VOC Heritage Settlements in Southeast Asia
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Abstract

The purpose of this contribution to the First International
Conference on Architectural Heritage in the Islamic States is
to expand on the historical background and planning of the
VOC (Dutch East Indies Company) settlements in the
Southeast Asia. The purpose of this paper is to show how
the ideas of architects influenced the planning and
construction of settlements in Southeast Asia. Specifically
the architect and mathematician Simon Stevin (1548- 1620)
had an important influence on the planning and
construction of settlements.

This paper will expand on how settlements were
constructed by explaining treatises of Simon Stevin about
fortifications and townplanning. Followed by a summary of
the ideas, about the Ideal City, of Italian architects and their
influence on Dutch architects. Finally the ideas of Simon
Stevin and their application will be dealt with and how VOC
settlements were constructed. Hopefully this paper will lead
to a greater interest in VOC settlements in Southeast Asia.

Keywords: VOC, Southeast Asia, heritage, settlements.
1. Introduction

VOC architecture and town planning, in the settlements in Southeast Asia, was similar in design, clear and straightforward.\(^1\) Regulations for settlements during the seventeenth and eighteenth centuries were not only confined to architectural principles and technical aspects of planning and construction. They also covered all aspects of life: social, economic and cultural level from trading and warfare to everyday living and working. It seems that this was deliberately planned in such a way. The local commanders and engineers could have been instructed by means of guidelines and technical and legal regulations from the Netherlands. (Oers 2000:10).

2. The treatises of Simon Stevin

Simon Stevin wrote treatises in which he expressed his ideas about architecture. These treatises had a great influence on the construction of settlements in Southeast Asia. Some of them will be mentioned below:

2.1 De Sterctenbouwing

In 1594 Stevin published *De Sterctenbouwing* (The building of Fortifications) in which he gave guidelines on the construction of Fortresses. There were according to Stevin two kinds of fortifications: fixed fortifications and temporary fortifications in the open field. According to the ideas of Stevin the fortresses were to be constructed of brick walls although this was unpractical in the wet and swampy Dutch landscape. Walls of earth were more easy to built, lighter and cheaper. In this paper Stevin also gave much attention to the use of water as a defensive system. (Catalogue Exhibition University Library Leiden 2004:6)

To make engineers more acquainted with fortifications in the open field a faculty was established in 1600 at the University of Leiden. The faculty got the name of *Duytsche Mathematique* (German Mathematics). The commission to establish such a faculty was given by Prince Maurits.\(^2\) The students were taught in geodesy\(^3\) and building of fortifications. After the students were familiar with the elementary

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1. The VOC had its head office in Amsterdam, the Netherlands. The inhabitants of the Netherlands are referred to as “The Dutch”.
2. Prince Maurits of Orange-Nassau (1567-1625) Stadholder (Governor) (1585-1625) of the Northern Netherlands.
3. Scientific discipline that deals with the measurement and representation of the Earth.
principles of arithmetics\(^4\) and practical geometry\(^5\) they had to measure and draw regular and irregular polygon (multi-corners) figures. They were then sent on fieldtrips to practise and to learn how to place the polygon figures with the help of beacons in the open field. When they had acquired enough knowledge of land-measurement, they had to make models of wood or clay of bastions and entrenchments in miniature size. (Catalogue University Library Leiden 2004:7)

**Figure 1a & 1b:** Marking out fortifications in the field using surveyors’ poles, ropes and vanes to produce circles (1a) and pentagons (1b).

Another paper: *Onderscheyt van de oirdening der steden* (the ordering of cities) was published in 1600. This treatise contains all kinds of information: it is about the selection of the site where to built a city and on the layout of cities. It is also about the layout of churches and prisons, as well as of the galleries in front of the house on both sides of the street and the mirror-sided expansion of the town. It also contains information how to keep water fresh, about locks, harbours, water breakers, how to keep smelling canals fresh and how to make diked lands higher in order to prevent the flooding of towns and villages while ensuring that they stayed fertile. (Heuvel, van den, 2005:200)

### 2.2 Castrametatio

The treatise *Castrametatio* of Simon Stevin which was published in 1617 was about the lay-out of an army camp. (Oers 2000:79) It also contains a description in which way temporary army camps should be designed for sieges. Stevin combined the theoretical examples of the Classical Antiquity with the experiences of the Eighty Years War.\(^6\) From these experiences Prince Maurits developed a camp model which was modern for its time. First the Prince had designs made of the lay-out of the camps in the fashion of the Romans but after many complaints from his officers for the too small housing he decided to redesign his camps according to the rectangles of Polybius \(^7\) and other authors of the antique Greek and Roman periods. (Catalogue Exhibition University Library Leiden 2004:7)

\(^4\) The most elementary and oldest branch of mathematics.

\(^5\) Is a part of mathematics concerned with questions of size, shape, relative position of figures, and the properties of space.

\(^6\) The Eighty Years War (1568-1648) was fought because the Northern Netherlands (present day the Netherlands) revolted against the Spanish Habsburg Kings to gain their in independence from Spain.

\(^7\) Greek statesman and historian (c 200 – c 118 BC). Polybius wrote 40 volumes on the rise of Rome of which only 5 remain in their entity. In some volumes Polybius wrote about wars
The model was empirical\(^8\) in its approach and flexible in design which made it possible for an encampment to be constructed anywhere. All required shelters were set up in squares with a total length of three hundred Dutch feet.\(^9\) Next the width was adjusted to the requirements of the commanding officer or army encampment. The squares were then drawn on scale and moved around on a drawn roster within lines which ran parallel to each other. In between these lines there had to be space for streets which had a width of fifty Dutch feet. When it was deemed necessary the squares could be made wider or narrower. Only after all the land inside the camp had been distributed the army was allowed to enter the camp. Then the camp was enclosed by, water filled, moats and two bastions erected at each corner of the camp, extending slightly outside the line of the walls so there was a better view of the surrounding countryside and along the length of the wall. (Catalogue Exhibition University Library 2004:7) It was especially the detail for logistics and order which were so characteristic for the designs of Simon Stevin. The longer the army stayed the bigger the camp could get and could even grow to become a city. The Polish architect Adam Freitag, who wrote the Architectura Militaris or Fortification in 1630, made a difference between temporary camps for one or a couple of nights, camps for sieges and camps which would grow into a city. His book was inspired by The Castrametatio by Simon Stevin. This design has most likely had an influence on the design of the first VOC settlements overseas. (Catalogue Exhibition University Library Leiden 2004:8)

2.3 Other treatises

In 1605 and 1608 Simon Stevin, published two volumes, with the title Wisconstighe Ghedachtenissen (Thoughts on Mathematics). A part of this treatise was named Huysbou (House Building). One of the chapters of this part is titled: Onderscheyt van de Oirdeningh der steden (Ordering of the cities). In this chapter Stevin expresses his ideas on locating all administrative power of a city in one single building. He added that all the governing bodies of the city had to be housed in a palace or Vorstelyck Huys (Regal House). (Heuvel, van den, 2005:159) Stevin also gave several reasons, why he wanted this stately house to lodge all the officers with their wives and children. One of the reasons was to reduce travel time as well as to save money. (Heuvel, van den, 2005:185)

\(^8\) Empirical means information gained by means of information, experience or experiment.

\(^9\) A feet is called a voet in the Dutch language. The most commonly used was the Rijnlandse voet. Which is 0.098596 m\(^2\) or 1.0163 sq f.
3. Treatises about Architecture from the Italian Renaissance.

In the Italian Renaissance treatises were written by Italian architects about their views of the ideal city. These treatises influenced Dutch engineers and architects. Some of these treatises were written by the following architects:

3.1 Leonardo Bruni 10

In 1407 Leonardo Bruni, in his *Laudatio Florentiae urbis* (Praise of the City of Florence), describes Florence as a model of an ideal city of justice, a city well ordered, harmonious and beautiful. Bruni stated that the city was rational and functional in her institutions as well as in her architecture: “nothing in her is confused, nothing inconvenient, nothing without reason, nothing without foundation; all things have their place, not only definite but convenient and where they ought to be. Distinguished are the offices, distinguished the judgements, distinguished the orders”. (Dictionary of the History of Ideas 2003:7)

The ideal city in the Renaissance was not only a Utopian one it was a real one as to be identified with the social and political reality. It was built along a river and had a Palace (*Palazzo dei Signori*) and a temple (the Dome) in the centre of town.

3.2 Leon Battista Alberti 11

Between 1443 and 1452 Leon Battista Alberti stated in *Re Aedificatoria* (On the Art of Building) his aesthetic and moral values, of his ”ideal” city, quite clearly. He proposed a scheme for an entire town. In his treatise he made a division between architecture for private and ecclesiastical purposes. Every detail in his city was subject to the whole plan. The choice of the site of the town had to be good for one’s health, it should have a supply of water and had to be easy to defend. The town should be clearly laid out with the main streets conveniently connected to the bridges and gates. The streets should be wide enough as not to get congested with traffic but not too wide to get too much heat. Symmetry was the most important component of the design of the city. (Dictionary of Ideas 2003:8)

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10 Leonardo Bruni (Arezzo c.1370 – Florence 1444) was a leading humanist, historian and chancellor of Florence. Bruni is supposed to have been the first modern historian.

3.3 Antonio di Pietro Averlino (Filarete)\textsuperscript{12}

Around 1460-1464, an interesting treatise, the *Trattato di architettura* (Treatise on Architecture) was written by Filarete in twenty five volumes. According to his ideas the city has the form of an octagonal star with a round *piazza* (square) at its center from where the streets radiate. Filarete puts strong emphasis on regularity of the town with as its main component large squares. His city is not to be an artificial structure but “beautiful and good and perfectly in accord with the natural order”. (Dictionary of Ideas 2003: 9) In his design Filarete also finds the social and economic needs of the population all important in accordance with the ideas of the Italian city-states of the fifteenth century. The large buildings are full of symbolism: the Dome of the Cathedral was covered by a mosaic representation of God in the form of a resplendent sun that lights all of the Dome with its rays of gold surroundend by angels and saints. On the pavement beneath the Dome there was a map of the lands and waters surrounded by the symbols of the seasons and the elements. (Dictionary of Ideas 2003:9)

3.4 Tomasso Campanella\textsuperscript{13}

In 1602 Tomasso Campanella wrote, in an Italian version, his *City of the Sun* and in a latin version *Civitas Solis* in 1623 about the ideal city. His Utopian city (which was located on a distant island) was governed by a solar religion. The form of the city was round which Campanella thought as the most perfect. The houses were arranged as circular walls placed around the temple (cathedral). The temple “is perfectly round, free on all sides, supported by massive and elegant columns”. (Dictionary of Ideas 2006:11) This Temple or Dome in the center of the city had an opening in the middle of its roof directly above the altar in the center. On the altar is nothing but two globes, “of which the largest is celestial, the smaller one a terrestrial one.” (Dictionary of Ideas 2006:11) The round form was an old symbol of perfection. It can be seen in the form a radiating center and as a concentric arrangement. Campanella wanted to give expression of a heavenly world in his City of the Sun therefore on the walls of the temple he depicted all the stars of heaven with their relation to things on the planet. On the walls of the houses mathematical figures, animals and different occupations of man can be seen. On the outermost circle or wall

\textsuperscript{12} Antonio di Pietro Averlino (Florence 1400 - Rome 1469) “Averulino”, known as Filarete (Greek for lover of excellence). Italian sculpture and architect.

\textsuperscript{13} Tomasso Campanella (Giovannno Domenico) (Stilo 1568 – Paris 1639). Italian monk, philosopher, theologian and poet.
statues of great men, moral leaders, and founders of religions are placed. (Dictionary of Ideas 2003:11)

The Utopian city plan was really a criticism on the natural grown cities. The narrow streets and confused planning of most of the medieval cities was changed to a rigidly planned and perfectly regular town. It had to be a rational and easily understood plan of a city as society should be too.

In the fifteenth century the ideal city there for was one of a rational structure. The model city contained elements of cosmic symbolism but the problems of daily life remained. It was a question how to make justice and wisdom work in a community and how to translate this into architecture. It is altogether very much a city on earth and there was nothing Utopian about it.

In the sixteenth century the borders between the real and the ideal city were less clear. Symbolism was more important in the design of the town but there was no return to medieval models. However Utopian townplanning did not take place in heaven but in distance regions on earth. The meaning of social functions in the architecture was less important than symbolic representations. The architecture of the city was mostly of an abstract regularity and not a chaotic assembly of buildings.

3. City design and planning according to the ideas of Simon Stevin

There was a great influence of Simon Stevin’s treatises on design and planning of settlements. In his ideal Scheme for a City Stevin had developed a city design in which he was and influenced by ideas of an ideal town according to the principles of the Italian Renaissance: the application of arithmetic units and strict symmetry, and Dutch engineering and fortification works from the sixteenth and seventeenth centuries. Stevin’s design had an orthogonal (rectangular) street pattern with buildings for military and civil use. (Oers 2000:11). The military buildings were constructed like forts with fortification walls, canals, locks, dikes and bridges.

Stevin describes, in his Ideal Plan for a City, how he would design a city: the most suitable form would be a rectangular one with a division in rectangular blocks of plots, houses, courts and markets. All these had to in a symmetrical order. There should be a clear positioning of functions and their positioning in the plan. All places should be easily accessible especially by water or by a network of perpendicular streets.

14 Part of the “Materiae Politicae. Burgelieke Stoffen” (Civic Matters) of 1649.
Stevin’s plan for a city has a central river or canal which formed the primary axis of the ground plan which runs from one side to the other: from the sea to the land behind through the settlement. One side of the settlement (the short side) is parallel to the coastline. On both sides of the town are gates and on the seaside the quays of the inner harbour. On the second axis, which runs a right angle to the first one, are the most important social and public buildings, including the centre of government, situated. Both axes represent the organisational side of the town. The first one running through the settlement for transport while the other one for its social and public functions.

4. VOC settlements

The choice of a specific site to build a settlement depends on certain aspects: it should be able to defend properly, the soil had to be fertile and it should be located at the estuary of a large navigable river which was essential for trade purposes. Because there were mostly swampy areas this also gave the Dutch an advantage over other nations because of their engineering skills. (Oers 2000:160) Other nations had to build their settlements on higher grounds but the Dutch could build their cities right at the seaside.

A settlement had two distinct axes at right angles of each other: a dominant axis, a canal or river, along which the direction of the development of the entire settlement took place and a secondary one along which the important buildings, spaces and elements where built. In Roman times these axes were running precisely north-south and east-west and had gates at each end. Stevin developed a plan with a formal network of horizontally aligned streets with central points and rigid social landmarks. (Oers 2000:79) To this were added the typical Dutch features like a water filled moat, around, and canals that ran through the town.

Goods with a destination inland and from overseas had to be transported over the water and through the port and over the river of the town. The trade of crops and handicrafts was there for prosperous. Money was generated from tolls and assessments. The canals and rivers served more than one purpose other than to pass goods over: it gave a possibility to earn a living: fishing, storing and circulating of water. Underneath the pavement of the streets there was an elaborate system of sewerage canals for the discharge of refuse and sewage from the houses above. (Oers 2000:81)
Canals divide the settlement into four principal identical bands or strips. Every band has a principal layout of twenty identical building blocks. Blocks themselves are subdivided into two times ten identical plots, with their backs to each other. A pattern of streets and building blocks or housing plots were part of the urban structure. (Oers 2000:82)

**Figure 2:** The subdivision of a settlement into four bands, these are in turn divided into symmetrical parts by special elements: buildings for social functions (churches, a college, a poor house and public spaces (markets).

Special elements like churches, colleges, poor houses and markets subdivided the bands or strips in symmetrical parts. All buildings were placed symmetrically in the settlement: so was the important Hoogschool (High School) on the main canal with on the other side the Stadthuijs (Townhall) with the Armhuijs (House for the Poor) situated behind it. To make a social distinction between the central part of the settlement and the rest of the city there was a double row of houses built for the labourers at the edge of the town. The streets were sixty feet wide including a separate lane, in front of the houses so people could easily enter their houses if they were not on horseback or in their carriages, of 10 feet wide on each side of the street. There remains therefore a street of forty feet wide for traffic to pass through. For the housing blocks squares of three hundred and sixty feet were chosen with the two housing plots to be built on these squares back to back. (Oers 2000:83)

Regulations could have been issued on the form and size of the new town even what the buildings should look like. To this date however no such regulations have been found in any papers of the States-General or VOC. (Oers 2000:10). It is not such an unconceivable idea however since everything in Dutch Society is meticulously planned.

In the centre of the town there were two squares. One was called de Grote Marct (Big Market) and the other one was for de Beurze (the Exchange). On the Big Market, which was close to the centre of town, daily fresh goods were sold like: fish, poultry, dairy products, vegetables and fruit. Next to the Big Market, in the two middle bands, other markets are placed: Coornmarct, Beestemarct, Houtmarct en Steenmarct which were the markets for wheat, animals, wood and bricks. (Oers 2000:83)

**Figure 3:** Placement of buildings in a Settlement: Example of an Ideal Scheme for a City.
The important factor in the lay-out of the city was that it was all related to the principle of trade. Keeping that in mind the Vorstelijck huijs or hof (Royal Palace) was placed at the side of the town. In other, less democratic, countries the royal or the noble court would be placed centrally in the settlement. In a Dutch town it was essential that all social groups were represented with their own architectural designs. An important part of a VOC settlement was the social, public and trade aspect. The social aspect was represented in buildings like the Hoogeschool (College) and Armhuijs (Poorhouse), Vangenis (Prison) and Tuchthuijs (Reformatory School). The public aspect was to found in buildings like the Groote Kerck (Main Church) and the Stadthuijs (Town Hall), These buildings were all centrally located around and aside the Beurze (Exchange). The buildings which represented the trade aspect of the settlement, like the Vishuijs (Fish House) and the Vleeshuijs (Meat House) were located aside the Big Market. An important part of the social network and design of the Dutch town was that there should be no sick, begging or needy people to be seen in the streets. (Oers 2000:84)

The VOC granted other religions a relative freedom in their settlements. So in the towns of the VOC plots were reserved for churches of other religions next to the centrally located, protestant, church. Religious houses were built for the Jews, Lutherans, Anglicans and Catholics. Regulations stated that houses of worship should not be built in a pompous style so as not to attract overly attention. The whole idea behind this personal and religious freedom in the settlements overseas was really to attract other nationalities who wished to settle because there was a distinctive lack of manpower. (Oers 2000:84)

5. Conclusion

VOC Settlements had a rectangular street pattern intersected by canals and surrounded by fortification walls and a water-filled moat. The sense of proportion was well balanced in the width and accessibility of the streets and the building blocks at the side of the streets. All elements in the town were fixed with a specific social and public aspect.

Secondly there was the architectural side of the city: with a fixed system of measurement of facades, building height and style. There was a central market, which was placed in the centre of town and there were local markets which were at the side of the centre. There was a main church, in the centre of town, and secondary churches, which were again more out of the centre of town. A settlement was there for logical and symmetrical in design.
Thirdly the city could be easily expanded, if necessary, on all sites as with the army camps in the Netherlands. Another fortification wall could be erected and another water filled moat could be dug. In the newly open space houses and public buildings could be built. There for a settlement designed by Simon Stevin was like a do-it-yourself kit and could be constructed anywhere. A VOC settlement in Southeast Asia there for would be and will be immediately, recognizable and identifiable.

References


