

THE LOST OF OLD DEMAK SULTANATE CITY PATTERN

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Abstract. This article reveals that the problem of sedimentation on the coast causes the loss of the old city. Sedimentation caused the Demak sultanate (1478–1586) no longer be on the coast and lose its power as a Maritime kingdom. What was the old Demak city shape? Historical records state that the strait had become a swamp and experienced frequent flooding. After going through three generations from 1478–1546, the fourth king moved the Demak to Prawata Hill (1546–1549 AD). Due to the lack of maps and historical data, we analyze the old Demak using maps and pictures of contemporary Javanese sultanate cities such as Cirebon (1506–present) and Banten (1526–1815). We also use its predecessor kingdom, Majapahit (1293 to 1527 AD) as a reference and the successor sultanate as an analytical tool. The long-lasting sultanate had a city centre that grew and developed with complete urban facilities and infrastructure. The sultanate had a short life; the city core was still intact as the city nucleus, like Demak. Due to geological problems, the king needed more time to complete the city plan with city facilities. Demak was a transitional city from the Hindu/Buddhist-Islamic concept and coastal city to the inland concept.

Keywords: architecture, Demak sultanate, city core, city pattern, toponym.

Introduction

Experts predict climate change will cause sea level rise and cause coastal cities to sink soon (Erkens et al., 2015). This phenomenon will get worse in coastal locations that experience land subsidence. Van Bemmelen, a Dutch geologist, has mapped that the Jawa North Coast, starting from Tangerang, Jakarta, Bekasi, Indramayu, Cirebon, Pekalongan, Semarang, Demak, and Surabaya, is built on young alluvial soil. The further east the alluvial land area is, the wider it is, around 40 m (Van Bemmelen, 1949; Bott et al., 2021). Port and traditional cities stood in the era of silk trade routes (Rahardjo & Rameln, 1997) and maritime on this coast. In the Dutch colonial era, Jakarta was a city predicted to sink in the next 30 years (Colbran, 2009). This land subsidence causes the area to experience flooding and damage to urban infrastructure (Hadi, 2017). Demak, a small city about 450 km from the east side of Jakarta, has a high level of subsidence compared to Jakarta. Land subsidence on the Demak coast ranges from 0.06–1.15 meters/year (Suryanti & Marfai, 2016). Now, two villages on the coast of Demak have disappeared, and the coastline is getting closer to the city center (Parman, 2010). This problem reminds us of the loss of the Muria

Strait (the strait that separated Java and Muria Island) in the 17th century and the collapse of the Demak sultanate as a maritime nation, which developed because of its location on the edge of the strait.

The city centre pattern of the Demak sultanate became a model for planning the cities of the Islamic sultanate in Jawa (Rukayah et al., 2023). The meaning of a traditional city, in general, is often interpreted as the city centre of early kingdoms in the archipelago or the capital of a kingdom that existed until the arrival of Western powers or before colonial influence and rule (16th century). Generally, these traditional cities were the centre of the past kingdoms. The kings built the city centre with magical-religious or cosmic considerations and local beliefs (Lynch, 1984). They built the traditional City based on an imaginary North-South axis (Handinoto & Hartono, 2007). Socio-cultural patterns can be seen clearly in the arrangement of settlement groupings. The king built houses for nobles, royal officials, courtiers, places of worship, and markets around the palace (Adrisijanti, 2000). Sometimes the courtyard is also a fort with a circular wall, complete with a field and a place of worship. The traces of the city pattern are in Central Java, the originators of the

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Demak kingdom such as Pajang 1568–1587, Kota Gede (1587–1600), Karta (1613–1645), Plered (1646–1680), Kerta Sura (1680–1750s), Surakarta (1745) and Jogjakarta (1755–present) (Andrisijanti, 2018).

The Demak location was strategic in the Muria Strait as a silk route. Demak grew as an international port during three generations of rulers (1478–1586). Serat Centini (an ancient book of Javanese history) is a historical record stating that the swampy area was north of the Demak Bintoro Palace from 1478–1546, so the area often experienced flooding. As a result, the fourth king moved the Demak palace to Prawata Hill (1546–1549 AD) on the east side of the Demak city. Researchers suspect that geographical geological problems have caused traces of the location of the Demak Bintoro palace (after this, referred to as the centre of the Demak palace) to disappear, leaving only the mosque and square. What is the shape of the city centre of the ancient sultanate as a whole? We analyze the early city form of Demak by using historical data, old maps, and old pictures of contemporary Javanese sultanate cities such as Cirebon (1506–present) and Banten (1526–1815). Wali Songo (the name for the nine figures who propagated Islam in Java) built the three sultanate cities. They built Cirebon after the Demak Sultanate. Wali Songo applied a city pattern with the composition of the main square, a mosque on the west side, a palace on the south side, a harbor, a market on the North side, a North-South axis (city core), and residential areas around the city core. The concept of the city of the Islamic sultanate era is similar to the ruins of the city layout of the Hindu Majapahit kingdom (1293 to 1527 AD) in East Java. The Sultanate of Demak is the final boundary of the traditional cities of the Hindu kingdom. These are also traditional cities with international ports in the era of world trade and the spread of Islam. Demak is a period of transition from the traditional world of the Hindu era to the Islamic era. Demak used to be just a duchy under the Hindu Majapahit Empire. When Majapahit experienced a crisis, Majapahit's subordinate kingdoms began to break away one by one and form a new kingdom (see Figure 1).

Meanwhile, Demak established its government with a city centre in the Bintoro area. Raden Patah (son of the Majapahit king's concubine) and the Wali Songo built Demak Sultanate. We only know a little about the layout of the city of Demak and the palace, as well as the residence of the king and nobles in the 16th century. There is, however, a strong suggestion that the Islamic kings of Demak and other kings of later times followed the example of the Majapahit royal capital (de Graaf, 1976; Tjandrasmita, 2009). Pigeaud told that the parts of the buildings from the Majapahit palace were moved to Demak and Kudus, and he said that builders from Majapahit were also brought to work in Demak (regarding the city planning of Majapahit can be seen in Pigeaud Java's book in the fourteenth Century: Vol V. Plans I and II; cf. Wertheim 1969). But the greatness of Demak is only a name. No historical heritage proves the kingdom's greatness apart from leaving the Demak Mosque, the alun-alun, mosque,

river surrounding the city, and the toponym of residential residents. It left a question about how big the kingdom area was, bearing the name as a maritime kingdom and the First Islamic kingdom in Jawa. Of course, many questions related to urban planning at that time. Sunan Kalijaga's (one of the Wali Songo members) and Raden Patah's graves. For a kingdom with a great reputation, the survival of the Kingdom of Demak is relatively short-lived, only 79 years. From this, five kings who led Demak, namely Raden Fatah (1475–1518) in Bintoro, Pati Unus (1518–1521) in Bintoro, Trenggana (1521–1546) in Bintoro, Sunan Prawata (1546–1547) in Prawata hill and Arya Penangsang (1547–1554) in Jipang (located in Cepu, Central Java, 120 km to the west from Demak). In 1554, Arya Panangsang was killed by the troops of the Duke of Pajang. With the fall of Arya Panangsang, the power of the Sultanate of Demak also collapsed and turned into the Pajang Kingdom.

There are three locations of the Demak sultanate, however only Demak Bintoro that laid on the Muria strait and plays an important role as a maritime sultanate. Indeed, there needs to be more literature explaining when Demak occupied an important place in the trade aspect. A fairly strong source regarding Demak in the international trade scene probably comes from the inscriptions of the Majapahit era during the reign of Hayam Wuruk. It stated that the name Demak (*Dmak*) became one of the 33 bases of the water crossing network. Demak developed into a big kingdom (Rokhman et al., 2016).

One proof that Demak was once a maritime country was Unus Duke, the son of Raden Patah, who had been ready to attack Malacca in 1511, 1512 and 1521. After the fall of Malacca into the Portuguese's, Muslim traders who had initially concentrated their trading offices in Malacca were looking for new areas or trade cities. Many moved to Johor following Sultan Manshur Syah, some to Brunei and Samudra Pasai, and others to the North Coast of Java, Demak, Jepara, Tuban, Gresik, and Surabaya (Hasyim, 2021). Wealth, military, commerce, and technology throughout the sixteenth century helped to increase coastal towns such as Demak, Jepara, Tuban, Gresik, Surabaya, Cirebon, Banten, and Sunda Kelapa. Gresik became a centre of international trade. This port city is a Javanese gem in trade ports (de Graaf, 1976; Rahardjo, 1997).

The administration of Unus Duke was short because he passed away at a very young age. He did not leave a crown prince. After Unus Duke passed away, his relative, Sultan Trenggana, became a Sultan. The glory era was during Sultan Trenggana's administration, who ruled from 1521–1546 M. This period was known as Demak Bintara. The fourth Sultan moved the capital city to Prawata Hill. The 5th Sultan was Arya Penangsang (1547–1554), and he moved the kingdom to Jipang, Cepu, Central Java. In 1554, troops of the Duke of Pajang killed Arya Panangsang. Demak Sultanate collapsed. The period of the Pajang Sultanate (1549–1587) was too short. We argued that Pajang was a transition period from the coastal area to Mataram in the inland of Java.

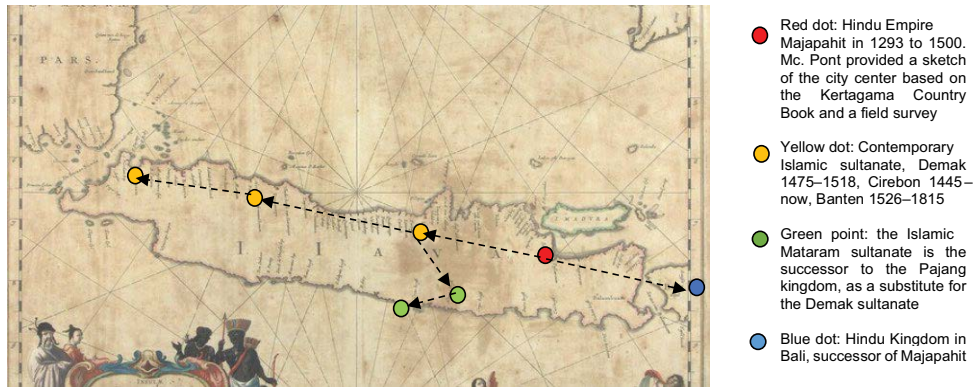


Figure 1. Old Java map (source: (Uitgever), 1657)

The foreign sailor’s records from Portugal and the Netherlands say that most of the port cities of Java in the 16th and early 17th centuries had fortifications, fence posts, or perimeter walls. The port cities are *Demak, Jepara, Cirebon, Banten, Pati, Tuban, Sidayu, Gresik, Surabaya, Aros Baya, Wirasaba, and Pasuruan* (de Graff & Pigeaud, 1974/1985). As an Islamic empire that controlled the North coast and had subordinate states in the sultanate of Cirebon and the sultanate of Banten, as well as a maritime state with ships capable of attacking the Portuguese in Malacca, the purpose of this paper is to reconstruct the city centre of the Demak sultanate by using a comparative analysis with the Islamic sultanates in the same era and his successor sultanates. Some of these elements of the sultanate city must be explained or followed by writers on the history of the traditional city. Studies on the history of colonial cities are also often more inclined to pay attention to the main role of the colonial party as a historical driver, including in urban development, and to ignore the contribution and role of local people in that development. The researchers interpret the shape of the old city from limited old maps, old pictures, and traces of toponyms of place names to support evidence of the shape of cities in the past. Although there have been some allegations that the collapse of the Demak sultanate was due to civil war, which destroyed the palace, this research opens up a new perspective for reviewing swampy

locations that often flooded the city centre, so the king had not yet had time to develop the city plan with complete imperial city facilities as in other sultanates which had long reign period and located in an area that was prone to sedimentation.

1. Theory discussion

1.1. The city pattern from Hindu Buddhist kingdom to sultanate cities in Java

Scholars believe that the cities pattern in Java refers to the remains of the ruins of the Majapahit kingdom. Mc Laint Pont reconstructs royal plans from the remains of the ruins. The results of the depiction find that the composition of the city center consists of a square, places of worship on the west side, kingdoms on the south side, and markets and ports on the north side (Tribinuka, 2014; Winarto et al., 2015). Although located in the interior, the royal cities of the past were still close to the river as a water transportation route. Urban planning is a waterfront city (Rukayah & Abdullah, 2021). The concept and model of this city pattern became the basis for the founders of cities in Java in the later era (Islamic sultanates and Islamic Mataram), such as Demak, Cirebon, Banten, and Pajang Matarm, Yogyakarta, and Surakarta in arranging the layout of royal cities (Rukayah et al., 2022).

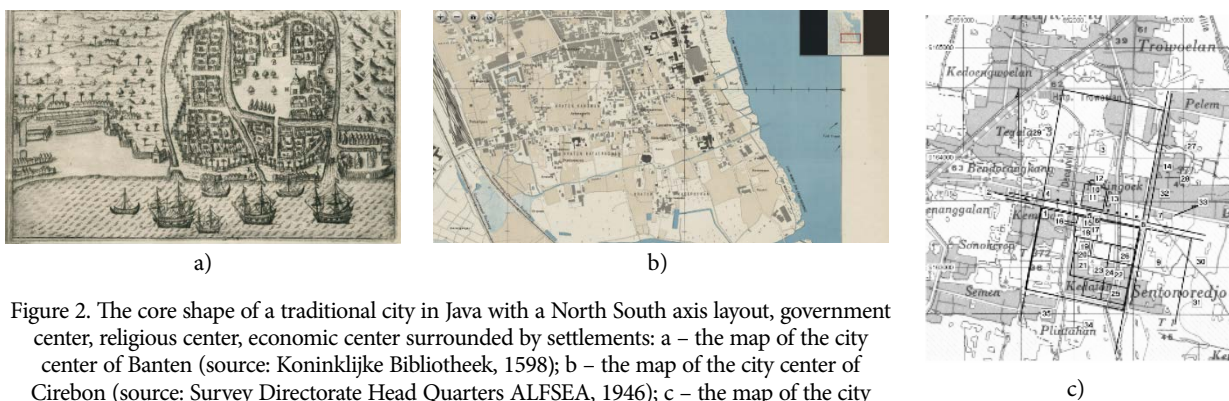


Figure 2. The core shape of a traditional city in Java with a North South axis layout, government center, religious center, economic center surrounded by settlements: a – the map of the city center of Banten (source: Koninklijke Bibliotheek, 1598); b – the map of the city center of Cirebon (source: Survey Directorate Head Quarters ALFSEA, 1946); c – the map of the city center form of the Majapahit kingdom (the predecessor kingdom of Demak) (source: Gomperts et al., 2008)

As a continuation city of Majapahit, these cities also consist of the main square, a mosque on the west side replacing the Hindu- Buddhist worship building, a palace on the south side, a port, a market on the north side, having an axis North-South (city core) and residential areas around the city core. In addition to the square, there is a typical city wall and gate made of red stone (see Figure 2).

The description of the *alun-alun* (the main square) in Majapahit has been described in Bujangga Manik's Journey. Bujangga Manik was a nobleman of the Sunda (west Jawa) Kingdom (*Pakuan Pajajaran*) who chose to become a Hindu-Sundanese monk who traveled to several holy places. The Bujangga Manik book is one of the ancient Sundanese manuscripts which contains the story of the journey of a character named Bujangga Manik around the Land of Java and Bali. This manuscript was written on palm leaves (Noorduyn, 1982). Bujangga Manik is known to have visited the capital of the Majapahit Kingdom. He described *Bubat* Field, as a large field used for big annual events. There is a highway (*rajamarga*) past *Bubat* to the south towards the palace. Leaving *Bubat*, Bujangga Manik arrived at *Manguntur* (the same as the palace square), as expressed by historian Pigeaud who read the original text *wanguntur* in the book *Nagara Krtagama*. (The *Nagara Krtagama* or *Negarakertagama* book is one of the relics of the Majapahit Kingdom) (Noorduyn, 1978).

In *Prapañca's* book description (Javanese literary poet who lived in the 14th century during the Majapahit era), stated that the Majapahit palace gate also has doors of iron (*wěsi*). The *Sutasoma* book (a literary work using Old Javanese script and language in the 14th century in the golden era of the Majapahit kingdom) adds an important architectural detail regarding the Majapahit palace gate which also appears in the *Arjunawijaya* (one of the manuscript

in Majapahit era): “The palace gate (*gupura*) has a nine-tiered top”. The number of tiers of the top of palace gates which, according to rank, range between one and eleven (Gomperts et al., 2014).

Prapanca's explanation, starting from the front yard of the palace, the names of important places, connecting streets and squares, to the main gates, matches Vistarini's (1930) search, Maclaine Pont's (1926) map, and floor plan of Stutterheim (1948). They description only reveals the shape of the downtown area of the entire Majapahit Palace area (Gomperts et al., 2014). Gomperts and friends combined text analysis, historical comparisons, archaeological investigations, and GIS (Geographic Information System) searches. GIS is a computer-based tool for mapping and analyzing things that happen on earth.

In addition to the shape of the city pattern, there is also a city wall. The discovery of the royal walls of Majapahit is composed of royal ruins formed from red bricks. The *Negarakertagama* Book, Pupuh VIII, says:

“... that's the magic of the city: high thick red stone walls surrounding the temple (another name for the king's city), the west door called Pura Waktra, overlooking a wide spacious field with a moat; brahmastana tree with body legs, long, neatly shaped in various shapes ...; to the north stands a beautiful gate with a carved iron door ... and so on ...”

The Chinese traveller Ma Huan refers to the measurements of the royal palace's circumference and height of its walls at the beginning of the fifteenth century. A brick wall surrounds the king's palace on all four sides. The brick wall is higher than 7–10 meters (Gomperts et al., 2008). We concluded that the shape of the Hindu Buddhist Majapahit city pattern became a reference for the Islamic Sultanate after the fall of Majapahit (Rukayah et al., 2022). The



Figure 3. The core shape of Islamic sultanate city in Java with a North South axis layout, government center, religious center, economic center surrounded by settlements: a – the city core of the Jogjakarta (Anonimous, 1890); b – the city core of the Soerakarta Sultanate (source: Survey Production Centre South East Asia, 1945); c – old sketch of the Jogja city square (Nelly & Rach, 1771)

adjustments from the core of urban planning are found in buildings of worship that have turned into mosques. The main components of the city were: the outer moat, city wall, road network, marketplace, the Mosque, city square, palace wall, palace, residential area, granary, and royal cemetery. It made the city's nucleus and the civic centre with the North-South axis. The city centre surrounds the grouping of residential areas based on ethnicity, type of work, and place of origin.

1.2. The nucleus of the old city and toponyms

There is a knowledge gap where historians, archaeologists, and city planners still need to discuss the form of the city's core as the initial core of a city. Researchers get historical data and old maps about the initial development of an imperial city. The researcher analyzes the core city from city with a short reign, namely Kota Gede, Kerta, and Plered. Only Kota Gede has a city component that is still intact. The other cities are just ruins.

According to written data, the development of the capital city Kota Gede reached its peak in the 17th century when Sultan Agung ruled the kingdom (Inajati, 2005). Typologically Kota Gede was a capital city located in the interior of Java. Its characteristics appeared in the existence of the palace, city square, the mosque, and toponyms indicating the names of high functionaries and professions. The absence of maritime toponyms indicates that Kota Gede was really an interior city. The great mosque and Islamic graveyard indicate the Islamic characteristics of Kota Gede as a capital city.

The main components of Kota Gede were: tax house, outer moat, city wall, road network, marketplace, the mosque, city square, inner moat, palace wall, palace, royal garden, residential area, granary, and royal cemetery. It made the nucleus of the city and also the civic center (Inajati, 2005).

The cities of the successor sultanates before finally settling and continuing until now in the sultanates of Surakarta and Yogyakarta are the sultanates of Kerta, Plered, and Karta Sura. The glory of Kerta and Plered as centers of government materially left no trace, covered by new buildings leaving almost no space to commemorate the greatness of the past. (Andrisijanti, 2018).

Based on Islamic Mataram Urban Archeology (Adrisijanti, 2000), Sultan Agung (the king of Kota Gede) ordered to prepare of land in Karta for a new palace location. The historical text needs to mention the background of urban development in Kerta. Keraton Karta only functioned for about twenty-five years. After that, Sultan ordered them to make a mobile fort, and build the Great Mosque. Meanwhile, several written sources state that there was much water infrastructure in Plered City (Andrisijanti, 2018). The abundance of water infrastructure shows the characteristics of a city in the interior.

During the colonial period, when the Yogyakarta area was a sugarcane plantation area, the colonial government used the brick and stone buildings in the former capital

city of Plered to build a sugar factory. That is causes Plered City to leave almost no traces. The same thing could happen to Kerta because it's not far from Plered. Kerta and Plered were the two capitals of the Islamic Mataram Kingdom in the mid-late quarters of the XVII century.

As the Islamic government, Plered also has the Great Mosque, although at present only ruins remain. Plered square is now just a toponym near the current market.

The Plered Palace still leaves traces of the toponym Kedhaton, but historians only found significant material traces in recent studies. However, written and pictorial sources indicate the existence of palace parts, like other Javanese palaces. For example: *Sitinggil* (an open building with a high floor, is part of the palace building), *Sri Menganti* (guest lounge and waiting area), *Kedaton* (palace).

In historical urban archeology research, studying artifacts and toponyms becomes important in city components and how the city founders arrange the toponyms into a city layout. Some historians, city planners, and archaeologists traced the complex urban life in the past using toponyms as archaeological data and its ecological context. The complexity creates population groupings and their settlements according to ethnicity, economic background, and social status. Those groupings became an inseparable part of urban planning, and we could trace their placements in the city layout (Eko Punto et al., 2021; Erikha & Lauder, 2022; Inajati, 2005; Jayanti, 2021; Muhammad et al., 2020; Seidl, 2008).

2. Research method

The research method uses uncovering old data, a historical approach (Gray, 1964). This research used the five stages historical research method: topic selection, heuristic, verification, interpretation, and writing (Kuntowijoyo, 1994). In addition, it will use an architectural history approach and the geological history of the island of Java. Narrative sources are limited to old Demak, so the researcher used contemporary historical sources, old records, photo archives, sketches, and old maps. Pictures provide more information than narratives (Pole, 2004). The research method also borrows the toponym approach that successfully uncovered the landscape of old cities in Jawa (Adrisijanti, 2000; Alifah, 2009; Tjandrasasmita, 2000, 2009).

Some of the author's studies have found that the distribution of the architecture of old buildings and historical areas in the coastal cities of North Java experienced land subsidence and rob (Rukayah & Pribadi, 2019). Demak is located on the north coast of Java and stands on alluvial soil resulting from sedimentation. The sedimentation processes occur continuously in this area (strait) through materials originating from the Kendeng Zone, Rembang Zone, Randublatung Zone, Muria, and Japara complexes of the Java Sea. That sedimentation caused the strait quickly experience silting and turn into land. Now, these areas are in the Semarang-Demak-Rembang Depression (Afif et al., 2018; Putranto & Rude, 2011).

Several theories stated that the old Demak city pattern's traces were lost due to geological and environmental factors (Eko Punto et al., 2021; Hendro, 1995). The opinion of Demak cultural experts' writings based on archive photos and maps of Demak from the VOC era slightly reveals the location of the Sultanate (see Figure 4). The author found a picture/painting from the Mutual Heritage Atlas (AMH) about the Demak. The AMH provides an overview of places (posts and forts) where the VOC (Dutch: *Vereenigde Oostindische Compagnie*), Dutch East India Company, officially the East India Company Association, were established in the 17th and 18th centuries, as well as a catalogue of topographical images of these places. We can obtain some old maps and sketches of cities on the north coast of Java easily in this website. Banten has the most data collection in the Dutch colonial era.

Based on the comparison of all old city sketches that show the centre of the city, we suspect that the sketch of the city of Demak is the city centre. The sketch shows a river in the foreground with five boats. You can see a building flying the Dutch flag on the left side. In the foreground are two soldiers with guns, exotic birds, and a crocodile to the right. – cf. National Library of Indonesia, inv. Nr. VL 30 and BG 07. The caption under the picture says 1750–1800. The creators are Nelly, A. de (assigned to draftsman), and Rach, Johannes (assigned to draftsman). They were drawing techniques using pen and pencil. The owner of the image is the Rijksmuseum Amsterdam.

Researchers are interested in focusing on the image and enlarging the image scale. In the middle of the sketch is a square with six banyan trees. The square with banyan trees is associated with the traditional square in Java. If we look at the building on the right side, it has a building with triple roof. A building without walls with pillars and a three-tiered roof. Is this a mosque? The building that looks like a village is also unique because it has a fence around it and a gate. The author enlarges the image so that the shape of the wall and gate is visible. (Are these gates and walls around the palace?). The shading of the surrounding fence material is visible. After that, the

writer did colouring to illustrate the perimeter fence with brick material. The gates and walls were most likely made of red brick, the same material in the previous kingdom (Majapahit 1293–the 1500s) and contemporary sultanates (Banten 1526–1813 and Cirebon 1430) (see Figure 3).

3. The nucleous Demak Sultanate structure (1475–1518)

Some signs of the Islamic sultanate's existence in the past are the Great Mosque, the square, the market, and facing the coast or river. Because No. trace of physical form of the Demak Palace, many historical, archeological, and urban planning researchers have tried to analyze its location. Some experts have used the toponym, which refers to the area of the palace. Archaeologists use this method to discover traces of the shape of the Islamic Mataram sultanate (Adrisijanti, 2000). Using the toponym method, many researchers found an approximate palace in the *Sitinggil* village (the Javanese language declares an open building with a high floor, which is part of the palace building) in the southern area of *Alun-Alun*. With mapping the area using aerial photos, the geoelectric test cannot be revealed with certainty because residential areas have covered the area. The excavation method is difficult because the location has become a dense settlement, so it is impossible to excavate the soil. One of the closest methods to getting a clue is using the traditional city pattern in Java. According to the Java's traditional cities pattern, the palace usually lies in the southern area.

Dutch documents inform through sketch maps of Demak in the 18th and 19th centuries AD (see Figure 6). These old maps are suspected to be the location of the former Demak palace building before the colonial government constructed the Pos highway (Deandels highway) in 1809 AD and built the railroad in 1885 AD. The writings of the Demak cultural expert M Kholidul Adib, secretary of the Community of Cultural Heritage Lovers (KPCB) on the online newspaper demak.wordpress.com have reviewed the archives photos and maps of Demak (Anonymous, 2016) (see Figure 4).

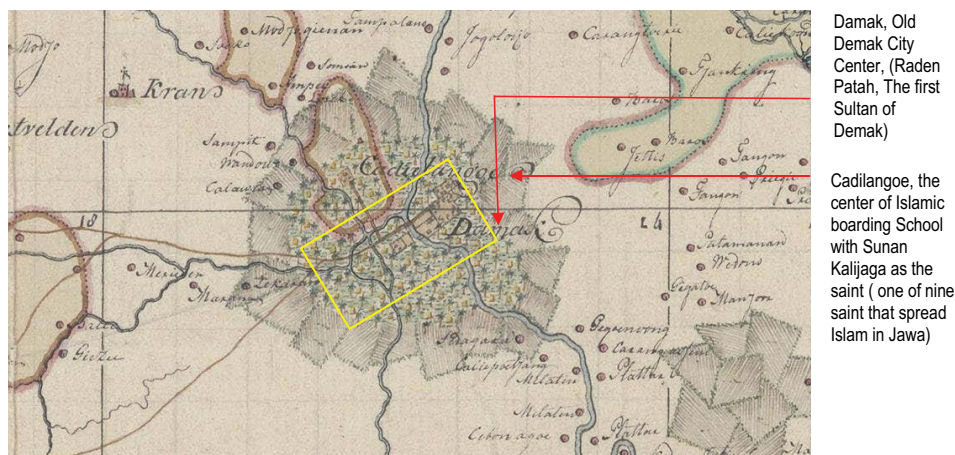


Figure 4. The map of the Demak sultanate, from Demak cultural expert M Kholidul Adib, secretary of the Cultural Heritage Lovers Community (KPCB) (source: Anonymous, 2016)

Historical archives save invaluable treasures and play a critical role in conserving Cultural Heritage. Old photographs and maps, which have survived over time, preserve traces of architecture and urban transformation and, in many cases, are the only evidence of buildings that no longer exist. They are a precious source of enormous informative potential in Cultural Heritage documentation and save invaluable treasures (Condorelli & Rinaudo, 2018). Researchers obtained Demak's old map data dating to 1910. The map shows a mosque on the west side, a toponym for ethnic settlements based on occupation, and a toponym for *sitinggil*. *Sitinggil* is an open building with a high floor, part of the palace building. We can find *Sitinggil* in all the Islamic sultanates in Java. The 1942 map has the same information as the 1910 map (see Figure 5a). The 1942 map has additional railroads. The Dutch East Indies government built city facilities and infrastructure, railways, and postal roads through the sultanate location (see Figure 5b).

We found in that map that the city's core consists of a square, mosque, and market with a palace that has been lost. The city centre with the court becomes the centre of religious and government activities. Same as in Banten, where government activities and ritual events are located at the square (Wessing, 1992). The market on the north side is not too close to the court. It's just that the site is estimated to be close to the river as a transportation route. Thus, the market will not be the dominant activity affecting the square. Wheatley (1971) argued that traditional non-Western cities evolved as ceremonial rather than economic centres. If this assumption were true, religious rather than economic factors would have been the critical variables determining urban ground plans. He argued that the origins of Southeast Asian cities lay outside the region: in China for North Vietnam and in India for the rest of the area.

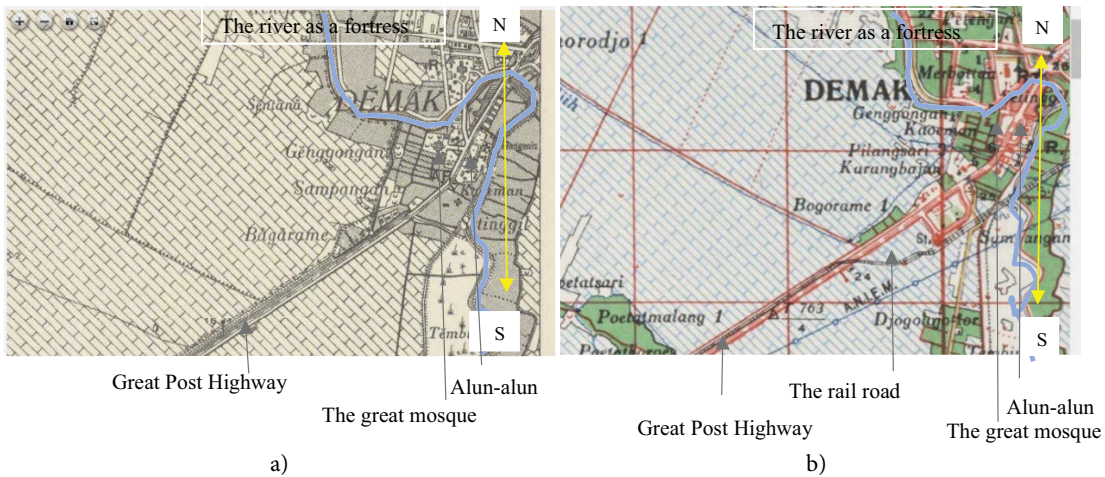


Figure 5. The core of Demak traditional city with a North South axis layout, government center, religious center, economic center surrounded by settlements: a – the old Demak city center maps in 1910 (source: Anonymous, 1942b); b – Demak in 1942 (source: Batavia, 1910)

View of Demak at 1750–1800, Johannes Racht

Enlargement of the view of Demak from 1750–1800 and the Great Mosque of Demak from 1801

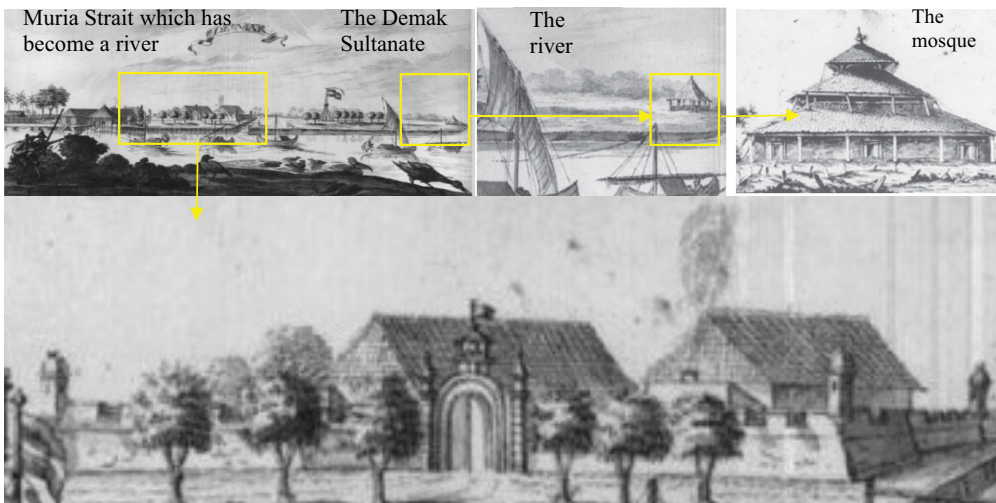


Figure 6. The view of Demak and enlargement of the 1750–1800 view of Demak, the brick fence and banyan tree, the mosque, thought to be the city center (source: Nelly & Rach, n.d.)

According to sailors' records, traditional cities on the North Coast had bamboo or red brick safety walls (Rahardjo & Rameln, 1997). The three significant examples of defensive walls from South-East Asia are made of solid stone blocks (rock and stone-like laterite). They provided with different but equivalent functions – a fortified imperial capital city (Angkor Thom, in Cambodia), a fortified royal citadel (Ho Citadel, in the North of Vietnam), and a royal palace with a partly fortified appearance (Ratu Boko, in Java Island, Indonesia)–, focusing on their constructive and technical characteristics and establishing parallels between them and their closest counterparts, from China and India (Garcia, 2017).

The royal cities of Java in the 16th century have exemplified the urban planning of the capital city Majapahit empire – likewise, the old Demak. The founder of the old Demak is the son of the king of Majapahit. When Majapahit collapsed, some parts of the buildings in Majapahit were moved and installed as new building elements in Demak and Kudus. The wooden pillars on the porch of the Demak Mosque and the Majapahit door, strengthen this opinion (Roesmanto, 1991). To build old Demak, a builder in Majapahit helped design the Demak kingdom, and his name was Ki sepet or Raden Sepat or Raden Sapet (Djajadiningrat, 1983). Most likely as a city planner and architect of Demak.

The Demak consists of the basic structure of a sultanate city only, namely the city centre, markets, and rivers surrounding the city. We estimate that the city was founded by considering the river as a fortress. We have not found any recreational facilities for the royal family or water parks from historical records and toponym remains. The researcher found several toponyms about water infrastructure in the kingdoms in the interior of Java. In the absence of a toponym for facilities related to water irrigation, water recreation indicates a place near the coast.

As an important port area, according to Tome Pires, this area was wider than Cirebon, Tegal, Semarang, and Jepara, and the population was much larger than in these areas (Cortesao, 1944). Historical sources states that the location of Demak Sultanate, which at that time could still be seen navigable from the sea and called Bintara (read Bintoro in Javanese), has now become Demak in Central Java. The old Demak city centre was located on the estuary and close to the beach (see Figure 6). This site is the same area if we confirmed the Tome Pires statement who visited the centre of the Demak, Demak (as a trading centre port), there is an important river, and ships from outside cannot enter the sea except when the tide is high (Cortesao, 1944). The fourth sultan moved the capital to Prawata Hill, northwest of this area. Every rainy season, to avoid puddles around Demak, he takes refuge in a palace built on Prawoto Hill. The palace still shows that there was once a gate, *sitinggil*, and a bathing pool (de Graaf, 1976; de Graaf & Pigeaud, 1974/1985).

Researchers suspect that according to the *serat Centhini* 1814 (Javanese literature book), the Prawata area temporarily serves as a place to stop and organize government

during the flood. *Serat Centhini* mentions Prawata as a place with a *kedaton* (a palace).

We can find the old Demak layout in several chronicle sources, which tell that in the centre of this kingdom, the *Walisongo* built a mosque, and the palace's location seems not far from the area of the mosque. The *pengrawit* and *pangapit* (Javanese building) of Majapahit installed the Demak for the porch of the Demak mosque. From the historical story, there is a picture of the centre of Demak, and there are three important building elements, namely the palace, the square, and the mosque, which are not far from each other. We also can find it in *Babad Jaka Tingkir*, 1981 (a Javanese literary book that tells the establishment of the Pajang kingdom). One thing that is quite interesting from this chronicle is the indication of the direction toward the Demak palace.

...The next day a *grebegan* (*Grebegan* is a routine celebration held by Javanese people to commemorate an important event, the prophet's birthday. *Grebegan* procession symbolizes alms from the Yogyakarta Palace to the community. At that Ceremony, the Sultan of Demak was pleased and sat at *paseban* in *sitinggil* Demak. The Sultan sits facing north...

In front of the Demak palace were banyan trees in twin-like those in the Surakarta and Yogyakarta sultanate that people can see today.

Referring to the old records, the core elements of Demak consist of a mosque, the square, the palace facing north, and a pair of banyan trees in the middle of the court. The composition of the core of this city is the same as that of the imperial cities today. The palace was on the south side, cited by the toponym *sitinggil*, which refers to a part of the sultanate south of the square. Toponymy studies place names (toponyms), starting from their origin, meaning, usage, and typology. The toponym *sitinggil* near the Great Mosque of Demak shows a relationship with the sultanate area. The distribution of toponyms on the east side means that the residential area. The name of the old village is *Beguron* Village (a place for religious study), *Sempal Wadak* Village (separated body after being killed), and *Pandean* Village (a person whose job is to forge iron for weapons and spears), *Tembiring* Village (a village for potters/clay bricks/tiles for buildings), *Tukangan* Village (a village where the builders live), *Yuda Mengalan* village (residence of warlords). *Glagah Wangi* Village (fragrant plant name), *Sitinggil* village is the place where the Sultan meets his people, *Tirtoyudan* village (the village where the water guards live), and *Kauman* village (a village where followers of Islam live) (see Figure 7).

Meanwhile, the existence of the Kadilangu area is identical to the presence of the tomb complex of Sunan Kalijaga. Sunan Kalijaga is one of the guardians of Wali Songo, who is closely related to Raden Fattah's struggle to spread Islamic teachings, the construction of the Great Mosque, and the establishment of the Bintoro Demak Kingdom. Sunan Kalijaga is known as the architect of the Great Mosque of Demak.

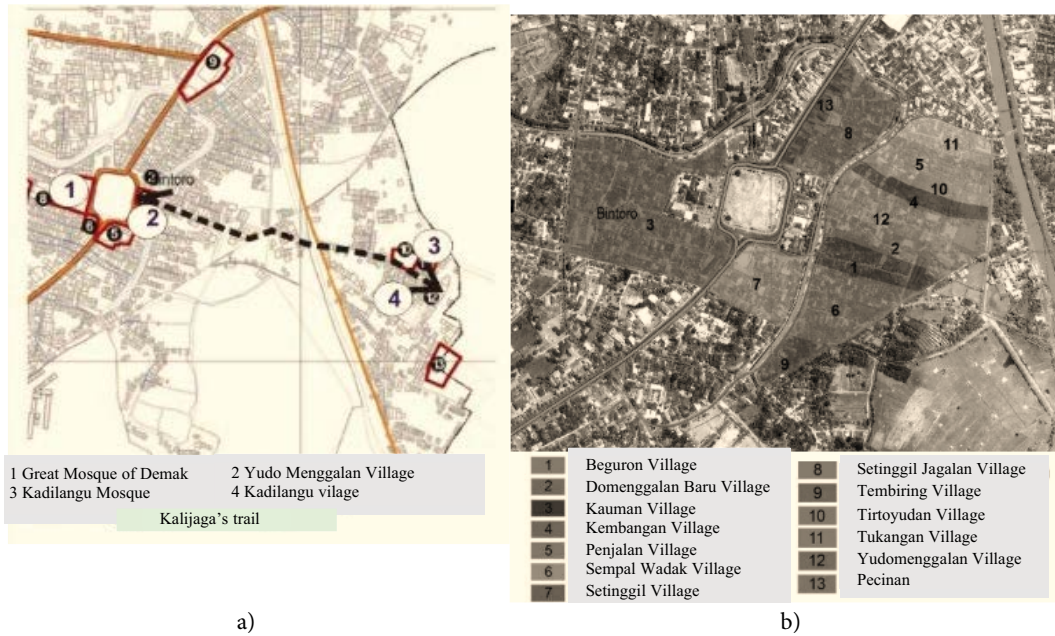


Figure 7. The city core of old Demak sultanate: a – the city centre is in a straight line with the tomb of Sunan Kalijaga; b – the toponyms of the villages surrounding the city centre (Saraswati, 2015)

During his lifetime, Sunan Kalijaga spread Islam through a cultural approach. The tomb of Sunan Kalijaga is located in Kadirilangu, about one kilometre from the Great Mosque of Demak, if taken by road. This tomb was the residence of Sunan Kalijaga (1586 AD), his wife, children and grandchildren, and courtiers.

The Demak Sultanate did not last long, apart from geological problems and a power struggle between royal relatives. In 1568, the power of the Sultanate of Demak shifted to the Sultanate of Pajang. The Chronicle of Tanah Jawi tells of Amangkurat II's order to build a mosque in Kartasura by following the model of the Demak Mosque. Several chronicles stated that the palace, square, and mosque are elements of buildings close to each other in the centre of the kingdom in Java.

3.1. Comparative analysis

Map data and images of old Demak are less than the sultanates of Banten and Cirebon. Only Banten has many maps, photos, and pictures from the Dutch East Indies government. Due to the need for an overview of the Demak, researchers must analyze the contemporary sultanate city. Sunan Kalijaga from Demak was also one of those who planned Cirebon with Sunan Gunung Jati. Sunan Gunung Jati founded the Sultanate of Banten in 1552 after conquering Sunda Kelapa (now Jakarta). He managed to convert the king of Banten (Sultan Maulana Hasanuddin) to Islam. Sunan Gunung Jati then built the capital city of the Banten Sultanate and built the Great Mosque of Banten as a centre for religious activities. Banten is a sultanate city after Cirebon that has the same city concept.

In the orders of Sunan Gunung Jati, the sultan of Demak assigned Raden Sepat (a builder in Majapahit who

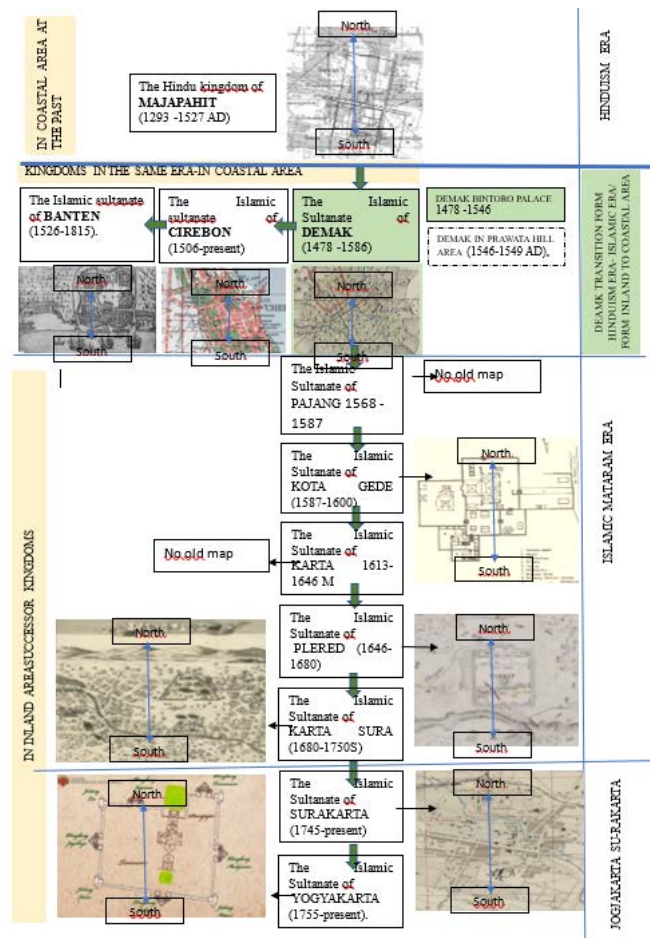


Figure 8. From Hindu Era to Islamic era, from coastal sultanate to inland. The cities layout follows the direction of the mountain (North) and sea (South) axes

helped design the Demak kingdom) to help design the old Cirebon. The authors conclude that there is a designer, namely Raden Sepat, as a character who gives the same urban design touch. The urban planning of the Demak, Cirebon, and Banten kingdoms will likely have the same urban planning. Allegedly, some rules and standards are not written but used as a reference in city design. The same in designing cities that produce the same urban patterns. The town's layout follows the direction of the mountain and sea axes (see Figure 8).

3.2. The structure of the Sultanate City that was contemporaneous with the Demak Sultanate (Banten-Cirebon)

3.2.1. Cirebon Sultanate (1445–now), from the city core-recreational facilities

Before the Dutch came to Indonesia, this traditional city existed since establishing a palace in Cirebon, the Pakungwati Palace, which *Sunan* Gunung Jati founded (*Sunan* is a person who is respected because he has a high position and knowledge, usually found in the Java area). The court, or the king's palace, is equipped with square and sacred buildings and is surrounded by hierarchal residential areas; high-ranking royal officials are closer to the

centre (near the castle). As described above, the structure of the old Cirebon is related to Kostof (1993) thought. The city is included in the type of cosmic city, namely a hierarchical-concentric city, and has planned settlements or cities (Lynch, 1984). Residential colonies tend to group concentrically based on position, ethnicity, profession, and religion. The structure of the town of Cirebon is the city centre, markets, ports, and added recreational facilities (*Sunyaragi*, a cave as a place of seclusion consisting of caves and water parks) – the tomb of *Sunan* Gunung Jati. Prince Kararangen, the great-grandson of *Sunan* Gunung Jati Sunyaragi founded Sunyaragi in 1703 AD. It had a function for Cirebon's court officials and palace soldiers to improve *kanuragan* (self-defence) knowledge and deepen war techniques.

The early growth of Cirebon had a city formation of a cosmic city, namely, a concentrically designed city. The centre is the palace of the king (Kasepuhan), the mosque, and the square, surrounded by residential villages in groups (clusters) according to position, profession, ethnicity, and religion (see Figure 9). The city's facilities will increase in the future, including the construction of a building called *Balekambang* (a place for the royal family to rest), which stands in the middle of a pond, and a hill called *Indrakila* Hill. In the Kasepuhan Cirebon palace, there are.



Figure 9. The city square, the sultanate and the great mosque in the Cirebon as the city centre sultanate: a – Cirebon, 1690–1705; b – Cirebon, 1942; c – the great mosque (Masjid Agoeng, Cheribon) (source: Anonymous, 1690, 1942a, 1930)

3.2.2. The structure of the Sultanate of Banten (1526–1815), from the city core- recreational facilities

The Banten started as a fishing village that was less important and located on the shores of Banten Bay. The plains were a village of Fatahillah or Faletahan with the Demak army in 1525 (Roesmanto, 1991). Fatahilah established Banten Sultanate as a manifestation of Islam’s spread and the Demak troops’ victory in expelling the Portuguese from Sunda Kelapa. Before becoming an Islamic area, Banten was part Pajajaran Kingdom. We can see the morphology of the Sultanate of Banten from the old map from Atlas Mutual Heritage. On the map in 1614, the structure of Banten is still in the form of the city core, the port, and the residential areas surrounding the city core. Banten’s design is complete with the addition of recreational facilities for water parks and irrigation- *tasik ardi* (Sundanese, Artificial lake).

On the map of Banten in 1598, the structure of Banten is rivers and canals as city forts, ports, markets between ports and city forts, and housing groups. The map shows the six-zone housing group (the possibility of zoning is based on skill groups, position groups, etc., such as the city centre of the Islamic sultanate (Adrisijanti, 2000), the city centre consist of the *alun-alun*, palace, and mosque.

On a map of Banten in 1665, the Banten was wider than the previous map in 1598. Several city facilities and a market area have emerged in the Northeast. On the southwest side appeared a Chinatown area (see Figure 10).

Panembahan (the lord) Maulana Yusuf (r. 1570–1580 AD) made a recreational facility and a water reservoir called Lake Tasikardi during the reign of *Panembahan* Maulana Yusuf (r. 1570–1580 AD), the second sultan of Banten. This place is the resting place of the sultan and his family (the island in the middle of the lake), collecting water for irrigating rice fields and supplying water to the palace and the surrounding community. Before being distributed to the city’s citizens, the water is purified at the *pangindelan*.

From the morphological development of the city, we conclude that Banten was a big city in its time. The king planned an advanced city with a city irrigation system and clean water for residents. King created the town from a city core, markets, ports, and residential areas surrounding the city core to designing an urban system based on international markets and agriculture. Its strategic location made the Kingdom of Banten rely heavily on trade to support its economy. Banten’s global market and port are growing because the road crosses it (see Figure 11). The sea trade made

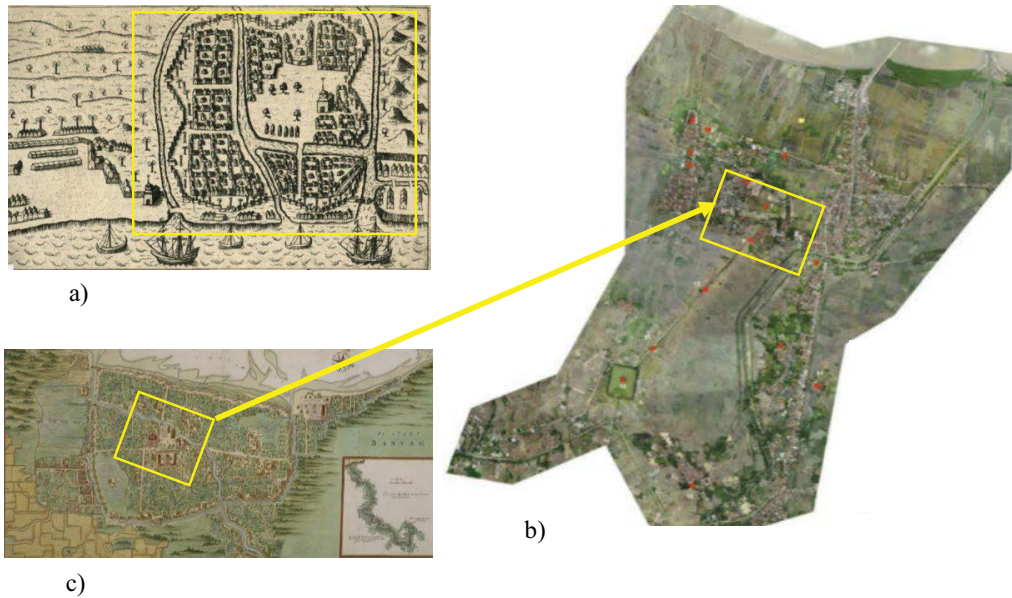


Figure 10. The centre of the sultanate of Banten and the development of city recreation facilities: a – the city core in 1598 (source: Claesz, 1596); b – the enlargement of the city core and city development; c – the city core and city development in 1665 (Vingboons, 1624)

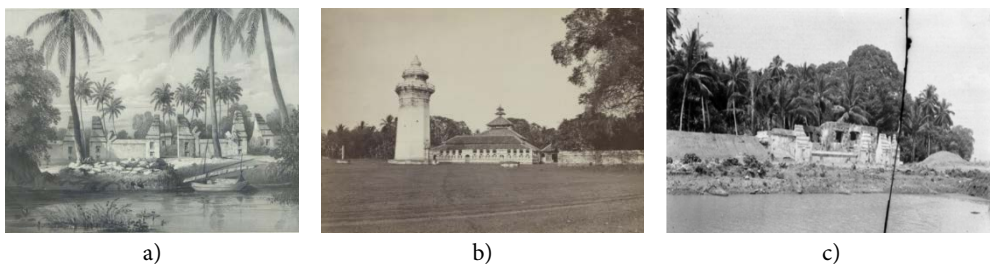


Figure 11. The strategic location of the Banten Kingdom near the coast became a global market and port: a – the Kaibon palace (source: (Uitgever) & (Lithograaf), 1846); b – the minaret of the Banten mosque, was once a lighthouse towertower (source: Anonymous, n.d); c – the ruin of sultanate Banten (source: Anonymous, n.d., 1872)

Banten flourish in the archipelago, reaching Persian, Indian, Arab, Portuguese, and Chinese traders. The civil war was one of the causes of the collapse of the Banten Kingdom. Around 1680 there was a dispute in the Sultanate of Banten. The son of Sultan Ageng Tirtayasa, namely Sultan Haji, tried to seize power from his father's hands. This division was exploited by the VOC Company by providing support and weapons assistance to Sultan Haji, so civil war became inevitable. After Sultan Haji died, the VOC put more pressure on the Kingdom of Banten. This pressure also made the influence of the Banten Kingdom fade.

3.3. The structure of the successor the Sultanate of Demak

After the Demak kingdom ended, the centre of the empire began in Pajang, which is in the west of Surakarta City. Along with the change of ruler, the centre of the empire moved, starting from the Sultanate of Pajang 1549–1582, Kota Gede 1587–1600, Karta 1613–1645, Plered 1646–1680, Karta Sura 1680–1756.

3.3.1. Lack of archaeological and data of old Demak (1549–1582)

The Kingdom of Pajang was centred in Central Java as a continuation of the Kingdom of Demak. The Pajang area is located around Boyolali, between Pepe River, Dengkeng River, and Bengawan Solo. The site is very fertile, so the Pajang people rely on rural resources (Camila & Hudaidah, 2022). The palace complex is now only the boundaries of its foundations. It is located on the border of Pajang Village, Solo City, Karatsura, Sukoharjo, Central Java. The political influence of the Pajang Sultanate in the 16th century covered most of the northern coast of Java, such as Surabaya, Sedayu, Lasem, Tuban, Demak, Jepara, Pati, Pemalang, and Tegal. Pajang's influence also reached the interior of the island of Java, such as Madiun, Kediri, Banyumas, Kedu, Bagelen, and even Mataram, before the latter was transformed into a major power in Java, replacing Pajang at the end of the 16th century (de Graaf, 1976; de Graaf & Pigeaud, 1974/1985).

However, there needs to be more information about Pajang due to limited references and the absence of foreign elements which interact directly, especially in Europe. Almost all stories about the sultanate on the Java north coast in the 16th century are always associated with the presence of Chinese, Arabs, Indians, and Europeans. The notes of Tome Pires (1512–1515), which are widely used as references to discuss the history of Java in the 16th century, almost do not report Pajang. According to H. J. de Graaf and Th. Pigeaud, European sailors, and merchants made no record of power in the interior like Pajang (de Graaf & Pigeaud, 1986).

This information from archaeological data and archives about Pajang is very limited (Purwanto, 2017). Relics during the Pajang sultanate are the Laweyan Mosque. Inside the Laweyan mosque are also tombs for relatives and heroes of Pajang (Camila & Hudaidah, 2022).

3.3.2. The sustainability of the Kota Gede city form (1587–1600)

According to the Babad Tanah Jawi, Ki Ageng Pemanahan built Kota Gede (Soekiman, 1993). As the capital of Mataram, Kotagede was still the territory of the Kingdom of Pajang. Through a long process with various upheavals, Mataram was able to replace the dominance of the Pajang kingdom power. However, unlike Kerta and Plered, Kota Gede still has archaeological remains. Kota Gede still exists as an old city that has survived.

However, like the capitals of other Islamic kingdoms from the 16th–17th centuries AD (including Pajang, Kotagede, Karta, Plered, and Kartasura) today, its condition needs to be fixed. We can identify the remain of the palace through toponyms. Other relics are customs gates, road networks, forts, *Jagang* (circular ditches), markets, grand mosques, squares, palaces, parks and *krapyak*, residential areas, barns, and cemeteries. Panembahan Senopati is the name of a village located in the southeast of the mosque and tomb complex. The toponyms of *kedaton* and *ndalem* are the location of the centre of the palace. In *Kedaton* Village, there are *watu gilang*, and andesite stone jars stored in small buildings. Empty land surrounds this area, without anyone daring to build buildings around it (Inajati, 2005; Jayanti, 2021; Tim Peneliti Pusat Studi Kebudayaan, 2020).

3.3.3. Kerta (1613–1645)

Kerta served as the centre of government in the not-too-distant future. The king built Kerta because he wanted to live in a new palace, while he left Plered because the enemy occupied it. Currently, only some significant material remains from the two capitals. However, there are still traces of archaeological remains.

Kerta, which was the Islamic Mataram Palace in the early quarter of the seventeenth century, is now only a small village. No significant artifactual remains or toponyms describe the state of society during its heyday. However, carved andesite stone pedestals measuring 85×85×65 cm as the *umpak saka guru* (the foundation of the main pillar) of the Islamic Mataram Palace during the end of Sultan Agung's reign. Interestingly, the team of archeology only found three *umpak* in Kerta. Even then, one *umpak* has been moved and used as a teacher's *umpak* at the *Saka Tunggal* Mosque in the Taman Sari neighbourhood, Yogyakarta. Thus, there are only two pedestals at the Kerta Site location (Inajati, 2005).

3.3.4. Plered 1646–1680

Plered As mentioned above, *Sunan* Amangkurat I built Plered during the reign of *Sunan* Amangkurat I. Judging from the archaeological remains, the condition of the Plered site is quite apprehensive. Although there is minimal archaeological data, historical data, and toponyms in the area, it provides an overview of Plered and its features not found in other royal city sites, especially in Java. The element that distinguishes Plered City from other old cities in Java is the presence of water buildings, including

Segarayasa, which means artificial lake. Now all that remains is the toponym, located south of Plered, across the Opak River. In addition, local and Dutch written sources describe the existence of ditches, dams, and dikes that are still only a piece (Andrisijanti, 2018).

There are four gates; the two closest to the capital are *Tadie* (= Taji) and *Caliadier* (= *Kaliajir*). Both toponyms still exist today. However, until now, the people have not found traces of the two gates. Colonial historical records also describe a two-mile-wide road stretching from the *Kaliajir* gate to the king's palace. However, we have yet to find a trace of that road.

People can find the existence of the market in Plered City, and we can estimate that its location is north of the current toponym Alun-Alun. As in the central cities of the Islamic government in Plered, there is also the Great Mosque. However, at present, it remains in the form of ruins. Plered Square is now a mere toponym near the market today. From the artifactual aspect, there are no phenomena at this location, but written and pictorial sources indicate that there are parts of the palace, like other Javanese palaces. For example: *Sitinggil*, *Sri Menganti*, *Kedaton*.

3.3.5. Karta Sura (1680–1756)

The remains that remain from the Kartasura Palace to this day are some of the walls of the *cepuri*, *baluwarti*, the palace garden (Gunung Kunci), *gedong* plate, *gedong* medicine, *dalem* prince, and toponyms which were components of the Kartasura in the past. The toponyms of the residential element consist of *Kemasan* (gold artisans), *Gerjen* (sewing artisans), *Sayangan* (copper crafts), *Kunden* (pottery crafts), *Pandean* (iron craftsmen), *Jagalan* (animal butchers), *Ngabean* (Prince Ngabehi), *Mangkubumen* (prince of Mangkubumi), *Purbayasan* (prince of Purbaya) (Agung, 2009). As a replacement for the Kartasura Palace, devastated by the Chinatown commotion in 1743, Sultan Pakubuwana II 1744 established the Surakarta palace. This palace has a fraction, namely the Yogyakarta Hadiningrat Palace, which is the palace of the Yogyakarta Sultanate so; that traditionally the Mataram dynasty was continued by two kingdoms, namely the Surakarta and the Yogyakarta Sultanate (1755-present). Traces of moving the centre of

the Islamic Mataram kingdom show the elements of the same city in the form of the Palace, *Alun-alun*, Mosque, Market, noble houses, and settlements for courtiers (see Figure 12).

The remains of Kartasura city from to this day are some of the walls of the *cepuri* (One of the traditional urban components which function as a barrier between the inner and outer palaces), *baluwarti*, the boundary of the palace, which on the inside is the palace and the residence of the king and his family and the courtiers, the palace garden, *gedong Piring* (the building to save some plates), *gedong obat* (the building to store medicine), *dalem*, and toponyms which were components of the Kartasura in the past. The toponyms of the residential element consist of *Kemasan* (gold artisans), *Gerjen* (sewing artisans), *Sayangan* (copper crafts), *Kunden* (pottery crafts), *Pandean* (iron craftsmen), *Jagalan* (animal butchers), *Ngabean* (Prince Ngabehi), *Mangkubumen* (prince of Mangkubumi), and *Purbayasan* (prince of Purbaya) (Agung, 2009). As a replacement for the Kartasura Palace, devastated by the Chinatown commotion in 1743, Sultan Pakubuwana II 1744 established the Surakarta Palace. This palace has a fraction, namely the Yogyakarta Hadiningrat Palace, which is the palace of the Yogyakarta Sultanate so; that traditionally the Mataram dynasty was continued by two kingdoms, namely the Surakarta Sultanate and the Yogyakarta Sultanate (1755-present). Traces of moving the centre of the Islamic Mataram kingdom show the elements of the same city in the form of the Palace, *Alun-alun*, Mosque, Market, noble houses, and settlements for courtiers.

The Sultanates of Pajang, Kota Gede, Plered, and Kartasura were the cities of the pre-colonial Islamic Mataram kingdom (HW, 2019). The city's shape is the town's core with the toponym of the city component surrounding the city centre (see Figure 12). Meanwhile, the formation of the sultanate cities of Surakarta and Jogjakarta have the shape of a city core (see Figure 12). Now the last two sultanates still exist today, and the city core is growing with the addition of city facilities, especially in the era of the Dutch East Indies government.



Figure 12. The short-lived successor to the sultanate of Demak (the nucleous cities of: a – Kota Gede; b – Plered and c – Karta Sura); d – meanwhile, the city core of Surakarta and Jogjakarta sultanates have growing with the addition of city facilities (source: Anonymous, 1724; Soekiman, 1993)

Conclusions

The loss of the old Demak, so experts debate its location. The Dutch government discovered the palace ruins when Governor-General Daendels built the highway post road from west Java to the East. The road cut off the court's position. The function of the royal site is next to Demak Square, now cut off by a highway. Then, the former palace disappeared at the end of the nineteenth century, coinciding with constructing the Semarang-Juwana railway through Demak, making a railroad line right through the centre of the Demak kingdom. The research findings confirm that the site's location, when referring to the urban design theory of cities in Java, is certain that the palace location in the southern area of the present city square of Demak and faces north. According to archaeological and toponymic relics, on the south side of Demak is *Sittinggil*. This word is part of the palace in the form of a high position. With reference to the existence of *Sittinggil* as part of the palace, the researcher has a strong suspicion about the location of the palace in the vicinity of site, south of the square.

Reserachers strongly suspects that the location of the Demak palace is on the south side faced north or towards the sea because, we have made comparisons with other sultanates that existed in the same era and their successor eras. Comparing the Kasepuhan palace (Cirebon) and the ruins of the Surasowan palace (Banten) and the successor sultanate of the Demak, we found that at the beginning, the city founder built all the Sultanate in a simple pattern consisting of a mosque, square and king's house/*keraton* facing north. The Demak Sultanate had not yet had time to develop the city's centre, even in the era of the fourth king, moving the location to Prawata Hill to avoid the frequent tidal floods. Geological conditions and disputes over the king's successors are why the big maritime city and the first Sultanate in Java are not as big as their names.

The age of the Demak sultanate is short, so it only has a city core and has yet to develop with the addition of urban facilities. We also found the simple form of the city core without complete urban facilities in the short-lived successor sultanates such as the Kota Gede Sultanate, Plered Sultanate, and Kartasura Sultanate.

Learn from the short-lived Sultanate that political, economic, social, and technological factors are the basis for the growth of a city with a heterogeneous population. In addition, the city founder chose site selection based on the ease of obtaining sources of life and the relief of defence-security factors. In the case of a short-lived sultanate, we assumed that the sultanate city had yet to function as the centre of the royal government fully.

The writings of the Demak cultural expert M Kholidul Adib, the secretary of the Cultural Conservation Lovers Community (KPCB), studied Dutch documents about the Tuntang river topography made in the 1700s AD. The map shows a simple rectangular shape that is possible in the wall around the city centre. If we look in more detail at the picture, we can see the writings of Demak and Kadilangu.

Kadilangu is the resting place area of *Sunan* Kalijaga, one of the nine guardians who spread Islam in Java. Sunan Kalijaga participated in establishing mosques in the Demak Sultanate and Cirebon Sultanate. The analysis results on the map show a connection between the city centre of Demak and the Kadilangu area. The Kadilangu area is wider than the city centre of Demak. We estimate that before Raden Patah built the sultanate city centre, there had been a centre for the spread of Islam by *Sunan* Kalijaga. The buildings depicted can be a *pesantren* (Islamic Boarding School) and a mosque. The location is on an East-West axis with the city centre of Demak and the river separating the city centre and Kadilangu. Now there is a path that connects the two places. Based on the map, the city centre of Demak is still the core formed by the mosque and the square, and there is no palace building yet.

Demak is a city centre of the kingdom with a king's palace. Historical sources stated that the location of the Sultanate of Demak's capital was still navigable from the sea at that time. According to the records of foreign sailors, Tome Pires, this area is more expansive than Cirebon, Tegal, Semarang, and Jepara. Likewise, the population is much larger than in these areas. However, because of the short government, we assume that the city centre was smaller than the city centre of the Sultanate of Banten and Cirebon, the sultanate city in the same area. The city centre is also smaller than the sultanates of Surakarta and Yogyakarta as the successor. The old Demak has a shape as a core city, such as the royal map of Kota Gede, Plered and Karta Sura.

The Demak government's short time and the area's rapid sedimentation process eliminated the strait, and the old city lost the transportation route for world trade. Demak is no longer possible to develop its maritime-based empire. Because no heritage map explains the city centre's, the researcher compares it with Pajang, Kota Gede, Plered, and Karta Sura, also sultanate cities that lasted only a short time. The sultanate city has a city shape that is the core city layout of the town, which has a north-south axis. The city centre consists of a square, mosque, and palace. The market is in the north and separate from the yard. The river surrounds the northern side of the Sultanate and becomes the city's fortress. The harbour was facing on the river on the city centre's north side.

Demak became the embryo for the design of royal cities in Java in concentrically planned cities. The centre is the square, mosque, the king's palace and residential surrounding this city centre. The residential villages are in groups (clusters) according to position, profession, ethnicity, and regional origin. The disappearance of traces of the Demak sultanate is evidence that sedimentation on Java's north coast was very fast from the 15th to the 17th century. During this period, the Demak often experienced seawater/tidal flooding.

This paper also finds that apart from the sedimentation disaster in the coastal area, the long reign of government will provide opportunities for future generations to complete city planning with city facilities and infrastructure.

The infrastructure facilitates the royal family and the people. The reservoirs support rice field irrigation, waterways, urban irrigation, clean water for residents, parks, and water parks for irrigation. In the absence of recreational facilities and imperial city facilities like this, Demak was only formed from a city nucleus.

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