The Influence of Railroad Transportation during the Dutch Colonial Era (1897-1942) on the Spatial Structure of Cirebon, Indonesia

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Abstract

Cirebon City was strategically located in the northern part of West Java. As a port city it flourished during the Dutch Colonial era. Sugar plantations and production were exploited by the Dutch government who developed the railroad transportation for people and commodities. The emergence of the sugar industry and railroad infrastructure in 1918 was followed by the development of settlements and the economic centre thus affecting the spatial structure of the Cirebon City in 1918.

This study examines the spatial structure of Cirebon City in 1918 It employs a spatial approach and a descriptive survey method. It gathers archaeological data from the sugar industry and railroad transportation using observation, literature, documentation and interviews. Data is then analysed with Geographic Information Systems based on concentric theory.

The findings show that the central business district zone is located near the port as the final hub of transportation. These developments have been followed concentrically including transition zones, low-class residential homes, better residents, and commuter zones following the infrastructure of the sugar industry and rail transportation.

Key Word: Spatial structure, Archeological heritage, Sugar industry, Railroad transportation

Introduction

The Dutch Colonial Government in Indonesia had a great influence on people's lives, especially in the economic sector, starting from the time when the VOC traded in the archipelago and carried on by the Dutch colonial government. Sugar is one of the commodities which were important and was closely related to the economy of the Dutch colonial government. The plants for processing sugar cane into sugar were mainly centralized in Java, one of which is in the Cirebon region. Before 1930, Indonesia had become one of the main sugar producers and suppliers in the world. This happened especially since the implementation of the forced cultivation policy of (1830-1870) and the liberal era (1870-1900s). The sugar factories had significant impact, especially on the socio-economic conditions of the society.

Nevertheless, socio-ecnomic mobility and various development infrastructure did not directly impact the spatial structure of the Cirebon Region directly (Knight, 1999; Jayanto, 2016; Dell and Olken, 2020).

There are 32 sugar factories in Java, along with its various supporting infrastructure. Of all sugar plantations around, 68% are located in the Island of Java, including the Cirebon region. These plantations are managed mainly by the traditional sugarcane farmers who supply raw sugarcane to the sugar factories. The plantations are either irrigated or dry plantations. These annual yield of these factories in the peak season can reach between 3000 to 5000 tons per day. Sugar has become one of the important trading commodities as it has several advantages compared to the other commodities, such as 1) high financial profit due to sugar as basic need; 2) Competitive and comparatively high margin of profit; 3) Comparatively stable price of sugar; 4) Government policies support as forced cultivation product (Ismoyowati *et al.*, 2003; Bosma and Curry-Machado, 2012).

The strategic location of Cirebon and easy-to-reach morphological conditions make this port city have advantages from agricultural exploration and exploitation, especially from commodities traded in the Malacca Strait. This happened during the Dutch occupation due to the forced cultivation policy. One of the forced cultivation plants is sugarcane which was then processed into sugar as a trade commodity (Hermawan and Mainaki, 2019).

Table 1: Sugar Factories Before The Second World War Period (Source: Research Results, 2019)

No	Processing Plant Name	Since	Directors Office	Owner	Location of Heritage
1	Djatiwangi	1896	Nt. Nationale Industrie and Landbeuw Mij Surabaya	Nv. Mij Tot Exploitatie der Sulter onderneming Djatiwangi Belanda	Majalengka
2	Gempol	1847	John Poet and Cc. (Indonesia) NV. Di Jakarta	Nv. Aments Suiker Fabriaeken	Cirebon
3	Khadipaten	1876	Fa. Anemaet dan co di Surabaya	Nv. Cultuur Mij Khadipaten Java	Majalengka
4	Karangsoewoeng	1896	Nv. Koey And Coester Van Voerhout	Nv. Mij Tot Ekploitatie der Suiker Ordeneming Karangsoewoeng	Cirebon
5	Arjawinagoen	-	-	-	-
6	Paroengdjaja	-	-	-	-
7	Soerawinangoen	-	-	-	-
8	Singdangleret	1896	CV Waller dan Plato di Jakarta	Nv. Mij Eksplotatie der Suiker Fabriek “Sindanglaoet”	Cirebon
9	Nie Tersana	1937	Nv. Cultuur Mij Parakan Salak di Bandung dan Jakarta	Nv. Landbouw Mij Tersana	Cirebon
10	Leuweunggajah	-	-	-	Cirebon
11	Ketanggoengan West	1911	Nv. Verenigde Voorstenlandsche Cultuur Mij di Semarang	Nv. Cultuur Mij Ketanggoengan West	Pekalongan
12	Gist and Spirtusus	1883	Nv. Interrationale Gredit an Handels Verenigde Rotterdam	Nv. Aments Suikernabrieken	Cirebon

Note - = It is not known when this factory was established but it is known for fact it is before WW II and are remains from Dutch colonial era.

All of Cirebon area was tropical in climate and located on the northern part of Java Island known as Pantura or Northen Coastal Area where the Daendels road is located. Thus, transportation is relatively easy in this region (Hermawan and Mainaki, 2019). It is located at a height between 0 to 10 m above the sea level in its northern region and 11 to 130 m above the

sea level in its southern region. This makes the southern region ideal for sugarcane plantations. This is also supported by soil types of Litasol, Alluvial, Mediterranean, latosol, Potsolik, Regosol, Gleihumus, and Grumosol. This type of soil is suitable for rice cultivation and sugarcane plantations (Hendro, 2014).

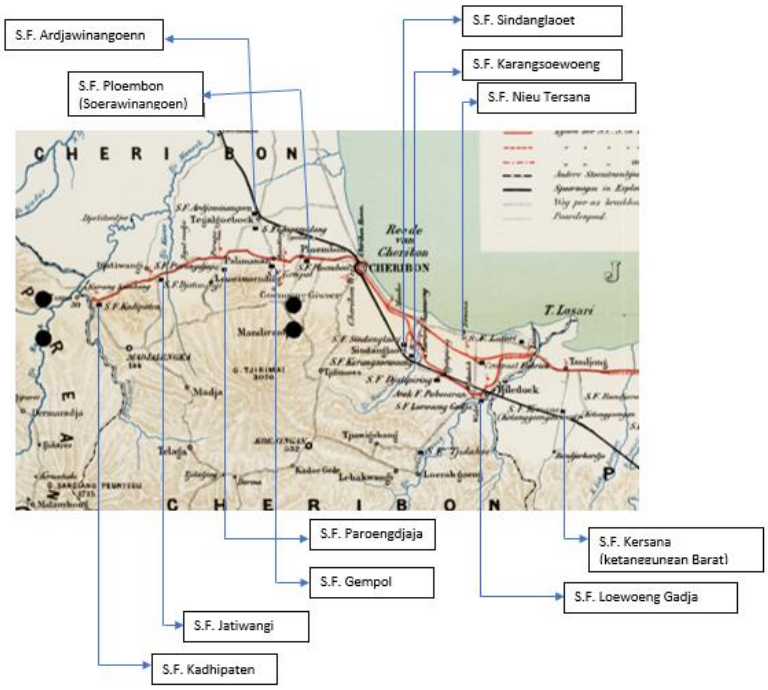


Fig. 1: Distribution of Sugar Factories before the Second World War
Source: Source: Hermawan, 2019

Exploitation of sugarcane during the Dutch colonial era has left various remains of industrial facilities and infrastructure. Sugarcane processing facilities that were built before the second world war (2nd WW) (before 1939), are Djatiwangi (1896), Gempol (1847), Khadipaten (1911), and Gist and Spiritus Fabriek Palimanan (1883). The existence of these factories have triggered a boom of infrastructure development peaked at 1918 around Cirebon area (before 2nd WW) (PG Rajawali II, 2008).

The location of sugarcane plantations and sugar factories as described in Table 1 and Fig. 1 are interconnected by the railways, and the development of the railway system in the Cirebon region is related to the development of the sugar industry. The railway system makes transportation of sugarcane to the factories and sugar from factories to transportation hubs such as ports more effective and efficient, and trains become the main transportation method for the sugar industry in Cirebon (Marihandono *et al.*, 2016; Hermawan, 2019).

The railway construction in Cirebon began with the operation of a tram line from Semarang to Cirebon in 1887 that goes through sugar factories along the Semarang-Cirebon line. This railway was used to transport sugar that the factories produced along its line (Hermawan and Mainaki, 2019). In the 20th century, the Dutch government-owned Statspoorwagen (SS) continued the expansion of its line westward to connect the Cikampek-Cirebon line which operated from 1912. Cirebon-Kroya was operated in 1915, Jatbaranang-Indramayu tram line in 1912 and Jatibarang-Karangampel in 1925. A private company, Semarang Cheribon Stoomtram Maastchappij (SCS) also built the Mundu-Losari line in 1915. All these lines were to support the production and distribution of sugar industries in Cirebon and its surrounding areas (Mainaki and Hermawan, 2019).

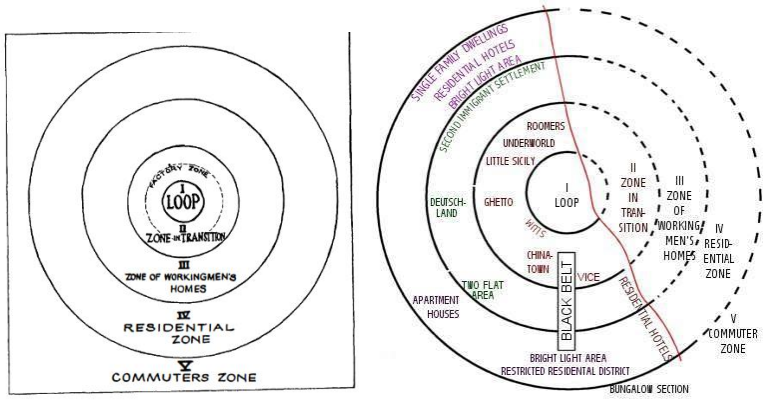
The growth of sugar industries and the development of the railway system also affected the development of the spatial structure of the Cirebon region. Beginning in 1918, the buildings of supporting infrastructure for the sugar industries such as official houses, warehouses, port, and other supporting infrastructure changed the face of Cirebon. This also have had an impact on the social mobility of people and formed social stratification. Dutch government regionally developed plans for the industrial development and transportation which in turn has affected the land use. This has led to the formation of certain zoning of areas.

In this context, this paper examines the spatial structure of the Cirebon region in 1918 was such an interesting issue to study and research, based on its archaeological remains. Its aims are:

1) To ascertain the impact of railroad construction on the development of the city of Cirebon and its surroundings.
2) To explore the development of the city of Cirebon and its surroundings through archaeological remains.
3) To identify the new growth areas that support Cirebon as the main growth center in the region.

Theoretical Framework

Cities grow and develop in an orderly manner because of interrelationships between people and people and their environment. About the orderliness of a city, Burgess (1925) revealed that a city will consist of concentric zones and each zone will reflect a different type of land use.



(a) (b)

Fig.2. (a) The Growth of The City; (b) Urban Area
Source: Burgess, 1925:51 & 55).

Fig. 2 represents an ideal construction of the tendencies of any town or city to expand radially from its central business district on the map "The Loop" (I) . Encircling the downtown area there is normally an area in transition, which is being invaded by business and light manufacture (II) . A third area (III) is inhabited by the workers in industries who have escaped from the area of deterioration (II) but who desire to live within easy access of their work. Beyond this zone is the " residential area " (IV) of high-class apartment buildings or of exclusive " restricted " districts of single family dwellings. Still farther, out beyond the city limits, is the commuters' zone-suburban areas, or satellite cities-within a thirty- to sixty-minute ride of the central business district (Burgess, 1925:50). The representation of the Black Belt as a block of space wedged in tension with the concentric radiation of urban growth is itself a suggestive refutation of these assumptions and of Burgess' celebration of 'mobility as the pulse of the community (Burgess, 1925:52).

Review of Literature

Cirebon at the beginning of its growth was a cosmic city. The city center is the Palace, Mosque, and the City Square surrounded by residential areas in groups based on position, profession, ethnicity, and religion. After the entry of the Dutch, the center of urban activity shifted to the Port area which developed into the center of trade activities in Cirebon (Hendro, 2014). The Port of Cirebon had a significant influence on the socio-economic life of the people of the city of Cirebon. These conditions led to a shift in the pattern of population settlements from oriented to the palace to the Port area (Sulistiyono, 1994).

The Cilacap port on the south coast of Java plays a significant role in the development and growth of Cilacap city and its hinterland. The development of a coastal city will be influenced by the high level of port activity and the activities of the port are supported by the surrounding areas (hinterland). This is because export products are produced by hinterland areas and distributed through land or river transportation networks, while imported goods entering the port will be distributed to hinterland areas. These conditions cause geographical social mobility that will encourage the port area to become a growth center or center of community activity (Zuhdi, 2016). The existence of the port as a center of community activity is strengthened by the existence of highways and railways that lead to the port (Sulistiyono, 1994).

The development and growth of a city or region cannot be separated from the existence of transportation routes that connect it with buffer areas. The more transportation routes that lead, the higher the social activity that occurs. The construction of the Postal Highway (Groote Postweg) through Priangan has given birth to new growth centers in the interior of West Java, one of which is Bandung, which developed from a small village in the middle of the forest into one of the major cities on the island of Java (Hermawan, 2010). The development of Bandung City grew rapidly when railroad transportation was connected from Batavia (Now, Jakarta) to Bandung City and connected to Cilacap. The development of railroad transportation modes also encouraged the emergence of buffer zones along the railroad line (Hermawan, 2018). Similar conditions also occurred in Cirebon, the areas along the railway line developed into new centers of crowds and became a support for the city of Cirebon (Hermawan and Mainaki, 2019).

Research Methods

This study uses a spatial approach, which is an approach that emphasizes the analysis of spatial processes: in this case, space is one unit of the earth's surface with the resources above it (Putra, Sudaryanto and Rindarjono, 2015). It employs qualitative research methods: seeing the structure of the Cirebon region in 1918, through historical reconstruction on industrial aspects and transportation.

The research was conducted with a descriptive exploratory survey method through inductive reasoning, following qualitative research principles (Goetz and LeCompte, 1984; Garna, 1999; Rahmat, 2009), namely

(1) Exploring the sugar factory industry in the Cirebon region in 1918;
(2) Exploring the heritage of rail transportation in the Cirebon Region in 1918;
(3) Analyzing the relationship between the existence of railroad transportation and the sugar industry in 1918;
(4) Analyzing the existence of the sugar industry and rail transportation with the development of the surrounding infrastructure;
(5) Analyzing the spatial structure of the Cirebon region in 1918 based on the concentric theory;
(6) Concluding and reporting the results of the study.

Data were collected through the following activities

1) Literacy studies: books, journals, maps and other sources of scientific publications to determine the existence of sugar factories and railroad transportation in 1918;
2) Documentation study, namely data from related agencies, a) PT KAI for rail transportation in 1918; b) PT Rajawali Sugar Factory for data on the sugar factory industry and sugar cane plantations in 1918 and c) Cirebon City and Regency

governments to obtain archaeological data along with the history of the existence of cultural sites related to the sugar industry and rail transportation in 1918;

3) Observation, namely conducting a direct survey of the location of the former sugar cane plantations and sugar factories which operated from 1918 to the present, namely the Karangsuwung Sugar Factory, the Sindanglaut Sugar Factory, the Tersana Baru Sugar Factory, and the Palimanan Spirtus and Alcohol Factory;

Data were analyzed by

1) Mapping the archaeological heritagesof the sugar industry and railroad transportation in 1918 with the reconstruction of a geographic information system, namely a unified system that emphasizes geographic information on the earth's surface, be it zoning, distribution or correlation, this is closely related to the spatial structure because the existence of research objects on the surface of the earth (Pujayanti, Susilo and Puspitaningrum, 2014),
2) Analyzing the descriptions to see the association or correlation of data related to the object of research (Agung, 2000) namely, the archaeological heritages of the sugar industry and railroad transportation in 1918 and their influence on the spatial structure of the Cirebon Region;
3) Correlating the results of the geographic information system analysis in the form of a map with the results of the description analysis so that more specific research results are obtained in the form of a described map;
4) Analyzing with a spatial approach in order to obtain the 1918 Cirebon Region spatial structure;
5) Classifying and zoning spatial structures in the form of maps and report descriptions. The basis for determining the spatial structure in this case is the concentric theory, namely the classification and zoning of areas as follows (Rachmawati, 2008; Ilma and Rakhmatulloh, 2014).

Archaeological Heritage of Sugar Industry in the Cirebon Region

This research was carried out at several sugar factories that were operated before the World War II. By looking at the archaeological remains from 1918, it is possible to identify what influence, direct or indirect, of this sugar industry have had on the spatial structure of the Cirebon region. The archaeological remains observed involved everything related to the sugar industry.

Findings and the Discussion

Archaeological Heritage of the Karangsuwung Sugar Factory

Karangsuwung *Suiker Fabriek* (sugar factory) is located in the Karangsuwung Village, Karangsembung District, Cirebon Regency. This factory has been founded in 1896 owned by the Dutch company *NV. Mij Tot Ekploitatie der Suiker onderneming* Karangsuwung. After being nationalized, the name of the factory has changed to *Pabrik Gula* Karangsuwung. Archaeological remains from this factory comprises of official houses in the factory area as shown in the Fig. 3. The five houses shown in the Fig. 2 indicated by a red arrow are houses for the section head or a person of similar position. The houses have been built at the same time with the factory in 1896.

House no. 2 is a duplex house. Building plans are symmetrical sharing one yard. The foundation of the building is raised by brick construction arranged in lines. A mix of lime, sand and red brick mortar have been use as cement for building construction. The roofs are of terracotta tiles.

Fig. 3: Plans (left) and official houses (right) Karangsuwung Sugar Factory
Source: Balai Arkeologi Jawa Barat, 2019

Archaeological Heritage of Sindanglaut Sugar Factory

Sindanglaut *Suiker Fabriek* is located at *Jalan Raya* Sindanglaut number 1, Cipeujeuh Wetan Village, Lemah Abang District, Cirebon. It has been founded in 1896 and has been owned by the Dutch company NV. Mij Tot Ekploitatie der Suiker Sindanglaoet. After nationalization, the factory name stayed. Four houses have come from the pre-WW II era. All are located within the factory area as shown in the Fig. 3. All of them have been for the factory employees with section heads or department heads.

The main building of the house consists of several rooms. At the back of the main house the functional building is located which also consists of several rooms. This functional building is where the kitchen, and the bathroom, etc. are located. The house has been constructed from red brick using a mix of sand, lime and red brick mortar as cement. The roof has been constructed from wood joined with pegs and red terracotta tiles. There is a roofed veranda at the front of the house which has raised the veranda in 3 steps up from the ground. At the veranda, there are two doors: one leads to the hallways and the other to a bedroom.

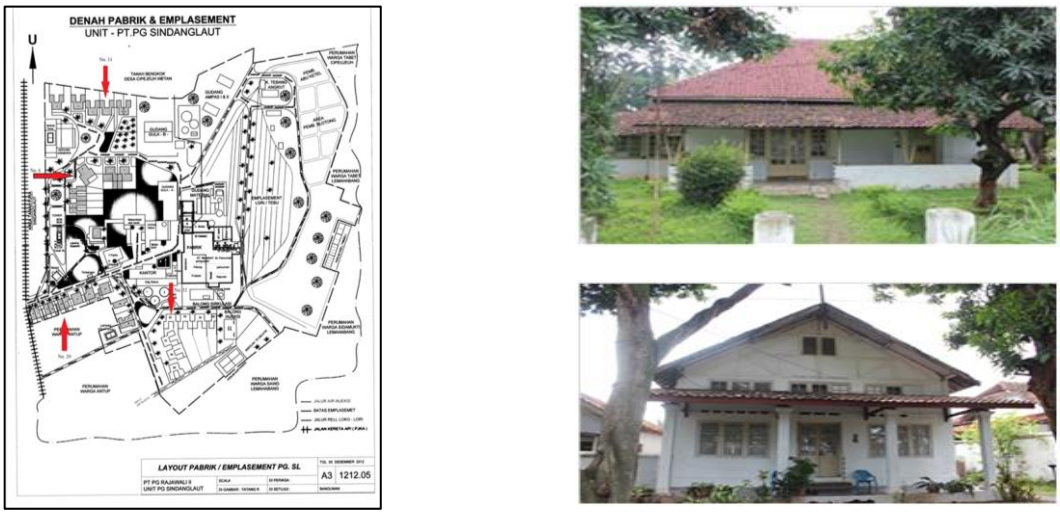


Fig. 4: Map (left) and two type of houses at Sindanglaut Sugar Factory (right)
Source: Balai Arkeologi Jawa Barat documentation, 2019

Archaeological Remains of the Tersana Baru Sugar Factory

Tersana Baru *Suiker Fabriek* is located in the Babakan Village, Babakan District, Cirebon Regency. Founded in 1937, under the name of Nieu Tersana owned by the Dutch company NV. Landbouw Mij Tersana. After nationalization, it has changed the name to *Pabrik Gula* Tersana Baru. The staff houses are located around the factory area. There are 5 houses that are used as samples: 4 houses for staff with the position of section head or department head and 1 house for the non-staff with the position of security or production department.

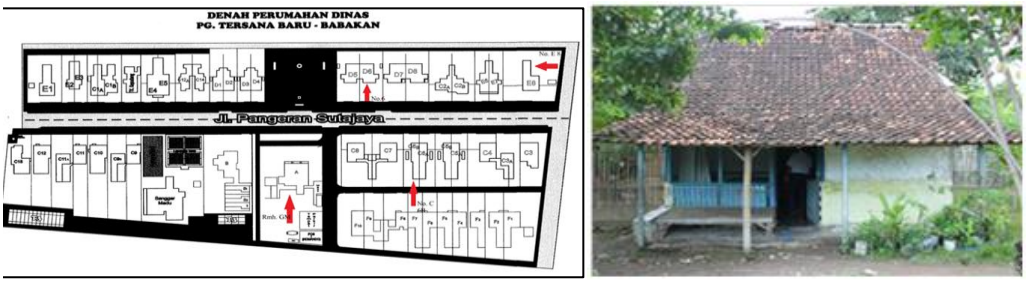


Fig. 5: Housing complex at Tersana Baru sugar factory (left) and non-staff official houses (right)
Source: Balai Arkeologi Jawa Barat, 2019

The Tersana Baru sugar factory is the only sugar factory that has housing for non-staff employees. The house for non-staff is located still within the boundaries of the factory but separated from the houses for the staff employees. There are a lot of non-staff employee houses that are similar in size and dimensions. The construction of the house is made from a combination of brickwork and woven bamboo sheets known as Gedeg. The roof is constructed from wood with wooden pegs and red terracotta tiles.

The house for the Tersana Baru sugar factory General Manager consists of several buildings i.e., the main building, functional building, and pavillion that are currently used for guest accommodation. Other houses are duplex type. The size and dimensions of the houses are identical and share one roof.

Archaeological Remains of Palimanan Spirtus and Alcohol Factory

The Palimanan Spiritus and Alcohol Factory is located at Jalan Raya Palimanan No. 168 Cirebon. The factory has been founded in 1883 and has been owned by NV. Aments Suikerfabriken. The factory at the beginning has been a subsidiary of the Gempol sugar factory. Nowadays the factory, as one of the subsidiaries of P.T. Rajawali II produces alcohol and spirits by processing molasses into spirits and alcohol. There are 4 official houses at the Palimanan Spiritus and Alcohol Factory. One of them is the General Manager's House which is located next to the factory. The other 3 are for the staff employees and are located at some distance from the factory.

Archaeological Remains of Railway Transportation in the Cirebon Region

Railway transportation has influenced the development of the city of Cirebon extensively. This can be seen in the archaeological remains of the railway archaeological remains related to the layout of the city of Cirebon: the station buildings, supporting buildings, and the railroad.

Archaeological Remains of the Station Buildings

The station is a place where trains stop to pick up and drop off passengers, and load or unload goods. It is also a place to cross or overtake other trains. The station is divided into Passenger Stations, and Goods Stations, and Operational Stations (Halsall, 2001). There are two important stations in Cirebon built by the two railway companies, namely Cirebon Kejaksan station or Cirebon SS Station built by the state railway company, *Staatsspoorwegen*

(SS), and Cirebon Prujakan Station or Cherebon West Station or Cirebon SCS built by a railway company, *Semarang Cheribon Stoomtram Maschappij (SCS)* (Hermawan, 2020a).

Cirebon Kejaksan Station or Cirebon SS Station has been officially operated in 1912 when the Cikampek - Cirebon railroad line officially operated. The station has been built by the government-owned railroad company, Staatsspooorwegen, to facilitate the passengers up and down to Batavia and *vice versa*. After the Cirebon - Kroya line has been connected, Cirebon station has also served train trips to the other cities in the South of Java (Wardhani, 2014; Hariyadi, 2016).

Cirebon Prujakan Station is a station built by a private railroad company, Semarang Cheribon Stoomtram Maatschappij (SCS), in 1914. It has functioned to transport the passengers up and down to Semarang or *vice versa*. This station is a replacement station for the previous SCS station which has been built previously along with the opening of the Semarang - Cirebon railway line in 1897. It has been intended to meet the needs of sugar transportation from the sugar factories to the Port of Cirebon. After obtaining a rail construction permit in the Cirebon Port area, in 1899, a branch line has been opened to the Port of Cirebon, so that trains could enter the Cirebon port area (Oegema, 1982; Marihandono *et al.*, 2016; Hermawan, 2020b).

In order to improve passenger and goods transportation services to Batavia and Semarang or Cirebon Port, SCS and SS collaborated, a number of developments have been done. They are:

(1) Building a connecting rail between Cirebon SS Station and Cirebon SCS Station, so that the passengers to Semarang from Batavia could directly change trains at the Cirebon SCS station and *vice versa*. Passengers to Batavia from Semarang could directly change trains at the Cirebon SCS Station.

(2) Transferring the transportation of goods from SS trains to SCS trams for the purpose of Cirebon Port or Semarang and other cities served by SCS, and *vice versa* (Marihandono *et al.*, 2016) .

a b c

Fig. 6: a) Cirebon Station; b) Cirebon Prujakan Station and c) former Port Station Cirebon.
Source: Balai Arkeologi Jawa Barat, 2019

Archaeological Remains of Railways Employee Buildings

Since there are two large stations operated by the two railway companies in Cirebon, there are two housing complexes for the railway companies' employees in Cirebon. Each of the housing complex located near the station is owned by each company i.e., Sportland (Sport street) and Tanda street, housing complex near Cirebon Kejaksan Station; Pelajar Pejuang street and Ampera street, housing complex near Cirebon Prujakan Station.

There are three types of houses in the housing complexes i.e. Type I, Type II, and Type III. Type I houses are built on a large plot of land and had the biggest size and dimensions of all the three types, built for high-ranking railway officials. Type II are medium houses built on medium size plots of land, built for middle management employees. Type III are small service houses known as tenements built for the other railway employees (Wardhani, 2013).

Archaeological Remains of Railway Tracks

Archaeological remains of rail tracks can be found in several areas in the Cirebon region, and the remains came from different train routes.

1) Cirebon Station – Port Station lines found at
   a) Gang Buntu: These remains came in the form of mechanical signal posts and railbeds for the rail line from Cirebon Station (CN) to Port Station.
   b) Gang Sudarma: These remains are in the form of railbeds on the line from Prujakan Station – Port Station. Rail tracks and railbeds can be seen in some of the resident's houses in the area
   c) Sukalila Bridge: These remains came in the form of rail tracks not far from Cirebon Prujakan Station (CNP)
   d) Kartini road crossing: These remains came in the form of crossing gates
   e) Jalan Syekh Magelung: These remains come in the form of a railbed from the Cirebon Port line.
2) Cirebon – Kadipaten Lines, in the form of a railbed and Pilangsari Bridge (Fig. 7).

Fig. 7: Archaeological remains of the railway line operating in 1918
Source: Balai Arkeologi Jawa Barat, 2019

Archaeological Remains of Cirebon Port Infrastructure

Starting in 1865, a channel about 20 meters wide has been built from the estuary of Cirebon River with a pier supporting wall 1,5 meters thick along the 200 meters of coastline. Starting from July 1st, 1867, ships going in or out of the Cirebon Port have been guided and regulated by a 14-meter high lighthouse constructed from iron with concrete and stone foundation, and the lighthouse which included guards' rooms. In July of 1883, the old lighthouse has been replaced with *Lichtostand Verangen* (lamp with stands).

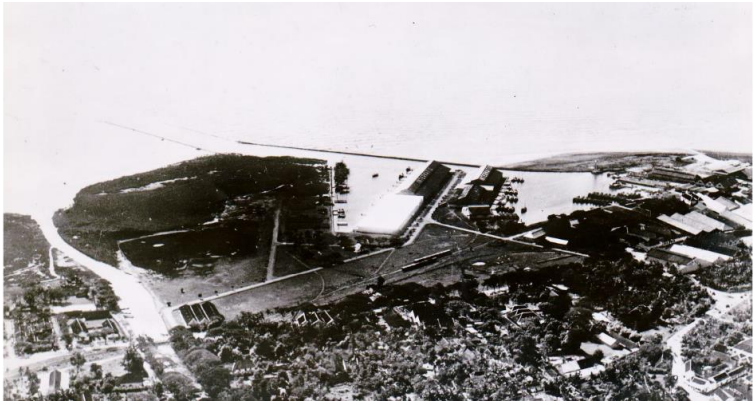


Fig. 8: Cirebon Harbor which has a wharf and warehouse complex (source: http://hdl.handle.bet/1887.1/item:915983)

From the beginning of the 20th century to the 1920s, Cirebon Port has grown as a modern harbor. The area of the harbor is bordered by Kalianyar (Kalibaru) on the North, along Pasisirweg (Pesisir street, now *Jalan* Sisisngamangaraja XII) on the northwest side, On the southern side is Chirebon River Canal that runs to the sea. What remains of this Cirebon Port are some piers, to keep up with the increasing port activities. In the 1930s, Cirebon Port piers have been added and extended, and a railroad has also been installed on the pier. All of this has been done to make it easier to load and unload goods from or to the ships. Warehouses have

also been built around the harbor to facilitate storing goods and commodities going out and into the Cirebon Port (Fig.8).

Archaeological Remains of Cirebon Urban Infrastructure

Other archaeological remains and landmarks from the sugar industry and railroad transportation that affect Cirebon's Regional spatial structures can be found in several areas of the Cirebon City. The first area will be Kebumen and Cangkol Field. In this area, there are several archeological remains which are as follows.

a) Keboemen Plein or Keboemen Square where in its surrounding area still can be seen several Dutch East Indies government buildings.
b) Post Office Building.
c) Pasundan Church, the oldest Protestant church in Cirebon, and
d) Schools for the Europeans, now *Sekolah Menengah Pertama Negeri* (Junior High School) 14 and *Sekolah Menengah Pertama Negeri* (Junior High School) 16.

The second area is in the vicinity of Jalan Siliwangi, Jalan Kartini, and Jalan Veteran. In and around this area, there are buildings from the Dutch East Indies era which are,

a) The main City Square: In its surrounding, there are the Grand Mosque, Regent Pavillon, Assistant Resident Residence and other Dutch government buildings,
b) Regent's office building, built in Art Deco architectural style influenced by modern style of Amsterdam School of Holland. Construction was initiated by the head of The Cirebon Public Works Office, Joost Jacob Jiskoot,
c) Cirebon Mayor's official residence,
d) Indonesian Railway Company Regional 3 (KAI DAOP 3) office, and Kebonbaru elementary school building.

The third area is in the Pamitran area, archaeological remains in this area are a) the Pamitran Hospital building, and b) a slab of rock with Chinese inscription.

Cirebon Spatial Structure

Based on the maps of Cirebon in 1918, the development of Cirebon's spatial structure has become more complex by the development of the sugar industry and rail transportation infrastructure along with the various developments by the Dutch government as the colonial ruler of the Netherlands Indies. Some of the available lands are planned for use as buildings, rice fields, plantations and road networks. Land for plantation has been divided for use as coconut plantations, rice fields, bamboo grooves, and other agricultural needs.

The material used to build buildings have also been consisted of several types of materials, wood, bamboo, iron, and bricks. Residential areas are also divided into indigenous residential areas and non-indigenous areas (Dutch, and other European citizens). The city center at the time as can be seen on the map is close to the port as the most colonial buildings such as Government Offices, Post Offices, Administrative Offices, Banks, and Hotels. In this area, there is also a rail line from the SS Kejaksan Station to the Cirebon Port.

The settlement has grown to the West and southeast of the port area, along the two main rail lines connecting the Cirebon City with the Cirebon Regency and other areas in the West Java Provinces. This expansion to the West and the Southeast has not been followed by the development of settlements to the North area of the city. This may be due to the fact that the distance of the area to the port is relatively far causing less or no interaction with the port, although some areas in the North are traversed through the same railways routes. This can be seen on the east side of the railroad line where there is a lot of infrastructure in contrast to the west side of the railroad line where the entire land use is the cultivation of food crops (rice fields), the spatial structure of the Cirebon Region in 1918 in accordance with the concentric theory looks like in Fig. 9.

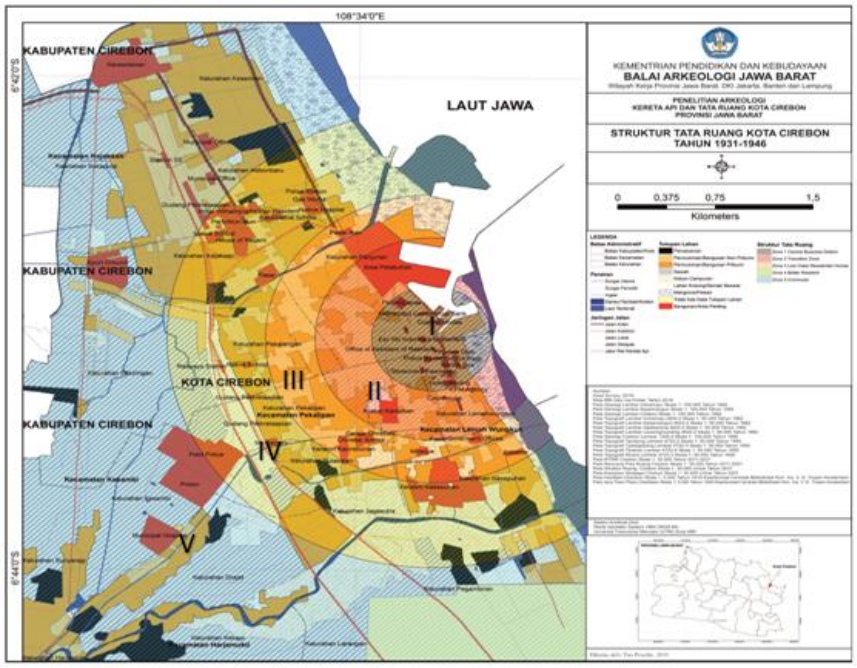


Fig. 9: The spatial structure of Cirebon Region in 1918
Source: Balai Arkeologi Jawa Barat, 2019

Fig. 9 shows the spatial structure of Cirebon city in 1918 based on the concentric theory proposed by Burgess (1925).

1) Zone I: The Central Bussines District (CBD) kota Cirebon, adalah kawasan Pelabuhan Cirebon. Buildings supporting economic, socio-cultural, and government activities were built in this area, such as warehouses, prisons, hospitals, and government offices. This area also has high accessibility, because it is a node for transportation modes from all directions and destinations. Cirebon Port is passed by the Pos highway which is the main route of the north coast of Java, and there is a railroad line that connects the port of Cirebon with Cirebon Kejaksan Station and Cirebon Prujakan Station.
2) Zone II: The Transition, is the area directly adjacent to the harbor area. Based on the 1918 map, settlements around the center of the economy and government mark the transition zone in the City of Cirebon.
3) Zone III: The Low Class Residential Homes is a residential zone for the workers who are active in the zones 1 and 2, not as the main residence but like a place to stop after work and activities. This zone is inhabited by the industrial factory workers. Settlements in this area are still better than those in the zone 2. Apart from being inhabited by the indigenous people, this zone is also inhabited by the residents from the other areas. The standard of this zone comprises raised beds for the railway employees or the beds for the sugar industry employees.
4) Zone IV: Affluent Residential Areas, This is a better residential area than the second and the third. This area is inhabited by people with high and middle economic class. The regularity of settlements in this area is relatively very high because it is well planned, making the comfort level of the residents in this area very high.
5) Zone 5: Commuters is a commuting zone as a result of the development of transportation technology. This zone develops on the outskirts of the center of economic and government activities. Settlements in this zone develop with a very high quality and luxury. This is because it is driven by the desire to get a more decent settlement, because it is not obtained from the previous zones. It is much freer from the various types of pollutions but further to access the regional activity centers. This area is outside the City of Cirebon, but can still be reached by traveling between 30 minutes and 1 hour.

Conclusions

The spatial structure of the Cirebon region in 1918 has been formed due to the arrival of the Dutch East Indies government and the exploitation of sugar industries. The development of the sugar industry in turn has encouraged the development of railways transportation and its technologies. The world's need for sugar and other sugar-related products have accelerated developments in the other fields, such as transportation technologies.

This paper examined the development of the complex spatial structure and the development in Cirebon around 1918. This paper interpreted the spatial structure based on the concentric theory of zoning, namely the central business district located near the port as the final transportation hub. For the sugar industries, these developments follow a concentric manner such as the transition zone, low-class residential homes, better residential areas, and commuter zones tightly following the development of the sugar industry and rail transportation in Cirebon.

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Conflicts of interest.

The authors declare no conflict of interest.

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