

R. Soekmono's tentative chronology of Central Javanese temples built before 800 A.D. is as follows (Soekmono 1979:472):

Phase I	*650-730 A.D.*	Arjuna, Semar, Srikandi, Gatotkaca.
Phase II	*730-800 A.D.*	(a)[25] Puntadewa, Sembadra, Bima, Gedong Songo, Muncul.
		(b) Gunung Wukir, Pringapus, Kalasan, Sewu.
		(c) Batumiring, Sambisari, Gebang, Lumbung.

A similarly early chronology is used by D. Chihara, while J. Williams and J. Dumarçay date the earliest temples to 720-750 A.D. and the latest ones to 850-900 A.D. (Williams 1981; Dumarçay 1993; Chihara 1996). A predominant concern of these three chronologies is to take into consideration the various building phases of the temples and to distinguish the dating of these phases. The architect J. Dumarçay based his study on building techniques, and was particularly careful in examining the possible rebuildings and transformations undergone by the temples. This is reflected in his chronology of the monuments of Central Java.

730-750 A.D.	Gunung Wukir 1, Arjuna, Semar, Puntadewa 1, Gatotkaca.
c.750 A.D.	Srikandi, Puntadewa 2, Gedong Songo II-VI.
750-790 A.D.	Kalasan 1, Sewu 1.
790-800 A.D.	Kalasan 2, Sewu 2, Sojiwan 1, Lumbung 1, Bubrah 1, Mendut 2, Borobudur 2.
800-830 A.D.	Bima 2, Gedong Songo I, Pawon 1-2, Ngawen, Kalasan 3, Borobudur 3.
832-856 A.D.	Loro Jonggrang
830-900 A.D.	Plaosan, Sambisari, Gebang, Banon, Banyunibo, Sari, Sewu 3, Mendut 3, Borobudur 4, Pringapus, Lumbung (Muntilan), Asu, Pendem, Ijo, Barong, Merak.

A simple look at the above tables shows the magnitude of the problem of dating Central Javanese temples. Even though everyone seems to agree that *candi* Arjuna is one of the oldest temples, there is no consensus about what 'early' means in terms of absolute chronology. It is 650-730 A.D. for R. Soekmono, 680-730 A.D. for D. Chihara, 730-750 for Dumarçay, 730-770 for J. Williams and *c*. 760 for E.B. Vogler (Vogler 1953; Soekmono 1979; Williams 1981; Dumarçay 1993; Chihara 1996). As for Gunung Wukir, it is dated *c.* 730 A.D. (on the basis of the inscription) by R. Soekmono, D. Chihara and J. Williams, but, according to E.B. Vogler, its style makes it more likely that it dates back to the East Javanese period (Vogler 1953; Soekmono 1979; Williams 1981; Chihara 1996).

Chronological framework of the present book

The great uncertainties concerning the chronology of Central Javanese monuments have compelled me in this research to limit my references to dates, and to implement very broad chronological lines. The only chronological framework I refer to is the classification of Central Javanese temples into an early and a late group – based on a stylistic analysis of several ornamental motifs - as proposed by M.J. Klokke in a recent publication (Kokke 2006).

[25] In this phase, (a), (b) and (c) corresponds to different architectural traditions called by R. Soekmono (a) New Dieng Style (in contrast to Phase I, which he names Early Dieng Style), (b) Early Śailendra Style and (c) a merging of the New Dieng style and the Early Śailendra style (Soekmono 1979:472).

Early period (up to c. 830 A.D.)	*Late period (after c.830 A.D.)*
Candi Banyunibo, Borobudur, Bubrah, Dieng, Gana, Gebang, Gedong Songo,[26] Kalasan, Lumbung (Prambanan), Mendut, Merak, Pawon, Pendem, Ratu Boko,[27] Sari, Selogriyo, Sewu.	Candi Asu, Barong, Gedong Songo I, Ijo, Kedulan, Loro Jonggrang, Lumbung, Morangan, Ngawen, Plaosan Kidul, Plaosan Lor, Pringapus, Ratu Boko,[28] Sambisari, Sojiwan.

This periodization represent the first result of a research on style and chronology which, together with the present thesis, is part of a wider project directed by M.J. Klokke and entitled *Spatial structures and meaningful motifs: temple networks as visual representations of the religious foundations of Central Javanese kingdoms (c. A.D. 750-850)*. The results presented here – dealing mainly with space – will later on be merged with the conclusions from the stylistic research conducted by Klokke (2006).

The main drawback of the absence of absolute chronological references is that it does not allow a precise mapping of the evolution of the religious occupation of the territory, even though the factors and mechanisms that led to the development of the built landscape (relations between temples and settlements, trade routes, natural features etc.) can be traced back - to some extent. The maps presented here show all the remains from the Central Javanese period, but the temples to which they correspond are not necessarily contemporaneous with one another. Even if a stylistic study one day comes up with an accurate chronology of Central Javanese shrines, it will not solve all the problems: only excavations would give us adequate information to determine the duration of the occupation of the various sites. Unfortunately, the archaeology of Central Java is still in its infancy: sites are still widely non excavated, old-fashioned excavations techniques make the analysis of excavation material difficult[29], there is a lack in ceramic expertise[30] and science-based dating is unavailable for most of the sites. However, until we have this type of information at our disposal, it will be difficult to get a precise idea of the actual religious landscape at any specific date in the history of Central Java. Some early buildings were obviously still in use in later times – such as Gunung Wukir and Pikatan[31] – but it might not be the case with all the shrines and monasteries. One should keep this in mind when looking at the maps, since they might easily lead the unaware reader to over-estimate the number of temples in use at any one time.

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[26] At the exception of Gedong Songo I.

[27] The meditation platform (*pendopo*) in the southeast part of the site.

[28] Western *gopura* and entrance gates to the bathing complex.

[29] Shards and other archaeological artefacts are numbered according to excavation square and depth (the reference being the modern ground level), but, most of the time, not according to archaeological unit. Problems arise when one suspects a sloping of the archaeological layers, a foundation trench, a pit hole or any other sort of disturbance.

[30] Local ceramics are broadly classified into coarse and fine paste, but attempts to trace stylistic and technical developments are still to be made, as well as attempts to characterised assemblages. Imported wares are better known; only a handful of sites have been gratified with visits of experts in Chinese ceramics though.

[31] The foundation of *candi* Gunung Wukir goes back to the first half of the 8th century, but it was apparently largely rebuilt during the 9th century (see below, p. 162, note 50) The first recorded land grant to the monastery of Pikatan (the remains of which are still to be identified) is dated to 746 A.D., but additional land was given to the same monastery in 908 A.D. (Wanua Tengah III inscription; see Wisseman Christie 2002-2004, nr 161).

Landscape archaeology in Central Java

Although this book says little about chronology, it says much about space. As mentioned above, my intention was to favour a geographically broad approach, and to consider temples as parts of a landscape. Therefore, I have employed the usual tools of landscape archaeology, plotting all the sites on a map, identifying concentrations of temple remains and cross referencing information from distribution maps with topographical and hydrographical data. I have concluded this approach with a reflection on the built landscape of of Central Java.

In this book "landscape" and "environment" have a specific, distinct meaning which, as they come over and over, is probably worth explaining here. In the absence of a more appropriate term, I use the words "natural environment" to designate geographical features such as hills, mountains, rivers etc. – everything that is related to topography and hydrography, while "landscape" is used in quite a different way. Following C. Tilley and C. Crumley, I regard it as a medium rather than a container for human action; it is understood as the material manifestation of the relation between humans and their natural environment (Tilley 1994:10; Crumley 1994:6). According to this point of view, landscape shapes human experience and is in its turn shaped by man. The result is a complex palimpsest of human society, reflecting its practical exigencies, but also its mythical, cosmological and ritual aspects. To quote Tilley:

> The landscape is continually being encultured, bringing things into meaning as part of a symbolic process by which human consciousness makes the physical reality of the natural environment into an intelligible and socialized form. The landscape is redolent with past actions, it plays a major role in constituting a sense of history and the past, it is peopled by ancestral and spiritual entities, forms part and parcel of mythological systems, is used in defining social groups and their relationships to resources. (Tilley 1994:67)

In the present thesis, although I sometime analyze Central Javanese landscape in the light of ecology and exchange networks, I have tried to introduce elements inspired from a more phenomenological and symbolic approach to landscape. In my analysis, I have considered not only the position of a site on a map, but also what is actually seen by a human subject visiting the place. In my analysis of temple orientation, besides the technical approach, I took into consideration not only the architecture itself, but also how architecture may guide the sight of the devotee towards a specific point in the landscape. References to the religious and cosmological background of Central Javanese society were also important in my approach. I have scrutinized inscriptions for clues to understand how ancient Javanese people viewed their landscape in inscriptions.[32] Besides, comparisons between actual temples of Central Java and precepts exposed in Indian treatises on architecture have yielded interesting results, showing how the architects managed to relate a physical building with Hindu-Buddhist cosmological concepts.

In this respect, the present study differs from and complements the work of Mundardjito, the pioneer of spatial analysis in Central Javanese archaeology (Mundardjito 2002). While Mundarjito focuses on ecology and uses temple remains exclusively to throw light on settlement patterns in Central Java (Mundardjito

[32] I am myself neither an epigraphist nor a Javanist and I had to rely mainly on other people's translation. It goes without saying that the subject of the perception of landscape in epigraphical record would require a more thourough study by an expert of the field.

2002:35), I have for myself tried to keep a broader approach, considering temples not only as markers for settlements – which they not always are, but also as possible remnants of other human activities, such as trade and religious practices. Mundarjito himself, in his conclusion, touched on the problem of his exclusive ecological approach in the following terms:

> (…) there is a small number of sites which are not situated on land of high potential, or, in other words, the location of these sites is not based on the abovementioned ecological potential. […] Other archaeologists should of course approach them using other points of view. (Mundardjito 2002:376)

The geographical scope of the present study is wider than that of Mundarjito. Mundardjito focused on the districts of Sleman and Bantul, in the province of Yogyakarta; I chose to include not only Yogyakarta, but also parts of the province of Jawa Tengah (Central Java).

Those who have read the thesis of Mundardjito will notice that I draw on a more limited amount of sites for Sleman and Bantul than he presents in his book. Mundardjito uses three types of archaeological sites: 1) unmovable archaeological remains, that is to say (ruined) buildings and building foundations, 2) loose architectural elements, 3) movable artefacts believed to be in their original location. My own inventory, however, only takes into consideration buildings (standing or in foundation) and certain sites belonging to Mundarjito's second category. I have deemed it too problematic to determine whether "movable artefacts" (i.e. loose sculptures) had actually been moved or not. In the absence of precise archaeological record mentioning the conditions of discovery of the sculptures and knowing that today and in a recent past, statues have attracted collectors of all kinds, I have decided not to include sites where only sculptures were found.[33]

Methodology

The research presented here followed three steps: data gathering (through literature and fieldwork), drawing of archaeological maps, and analysis.

As no inventory of Central Javanese temple remains had been published since 1915, it soon appeared that a new, up-dated inventory was needed. Therefore, I first gathered information from Dutch and Indonesian sources.

Temple remains: a definition

In contrast to the older inventories, my inventory only takes into account temple remains. Sites where only a few sculptures, an inscription or metallic material have been found are excluded. This choice was made in order to gather a corpus as homogeneous and reliable as possible for a distribution study. Temples are fixed landmarks whereas inscriptions and sculptures are easily moved from one place to another, and are more difficult to use within the framework of a historical study of the territory.

Paradoxically, identifying a temple is not as easy as it may seem. Many of them have been reduced to a few scattered stones lying along a country road. I considered as temple remain any site that 1) still shows *in situ* building features, 2) has once been recognized as a construction, 3) shows stones in sufficient quantity and variety to

[33] In a few exceptional cases, however, such sites are mentioned in the inventory: see p.18.

suggest the former presence of a temple,[34] and 4) the location of the discovery of an unusually large *yoni*[35] or sculpture of sufficient dimensions to make it unlikely that it could have been moved.[36]

Data gathering

As noted above, an up-to-date inventory of Central Javanese temple remains was required in order to take into account the research completed since the last one was produced (1915).

I collected data from the older Dutch inventories and the modern Indonesian lists. Information was then completed by reading the various archaeological reports, both Dutch and Indonesian, with an emphasis on reports issued during the last three quarters of the 20th century.[37] As far as possible, I tried to trace back changes in temple names and to build up a table of correspondences between the different inventories.

From these printed sources, I drew up a provisional list of temple remains, including localization and description (when available). Sites were plotted on topographical maps as precisely as possible given the available information. At this stage, various maps were used, in order to find the *desa* and district names mentioned in the different inventories. Four sets of maps were utilised in the present research:

1:25 000 – Java en Madoera – Topografische Dienst: first made in the 1910s, revised in the 1930s.

1:50 000 – Java en Madoera – Topografische Dienst: first made in the 1910s, revised in the 1920s and late 1930s.

1:50 000 – Java, Madura and Bali – US Army Map Service: 1940s.

1:25 000 – Peta Rupabumi Digital Indonesia – Bakosurtanal: 1990s.

In order to check the accuracy of data and information given in written sources, I carried out fieldwork in the regions of Yogyakarta, Magelang, Semarang and Boyolali, where most of the temple remains are located. Unfortunately, due to a lack of time and resources, I could not carry out fieldwork in the outer regions. Information for the areas around Temanggung, Wonosobo and West Central Java comes therefore mainly from written sources, although I visited the main sites. The choice not to investigate those regions through fieldwork was a painful one, but it was made with the knowledge that the area was the only one for which I could rely on a modern, up-to-date inventory, published by the Balai Arkeologi (Tjahjono 1994-2000).

The first 6-months period of fieldwork focused on the Daerah Istimewa Yogyakarta and the southern part of the district of Magelang and was carried out from

[34] I set the limit at a minimum of 15 stones. These should include plain stones as well as carved ones. Carved stones are indeed less representative: because of their artistic value, they are often moved and used in gardens and mosque as ornaments. Exceptions have been made for sites where the stones were still partly buried in the ground.

[35] Pedestal for a *lingga* or śaiwa image, usually square, with, on one side, an outgrowth cut by a small drain for lustral water.

[36] I arbitrarily fixed the limit to 1m square for *yoni* and 1.5m height for sculptures. I nevertheless excluded large pieces when there were good reasons to believe they were parts of an antique collection rather than *in situ* artefacts.

[37] This work was carried out from July 2001 to February 2002 for the D.I. Yogyakarta and the district of Magelang, from September 2002 to February 2003 for Semarang and Boyolali and in the last trimester of 2003 for the surrounding areas.

March to August 2002. Northern Magelang, Semarang and Boyolali were surveyed during a second fieldwork period, from March 2003 to July 2003. In both cases, the survey was based on the information gathered from printed sources. I visited all the villages where temples stones had previously been reported, included when the stones were reported as missing in later reports, questioning *kepala desa* and villagers about the possible existence of other ancient sites or places of interests (springs, Muslim holy places, meditation grounds, body of water with special virtues etc.), consulting lists held by village authorities whenever they existed.[38]

In the first trimester of 2004, printed information and fieldwork data were merged to create a new descriptive inventory of Central Javanese temple remains[39] and to draw an archaeological map.

Drawing archaeological maps

The resulting archaeological maps proposed in this book are based, according to scale, on the following topographical maps:

1:50 000 – Java, Madura and Bali – US Army Map Service: 1940s.

1:25 000 – Peta Rupabumi Digital Indonesia – Bakosurtanal: 1990s.

1:250 000 – Indonesia – Series T503 – US Army Map Serice: 1950s.

The maps have been scanned and re-worked on Illustrator software to keep only contour lines and river systems. Both the descriptive inventory, initially written as an Access database file, and the maps (digitized using Illustrator) have been introduced into MapInfo, a simple geographical information system, in order to enable multi-level spatial requests.

Analysis and hypotheses

The various maps have provided the basis for a visual analysis of distribution, orientation and spatial features. Using multiple queries, I have tried to find correlations between several variables: geographical location of the remains, altitude, local topography, distance from a river, position compared with a river, religion, spatial arrangement, number of buildings, orientation, ground plan and moulding composition. Maps have been generated for each query in order to identify the distribution patterns of the selected sites and highlight correlations between distribution and the other variables.

My main hypothesis was that Central Javanese temple remains reflect at the same time the political and economical occupation of the territory, the spiritual aspects of the relationship between man and his natural environment, and the abstract concepts of space inherited from local and imported traditions. To address this hypothesis, I have considered three aspects of the architectural space: location within the landscape, orientation and ground plan design.

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[38] On average, I spent one day per site mentioned on my provisional list in order to localize it, measure and describe the remains – when they were still visible.

[39] See appendix 1 for a detailed description of the organization of the inventory, appendixes 2-4 for the inventory itself.