Simon Stevin’s ideas on Settlements

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Abstract. As part of this paper it is important to understand the development of the ASEAN in a historical context. This development is highly influenced by trade. Many foreign powers are attracted to the region because of the economic welfare. Cities and trade posts like Melaka (Malaya), Jakarta (Indonesia) and Singapore are conquered and developed. The implementation of European influences on some settlements in Asia is highly influenced by these European countries. Foreign powers that conquer parts of Asia include the Spanish, Portuguese, Dutch¹ and English. The Dutch leave their mark, especially through the ideas of Simon Stevin (1548-1620) on settlements in Asia through lay-out and architecture in a very recognizable, entirely different way from the Portuguese, Spanish or English.

Keywords: VOC, Asia, history, settlements.

1. Introduction

Many European countries are attracted to Asia because of trade purposes. There is money to be made in the region. Among the most important ones are the Spanish, Portuguese, Dutch and English. They establish a network of trade outposts in Asia. As a result settlements develop throughout Asia with Spanish, Portuguese architecture but specifically Dutch/VOC architecture and town planning, in the settlements in Asia, is similar in design, clear and straight forward. Regulations for settlements during the seventeenth and eighteenth centuries are not only confined to architectural principles and technical aspects of planning and construction. They also cover all aspects of life: social, economic and cultural level from trading and warfare to everyday living and working. It seems that this is 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. Historical background

2.1. The Dutch

When the Dutch sail for Asia it is because of the conflict the Netherlands has with Spain. The territorial expansion of the VOC is limited to Ceylon, South Africa and Java. Elsewhere in Sumatra and Celebes for example the Dutch are content to secure a dominant commercial position by making treaties or contracts with the coastal sultans (Boxer 165:116).

¹ The inhabitants of the Netherlands are referred to as the Dutch. The VOC or Dutch East Indies Company has its head office in Amsterdam, the Netherlands.
Although Spain is the hereditary foe in neighbouring Spanish Netherlands the Dutch attack on the Iberian colonial world is far more directed against the Portuguese than against those of Spain. (Boxer 1965:28) The majority of Dutch factories are former Portuguese establishments. Thus, the Dutch inherit Portuguese governmental institutions and tax systems, as well as religious organizations. Initially they have to rely on information from Portuguese archives, as can be seen in Amboin and Ceylon (Goor 1994:59).

2.2. A short biography of Simon Stevin

Simon Stevin (1548/49-1620) is a Flemish mathematician and military engineer. He is active in a great many areas of science and engineering, both theoretical and practical. Stevin is born in Bruges, Flanders (now Belgium) around the year 1548, to unmarried parents, Antheunis (Anton) Stevin and Catelyne van der Poort. in 1583. While in his thirties, he attends the Latin school in Leiden. At the age of 35 Stevin enters the University of Leiden where he befriends William van Orange’s second son, Maurits, Count of Nassau. Following William of Orange's assassination and Prince Maurits assumption of his father's office, he becomes an advisor and tutor of Maurits, who asks his advice on many occasions, and makes him a public officer. (Internet Resources: Wikipedia.org)

Stevin is a vernufteling which means he has a sense of ingenuity. Hooft invents this term that refers to representatives of the "practical, outside of the universities operating engineering sciences, as a translation of "engineer" a familiar concept at the time. Stevin also distinguishes himself from the humanist scholar who is characterized by universality, who gains knowledge through the study of antique books and refined existing knowledge. Yet Stevin is characterized as one of the new generation of scientists. Stevin is a pragmatist who did not surrender to philosophical speculations. Stevin hardly refers to ancient philosophers. (Mare de 2003:24)

3. The treatises of Simon Stevin

Simon Stevin writes several treatises in which he expresses his ideas about architecture. These treatises have great influence on the construction of settlements in Asia. Some of them will be mentioned below:

3.1. De Sterctenbouwing

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

3.2. Wisconstighe Ghedachtenissen

The treatise Wisconstighe Ghedachtenissen (Thoughts on Mathematics) is published in 1605 by Simon Stevin. (Van den Heuvel 2005:149) A part of this treatise is named Huysbou (House Building). One of the chapters of this part is titled: Onderscheyt van de Oird Huysbou (The Ordening of the Houses). Stevin expresses his ideas in this chapter on locating all administrative power of a city in one single building. (Van den Heuvel 2005:185) He adds that all the governing bodies of the city have to be housed in a palace or Vorstelyck Huys (Regal House). Stevin also gives several reasons, why he wants this stately house to lodge all the officers with their wives and children. One of those reasons to Stevin is to reduce travel time as well as to save money. (Van den Heuvel 2005:185) The paper contains as well all kinds of information: it was about the selection of the site where to build a city and on the lay-out of cities. (Van den Heuvel 2005:200)

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2 William I, Prince of Orange (1533–1584), also widely known as William the Silent (Willem de Zwijger), or simply William of Orange, was the main leader of the Dutch revolt against the Spanish that set off the Eighty Years War and resulted in the formal independence of the United Provinces in 1648.

3 Prince Maurits of Orange-Nassau (1567-1625) Stadholder (Governor 1585-1625) of the Northern Netherlands (present day the Netherlands).

4 Pieter Corneliszoon Hooft (1581–1647). Knight in the Order of Saint Michael was a Dutch historian, poet and playwright from the period known as the Dutch Golden Age (17th century).
3.3. **Castrametatio**

The treatise *Castrametatio* of Simon Stevin which is published in 1617 is 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 combines the theoretical examples of the Classical Antiquity with the experiences of the Eighty Years War. From these experiences Prince Maurits develops 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 decides to redesign his camps according to the rectangles of Polybius and other authors of the antique Greek and Roman periods. (Catalogue Exhibition University Library Leiden 2004:7)

The model is empirical in its approach and flexible in design which makes it possible for an encampment to be constructed anywhere. All required shelters are set up in squares with a total length of three hundred Dutch feet.  

Next the width is adjusted to the requirements of the commanding officer or army encampment. The squares are then drawn on scale and moved around on a drawn roster within lines which run parallel to each other. In between these lines there has to be space for streets which have a width of fifty Dutch feet. It is especially the detail for logistics and order which are so characteristic for the designs of Simon Stevin. The longer the army stays the bigger the camp can get and could even grow to become a city.

4. **Translation**

The English translation of 1604 in manuscript form of the Art of Fortification (*Sterctenbouwing*), of 1594 in the James library at Trinity College, Cambridge has never been printed. This rare 106-page document, most of which in old writing, has been found not to be serviceable for the interpretation of Stevin’s original text for the non-Dutchmen. This book has been translated not only in English but also in French and German. (Schukking 1964:34/35).

The question why an English translation is so soon made is not difficult to answer. For in 1604, the year in which the manuscript bears, there were still a fair number of English troops in the service of the Republic; the siege of Ostend, in which also commanders and engineers are involved, just has come to an end and until 1609 Britain is to keep the fortresses of Flushing and Brielle occupied. Likewise, it may appear from the History of the Royal Engineers that in those years and even earlier, the English themselves must have been acquainted with the art of fortification in the style of the Italians and their followers Stevin and Speckle. (Schukking 1964:35).

5. **Influence of the ideas of Simon Stevin.**

There is a great influence of Simon Stevin’s treatises on design and planning of settlements. In his ideal Scheme for a City Stevin has developed a city design in which he is 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.

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. (Oers 2000:160/161).

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5 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 independence from Spain.
6 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 which were fought by Rome and how they were fought.
7 Empirical means information gained by means of information, experience or experiment.
8 A foot is called a voet in the Dutch language. The plural of foot is feet. The most commonly used was the Rijnlandse voet. Which is 0.3140 meter.
9 With the exception of the title page, the tabulated classification of the contents, the notes in the margin and the captions and legends of most of the figures, the entire manuscript has been written in the old Gothic script.
10 Daniel Specklin (1536-1589) German fortressbuilder, engineer and cartographer.
11 The humanistic revival of classical art, architecture, literature, and learning that originated in Italy in the 14th century and later spread throughout Europe.
12 Part of the *Materiae Politicae. Burgelicke Stoffen* (Civic Matters) of 1649.
Stevin’s plan for a town has a central river or canal which forms 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 organizational side of the town. The first one running through the settlement for transport while the other one for its social and public functions. To the two axis typical Dutch features as a water filled moat around, and canals that run through, the town are added.

Stevin mentions, in his Ideal Plan for a City, how he would design a city: the most suitable form would be rectangular with a division in rectangular blocks of plots, houses, courts and markets and buildings for military and civil use. The military buildings are constructed like forts with fortification walls, canals, locks, dikes and bridges (Oers 2000:11). All these have to be in a symmetrical order. There should be a clear positioning of functions and their positioning in the plan. All places shall be easily accessible especially by water or by a network of perpendicular streets.

The 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 in to two times ten identical plots, with their backs to each other. A pattern of streets and building blocks or housing plots is part of the urban structure (Oers 2000:82).

Special elements like churches, colleges, poor houses and markets subdivide the bands or strips in symmetrical parts. All buildings are placed symmetrically in the settlement: so is the important Hoogschool (High School) on the main canal with on the other side the Stadthuys (Town hall) with the Armhuijs (House for the Poor) situated behind it.

Figure 1: Placement of buildings in a Settlement. Example of an Ideal Scheme for a City.
Source: KB. The National Library of the Netherlands

There were two squares in the centre of the town. One was called de Grote Marct (Big Market) and the other one is for de Beurse (Exchange). On the Big Market, close to the centre of town, daily fresh goods are sold like: fish, poultry, dairy products, vegetables and fruit. Next to the Big Market, in the two middle bands, other markets are placed: Coornmarkt, Beestemarkt, Houtmarkt en Steenmarkt. These are the markets for wheat, animals, wood and bricks (Oers 2000:83).

The important factor in the lay-out of the city is that it is all related to the principle of trade. Keeping that in mind the Vorstelijck huijs or Hof (Royal Palace) is 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. Royalty are no more than a highly placed persons according to Simon Stevin as discussed in his work Civic Life (Oers 2000:83).

An important part of a VOC settlement is the social, public and trade aspect. The social aspect is represented in buildings like the Hoogeschool (College) and behind it the Armhuijs (Poorhouse). Because this is a socially undesirable building. These buildings are to be found opposite the Stadthuys. The social and public aspect is to be found in buildings like the Groote Kerck (Main Church) and the Stadthuys (Town hall). These
buildings are all centrally located around and aside the Beurze (Exchange). Other buildings are the Vangenis (Prison) and Tuchthuys (Reformatory School). The last two are to be found on either side of the Stadhuis. The trade aspect of the settlement is represented in buildings, as the Vishuijs (Fish House) and the Vleeshuijs (Meat House). These are located aside the Big Market. An important part of the social network and design of the Dutch town is that there should be no sick, begging or needy people to be seen in the streets. (Oers 2000:83/84)

The VOC granted other religions a relative freedom in their settlements. So in the towns of the VOC plots are reserved for churches of other religions next to the centrally located, protestant, church. Religious houses are built for the Jews, Lutherans, Anglicans and Catholics. Regulations state 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 is really to attract other nationalities who wish to settle because there is a distinctive lack of manpower (Oers 2000:84).

6. Application of the ideas of Simon Stevin on the town of Melaka

The settlement of Melaka met with the three requirements as stated by Simon Stevin in his Ideal Plan for a City which are: 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. Which is all the case with Melaka: it has a fort so it can defend itself, the soil is fertile and it is located at a large navigable river.

The river is the primary, dominant axis, which divide the settlement in two parts, the town and the fort. According to the ideas of Simon Stevin the development of the settlement took place along the river. The river is the transportation route for goods for the settlement of Melaka or the hinterland.

The settlement is not rectangular in design, which, according to Simon Stevin, is the most suitable form. It does not have a division in rectangular blocks of plots, houses, courts and markets, which should all be in a symmetrical order. It does not have any arithmetic units and strict symmetry. There is no clear positioning of functions and their positioning in the plan. Though all places are easily accessible by water but not by a network of perpendicular streets. The settlement is surrounded for the greater part by water: the sea and the river.

References

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