

## Chapter 6

### The Dutch Settlement of Melaka

#### 6.1 Introduction

The previous chapter discusses about the historical background and planning of settlements in the Netherlands, East Indies, Sri Lanka and India. This chapter refines the study and expands on the historical background and planning of the settlement of Melaka during Portuguese and Dutch times<sup>1</sup>. It will also expand on the construction and expansion of the fort during Portuguese and Dutch times.

Melaka was taken over by the Dutch from the Portuguese in 1641. It was taken due to its strategic position on a rocky hill overlooking the Malacca Straits and to enforce the control on the spice trade. Its natural defenses were made out of the hill and river. The Dutch/VOC occupied this city from 1641 until 1824. In the middle of the 18<sup>th</sup> century, as (2000:48), mentions it had a size of 0.6 by 1 km. It was made out of a fort and town.

#### 6.2 The Settlement

##### 6.2.1 The Portuguese Settlement

In the first report (1641), after the take over, by Joost Schouten, commissioner in the service of the VOC to Governor-General Antonio van Diemen in Batavia it was mentioned that the city was at the base of the mountain and constructed in the Portuguese way (Vis 1988:113). A very tight knit built settlement with wooden and stone houses developed. On top of the summit was the St. Paul's church, one of four churches in the city. There were also constructed some monasteries and the bishop's

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<sup>1</sup> The VOC/Dutch conquered the city of Melaka in 1641 from the Portuguese and held it till 1799 when it was agreed upon between Britain and the Netherlands that Britain would have Melaka under her care during the Napoleonic period (1799-1814) in France. After the defeat of Napoleon the city of Melaka was returned to the government of the Netherlands until it was definitely agreed between the Netherlands and Britain in 1824 that Melaka would be under British rule.

house. About the Portuguese hall, Schouten said: "The civil hall is small, but fairly commoditive built into the sides of the hill. It belonged to the Jesuits and leased to the city civil regents or magistrates where they had their council meetings".

Inside the fort, churches, convents and houses were built. Few however were built of stone, their walls were constructed of wood and the roofs were covered with palm leaves according to local traditions. The streets, squares and buildings were constructed and built in the Portuguese fashion: on and around the steep sides of the hill a tangle of street developed. The main street, the *Rua Diretta* (Straight Street), ran from the main square where the governor's house stood in a straight line crossing the river. On top of the hill, in 1521, a small chapel was build by the Portuguese merchant Duarte Coelho in thanksgiving for having survived an attack of the coast of China. It was consecrated to *Nossa Senhora da Graca* (Our Lady of Grace). In 1549 the chapel was handed over to the Jesuits who build a church on the same spot in 1567. It was consecrated *Anunciada* (Anunciation). Other religious orders came to Melaka in time: the Dominicans in 1554, the Fransiscans in 1581 and the Augustinians in 1587. By the end of the 16<sup>th</sup> century Melaka had become, like Goa and Macau, a centre of the Christian faith. It also had become a major trade centre in the region.

### 6.2.2 The Dutch Settlement

Melaka was already an existing settlement when the Dutch conquered her in 1641. The churches and convents, as Lim and Jorge (2006:28) describe, were destroyed or used for other purposes. The Jesuit College retained its function as a school.

On the main square on the place where the Portuguese governor's house stood a town hall (*Stadthuys*) was built in 1645. Next to it the Dutch Reformed Church was completed in 1753. The church on top of the hill was renamed St. Paul's and used for religious purposes. It could very well have been that the space in front of the town hall

and Christ Church was used as a marketplace. Markets established themselves along the quays at the riverside where the merchandise is delivered by boat.

The network of streets remained untouched but new roads were laid out as the city grew. The city had a regular street pattern with horizontal and vertical streets. It had to be adapted to the coast and the swampy land behind. The *Rua Diretta* (Straight Street) ran from the governor's house across the river through the settlement, it was renamed *Heerenstraat* (*Gentlemen's Street*). Next to the *Heerenstraat* was a street which was renamed *Jonkerstraat* (*Prince's Street*).

On *Heerenstraat* the wealthy businessmen lived, as Measured Drawings, Northwest (2001:23) reports, and on *Jonkerstraat* lived the government officers and the employees of the businessmen of *Heerenstraat*.

In almost all settlements overseas under VOC rule, Temminck Groll (2002:46) describes, a *Heerengracht* or *Heerenstraat* (*Gentlemen's Canal or Street*) exists. When Amsterdam is extended with a concentric circle of canals the most important canals were the *Heerengracht* followed by the *Keizersgracht* (*Emperor's Canal*) and then the *Prinsengracht* (*Prince's Canal*). There was a proverb: "First the Lord than the Princes". So in the design of settlements in Asia the *Heeren* (Lord) came first followed by the *Prinsen* (Prince).

*Batavia* had a *Heerenstraat* (*Gentlemen's Street*), as Temminck Groll mentions (2002:129/130), to the east of the *Kali Besar* now called *Jalan Pintu Besar*. The gate at the utmost south of the street still lived on in that name. This street once connected the castle with the town hall. The *Heerenstraat*, as Temminck Groll (2002:167) describes, formed the east west axis in Semarang. In Surabaya the *Heerenstraat*, as Temminck Groll (2002:176) mentions, also formed the east west axis. The *Pettah* residential

neighbourhood in Colombo, as Temminck Groll (2002:247) describes, on Sri Lanka still has a *Keizerstraat (Emperor's Street)* now renamed *Keyser Street* and also a Prince Street at the east of the fort.

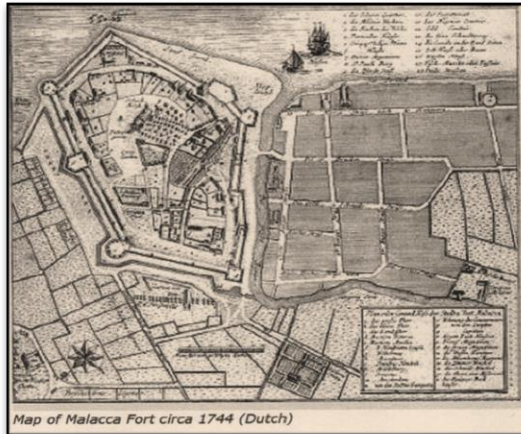


Figure 6.1a: Melaka.  
Plan of the City (1635-1644).  
J.W Heydt del. et sculp. Copper plate printing..  
Source: Atlas of Mutual Heritage.

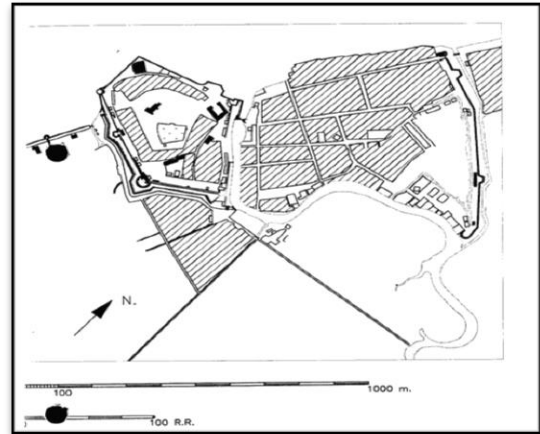


Figure 6.1b: Melaka.  
Typological Ground Plan (18<sup>th</sup> century).  
Source: Van Oers (2000:49).

### 6.2.3 Application of the ideas of Simon Stevin (Commercial Zone)

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. This was all the case with Melaka: it had a fort so it can defend itself, the soil was fertile and it was located at a large navigable river.

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

The settlement was not rectangular in design, which, according to Simon Stevin, was the most suitable form as discussed in his treatise *Vande Oirdeningh der Steden* of 1599. It did not have a division in rectangular blocks of plots, houses, courts and

markets, which should all be in a symmetrical order. It did not have any arithmetic units and strict symmetry. There was no clear positioning of functions and their positioning in the plan. Though all places were easily accessible by water but not by a network of perpendicular streets. The settlement was surrounded for the greater part by water: the sea and the river.

### 6.3 The Fort



Figure 6.2: Malacca Fort (ca. 1789).  
Source: Badan Warisan, Malaysia.

#### 6.3.1 The Malay Fort

The fort was reportedly constructed by the indigenous Malay at the bottom of the hill that was the most prominent feature of Melaka. It was built on the left or southern bank of the Melaka river close to the estuary along the edge of the sea shore on the south-east side of the river mouth. The fort was made of a system of earthworks surrounded by wooden stockades and, by the 16<sup>th</sup> century, had big guns.

#### 6.3.2 The Portuguese Fort

When the Portuguese took over Melaka in 1511 the construction of a wooden fort was initiated because the Malay one was greatly damaged. It was built on the same site and many elements, of this Malay fort, were conserved. It was only a make-shift to protect the Portuguese at this point from any attacks from the indigenous enemies.

The fort, as Irwin (1962:22) reports, was surrounded by thick trees and had much artil-

lery. Work on the fort began in August 1511 and was completed within a month. Any possible attacks from local enemies, as Irwin (1962:24) mentions, were not really to be taken seriously because they did not have any weapons to speak of which could cause great damage.

### 6.3.3 The Stone Fort

Work, however, was started on a stone and mortar fort, to replace the wooden one, in September 1511. The stone fort had to be built to be able to fend off any attacks from European enemies whose weapons were much more advanced than those of the Malay. Without any inhibitions the fort was built on the ruins of the Great Mosque and stones from the hill where the Malay sultans were buried were used. It was called *A Famosa*, which means the famous. The first fort became the *Fortaleza Velha* or the Old Fort. By extending *A Famosa* right to the seashore the Fort could be supplied by ships that anchor alongside the walls. The Portuguese inhabitants of Melaka designed the fort without the help of any architect. Vis (1988:113) describes that the building material which was used is late rite, coarse-grained, reddish brown rust coloured, clay, which got hard in the open air.

The height, as Vis (1988:113/114) describes, of the wall was 22-32 Rhineland feet<sup>2</sup>, 6.90-10.04 meters, where the walls on the landward side were the highest. The soldiers did the hard manual labour with the help of slaves. At the same time they had to defend the city against any attacks from enemies.

The fort was finished, as Cardon (1934:13/14) reports, in January of the year 1512. It did take five months to build. The new *A Famosa* was, as Irwin (1962:22/23) mentions, square in plan with walls eight feet thick (2.43 meters)<sup>3</sup>. Erédia reported that on the east side, as Mills (1997:17) describes, of the fort there was a circle of walls with a well in

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<sup>2</sup> A Rhineland foot is 0,3140 meter.

<sup>3</sup> A foot is 30.48 cm's.

the middle. Irwin (1962:22) reports that at its north-east corner a tall *donjon* or keep, known to the Portuguese as the *torre de menajem* or tower of homage, was built. It had, as Irwin (1962:23) mentions, four stories and measures 60 feet (18.28 meters) per storey and its height was two hundred and forty feet (73.15 meters). An eye witness, as Blagden et.al. (1927:39) report, who seems to confirm Erédia's findings, is the Dutchman Balthasar Bort<sup>4</sup>. He stated in his report of 1678, that the tower before the takeover by the Dutch did measure a hundred and twenty feet in height. This meant the resulting height matched with Erédia's account that the top of the tower was on the same height as the summit of St. Paul's hill.

#### 6.3.4 The Architecture of the Fort

By the end of the 15<sup>th</sup> century high towers and high stone walls, as Irwin (1962:23) describes, were not a common feature of forts in Europe any more. This was because of improvements in the science of artillery: metal cannon balls and better possibilities in the aiming of guns. Instead lower and more extensive fortifications were built which could take the impact of cannon balls and behind that the defenders own artillery could be better employed. These ideas were introduced by Afonso d'Albuquerque<sup>5</sup> for the fort of Melaka was therefore old fashioned. Very modern was the angling of the walls and the placement of the bastions<sup>6</sup> where the Fortress of Verona (Italy) was the example for the fort of Melaka. Ideas which were developed in the third decade of the 16<sup>th</sup> century.

A bastion, as Irwin (1962:25/26) mentions, was really a big platform to shoot a gun from. It stuck out from the main fortress and was so designed that there was no space outside the fort which could be overlooked. It had no roof so smoke would blow away

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<sup>4</sup> Governor of Malacca 1665-1678.

<sup>5</sup> Afonso d'Albuquerque (1453-1515). Portuguese nobleman and naval general officer who through military and administrative activities conquered and establishes the Portuguese colonial empire in the Indian Ocean.

<sup>6</sup> A part of the wall that sticks out in order to protect it.

so as not to cloud the view of the defenders. A ditch was dug below and in front of the bastions and the linking walls. The earth thus required was used to build a rampart<sup>7</sup> within the walls. A rampart usually would be 14 feet deep or more, wide enough for the artillery to operate on and for the men to circulate. However, in the case of the fort of Melaka it appeared that never any such full-scale rampart was built. A reason could be that the soil was too wet. Possibly a rampart was built on the inside at the North side of the fort to be able to fend off attacks from the landside.

### 6.3.5 Descriptions of Melaka Fort

In the literature many descriptions have been given of the fort in Melaka. In this part three will be mentioned. Two concerning the fortification walls and a more general one. Erédia reported in 1613, as Mills (1997:18) describes, that ramparts were built all around the fort. One of stone and mortar that ran along the shore northwards for a distance of 780 feet to the corner of the river mouth and the bastion of *S. Pedro*. A second stone rampart was constructed running for nine hundred feet from the gate of the Custom Terrace House alongside the river in north-eastern direction for a distance of 600 feet to the bastion of *S. Domingos*. An earth rampart ran from this last bastion in south-eastern direction for a distance of six hundred feet to the bastion of *Madre de Deus*. Another earth rampart ran from the gate of *S. Antonio* for a distance of 600 feet in south-eastern direction past the bastion of *S. Virgens* to the bastion of *Santiago*. Lastly a stone and mortar rampart ran westward from the bastion of *Santiago* for a distance of 400 feet to the angle where it meets with the rampart which ran from the Bastion of *S. Pedro*. Therefore, the total length of the walls is 3140 feet<sup>8</sup>.

In his article about the Malacca fort that, as Irwin (1962:25) reports, according to his fin-

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<sup>7</sup> The Fortification walls. A defensive mound of earth or a wall with a broad top and usually a stone parapet; a wall-like ridge of earth, stones or debris; an embankment for defensive purpose.

<sup>8</sup> In the translation of Erédia by Mills (1997:18) it states that the total length of the ramparts amount to 555 fathoms. If one fathom is equal to six feet then 655 fathoms would be equal to three thousand and thirty feet.



dings, that from the tower earth walls were going around the dwellings of the Malay population that was located around the hill. At the seaward and riversides, a strong new wall was build. In the centre of this wall, projected towards the sea is the bastion *S. Pedro* close to the river mouth also known as *couraça* or “breastwork”. At the northern extremity of the wall was the bastion *S. Domingos* and at the southern end *Santiago*. These two last bastions were connected with a wooden wall which ran south and east of *S. Paul’s* hill and together with the stone wall that ran to the north and west formed a circle with a total length of 1300 yards which equals 3030 feet<sup>9</sup>. In the centre of the southern wall a 4<sup>th</sup> bastion was build: *As Virgens* or *Onze Mil Virgens* which means Eleven Thousand Virgens. There were 4 gateways, one on each side of the fort. Of these only two were in use, the *Porta da Alfandega*, which gave access to the bridge over the Melaka river and the *Porta de S. Antonio*, on the landside, which was situated to the east of the bastion *S. Virgens*.



Figure 6.3: The Portuguese Fort in Melaka (ca. 1630).

Source: Fortaleza de Malaca in: António Bocarro, Livro das plantas das Fortalezas, Cidades e Povoações do Estado da India Oriental 1635.

Pedro Barretto de Resende, a Portuguese traveller, as Irwin (1962:28/29) describes, wrote in 1646 about the fort at Melaka. Although his ‘Account of Malacca’ referred to the state of the fort in 1638. According to his measurements it averaged 20 feet high in total and 9 feet at the base. Baretto de Resende describes the lay-out of the fort in detail: the angle not used at the east corner was transformed in a bastion known as *Madre de Deus*. The total of bastions therefore came to six: *S. Domingos*, *Madre de Deus*, *As*

<sup>9</sup> One yard equals 3 feet.

*Virgens, Santiago, Hospital dos Probes and S. Pedro*. The long unbroken wall between *S. Domingos* and *S. Pedro* had by 1640 been stepped back to provide half-angles.

These were raised positions from which guns could fire in one direction, the south-west, as Irwin (1962:29) mentions. The names given to these half-angles are *Mora* and *Hospital Real*. On the north-west and south-east ditches were dug and slopes on the outside of the moats (counterscraps) constructed and some of the ramparts within the fort had been widened to at least 24 feet<sup>10</sup> On land the provisions made to defend the city were even more extensive. To protect the town on its northern side two lines of trenches were dug. One near the shore and the other along the embankment guarding the suburb of Upeh. At both sides artillery and musketeers were stationed. The *tranqueira*, an earth backed enclosing Upeh on the landward side, gave some additional protection but since it was constructed primarily to fend off attacks on the town by marauding Malays it was not constructed in such a way to be used as any obstacle to an enemy coming from the sea or land.

Another defence system was provided by a *pagar* or wooden, as Irwin (1962:30) reports, running around the bottom of the trench. On the north side this had been built in a double line. The open ground behind the *pagar* had many caltrops (*ranjau*)<sup>11</sup> and mines were set up ready to explode in the line of the enemy's approach. All these measures were taken after the attack of 1606 on Melaka by the Dutch which made the Portuguese conscious of the situation with regard to a European enemy who wanted to take Melaka.

### 6.3.6 Upgrading of the Fort

By 1580 it was most probable that the defence systems of Melaka had to be upgraded, as Irwin (1962:24) mentions, to be able to withstand attacks from any European enemies

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<sup>10</sup> From the French where it is written as *contrescarp*.

<sup>11</sup> Or *mantrap*. Used to mutilate the cavalry horses.

even better. Since in 1580 a union was declared between Spain and Portugal. An attack could be expected from The United Provinces of the Netherlands<sup>12</sup> who were at that time the mortal enemy of Spain. In 1583 the Italian military engineer Giovanni Battista Cairati, or known under his Portuguese name a João Batista<sup>13</sup> was appointed architect-in chief for the Portuguese empire overseas. It also took him to Melaka in 1588. His instructions were “to inspect work that is already in progress” and secondly “to inspect the works that were already carried out in the fortress there and to arrange for such further strengthening of its defences as might be thought necessary”.

The great weakness of the fort were the wooden walls on the southern and eastern sides, as Irwin (1962:26) describes, and the presence of only one bastion on the eastern side: *As Virgens*. To solve this problem a plan was designed where there would be four spade shaped bastions joined by short walls extending in a half moon from *S. Domingos* around St Paul’s hill to Santiago. This was quite an innovative design. In the 1580’s the spade shaped bastion was designed to provide better cover for the gunners working on the bastion while they could fire away.

### 6.3.7 Buildings inside the Fort

Within the fort, as Mills (1997:18) reports, the space was entirely taken up, during Portuguese times, by buildings in which the administration of the city was housed and by churches, convents, hospitals and government buildings. These were the following buildings: the Castle, the Governor’s Palace, the Bishop’s Palace, the Hall of the Brotherhood of Mercy, the Church of our Lady of Assumption, the Cathedral, the Church of our Lady of Visitation and Mercy, the Church of our Lady of Assumption, the Church of St. Dominic.

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<sup>12</sup> The Dutch.

<sup>13</sup> (.....Milan.....).

### 6.3.8 The Fort taken by the Dutch

As Irwin (1962:31) describes on the 3<sup>d</sup> of August 1640 the Dutch, once again, open an assault on Melaka. The initial landing met hardly with any resistance. By the evening of the first day, the Dutch had overrun the defenders outworks and had guns in position to fire directly into the fort. From there on for some reasons things go wrong and the result was a long siege that the Dutch never have envisaged. On the 5<sup>th</sup> of September the commander of the attacking forces wrote to the High Command in Batavia: "If the enemy were to have reinforcements at this stage, which God forbid, we would have to withdraw." Various reasons were given for this lacks siege. The first two were that the Dutch could not keep a proper watch on the southern side of the fort, either due to lack of men, who were mostly sick, and a lack of ammunition. A third reason was that the soil around the fort is so swampy that the men could not dig in and a fourth reason was that frequent sorties of the defenders see to it that the attackers had to be vigilant all the time. The Portuguese townspeople too passed easily through the blockade. They went in and out to collect wood for their fires and to cut coconut logs to repair the walls of their houses. Only in December 1640 did the Dutch fortify St John's hill to keep all people in the town. Then on the last day of the year an opportunity arose: a number of small Portuguese ships escaped into the open sea. This convinced the Dutch that they should attack the fort without any further delay. In the night of the 13<sup>th</sup> of January 1641 a bridge was constructed over the river. On the 14<sup>th</sup> of January the bastions of *S. Domingos* and *S. Pedro* were stormed. Heavy hand-to hand fighting broke out but all opposition was overcome by the attackers and Melaka had changed hands. However, a total of 7000 people, townsfolk and soldiers, had perished in the siege from hunger, disease or fire.

The fort and town of Melaka were, as Lim and Jorge (2006:28) mention, severely damaged by the attack of the Dutch and had to be repaired and restored.

As Irwin (1962:32/33) reports the top floors of the *Fortaleza Velha* had been entirely shot away. The lower floors were in imminent danger of collapsing because large cracks had formed through which rainwater seeped. The bastions on the river and seaward sides: *S. Domingos*, *S. Pedro* and the *Hospital dos Probes* had been flattened. Therefore the Dutch took the opportunity to rebuild the fort, for the time being, according to the needs of the new Government. The bastions, all named after Portuguese Saints, were renamed<sup>14</sup>. Earth banks were put up, held in place by wooden stakes, also extensive stockades and water-filled ditches made. The fort was used for government purposes, slave quarters, prison, storage and guard house.

### 6.3.9 Reconstruction

The plans for a reconstruction plan of the fort would have to go according, as Irwin (1962:34) describes, to a geometrical system, which meant exactitude and symmetry. According to the military design of around 1640 the perfect shape for a fort was a rectangular pentagon<sup>15</sup>. A fort of this shape presented a precisely similar front in all directions and had no weak ‘spots’ to an attacker. Its guns gave mutually supporting flanking fire at the best possible killing angles.



Figure 6.4: Plan of the Fort of Melaka (ca.1656).  
Source: Atlas of Mutual Heritage, the Netherlands.

<sup>14</sup> All bastions, angles and half angles, apart from Victoria and Amsterdam, were named after members of the House of Orange (The Dutch Royal Family) Bastions: Sao Domingos became Victoria, Madre de Deus: Emilia (after Amalia van Solms, wife of Stadholder (Governor) Prince Hendrik, Onze Mil Virgens: Henrica Louise (after the daughter of Prince Hendrik), Santiago: Wilhelmus (after William the Silent. Hospital dos Probes: Maurits (after Stadholder Prince Maurits) and Sao Pedro: Prince Hendrik Half-angles: Mora became Ernestus (after Ernst Casimir, Count of Nassau) and Hospital Real: Amsterdam.

<sup>15</sup> A rectangular pentagon is a five sided polygon (all lines are equal in measure and all sides have the same length).

In September 1641, the first comprehensive report, for an improvement of the fort, was drawn up by Joost Schouten a commissioner appointed for this purpose by the High Government in Batavia. As far as the fort was concerned the Dutch wanted to strengthen, improve and adapt it for the time being. The *Fortaleza Velha* had to be repaired and made into a strong redoubt at least to the height of the first storey. A wall had to be build connecting it with the bastion *Prins Henrik*. St Paul's church with its high towers situated on top of the hill should be turned into a stronghold. It could serve as a watch tower over the harbour and paddy fields in the surrounding area and as a final refuge. The walls between *Prins Henrik* and *Ernestus* should be raised and doubled. This was because it is the oldest, weakest section of the circle and the lowest. At the river side, the walls were 24 feet high, elsewhere approximately thirty-two. Increased defense was to be obtained by completing the fort on the *Ilha da Nãos*, which was renamed 'Red Island', and by the construction of strongholds on St. John's hill and Bukit China. Lastly the construction of three smaller redoubts<sup>16</sup> respectively north and south of the city and a short distance up the river was planned, in order to give better protection from an attack by land.

#### 6.3.10 What was done?

In 1660 Governor Jan Thyssen Payart<sup>17</sup> build a small oblong bastion, as Irwin (1967:39) mentions, *Middelburg* at the western corner of the wall next to the river mouth. The government did approve of the construction of this bastion that brings the total number to 9. These bastions were: *Victoria, Emilia, Henrica Louisa, Wilhelmus, Maurits, Prins Henrik and Middelburg*. It could be assumed that the half-angles *Ernestus* and *Amsterdam* must have been reconstructed as bastions. During the time of governor Balthasar Bort the Fort of Melaka reached its final form. Bort enlarged bastion *Victoria*,

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<sup>16</sup> A small, often hidden, building in which soldiers could hide themselves while they were fighting.

<sup>17</sup> Governor of Melaka 1646-1662.

which was situated to the north-east, to balance bastion *Middelburg* on the west. He also had a passageway constructed along the top of the wall between *Victoria* and *Emilia*. All walls of the fort were now of equal width and sentries and gunners could get around the whole fort under cover.

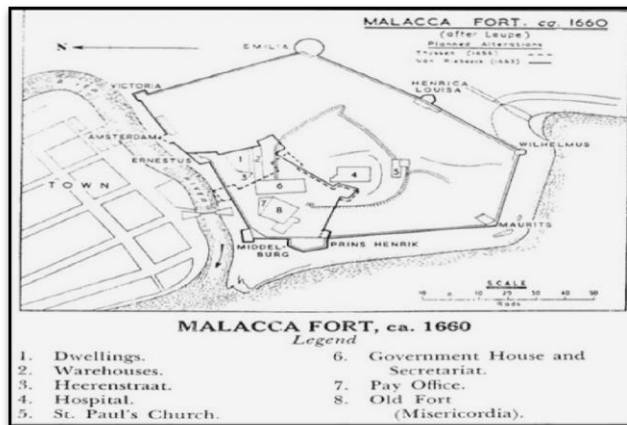


Figure 6.5: Malacca Fort (ca. 1660).  
Source: Irwin (1962:40).

In 1669 Bort had new gates installed at the *Porta da Alfandega* and the *Porta da Santiago*, as Irwin (1962:39) describes, consisting of “great double doors with a wicket”.

The one on the river side was known as the Water Gate and the one on the landside as the Land Gate. The latter survived to this day and was known under its Portuguese name of *Porta da Santiago*. During Bort’s time the fort was further improved which also affects the amenities of the garrison. Stone steps were built to access ramparts and the bastions were equipped with better cook-houses and guardhouses. However, it was outside the fort that Bort left his greatest mark. It was he who ordered that a ditch had to be dug at some distance from the walls of the fort so soldiers equipped with muskets and light guns could aim at an enemy attempting to cross the ditch. It started at the bastion *Victoria* to protect the northern tip of the fort and then continued in a straight line towards *Emilia*. It was later extended past *Henrica Louisa* to *Wilhelmus* enclosing the fort completely on the landside. Another accomplishment of Bort was to have a moat dug from the river to the sea around the eastern part of the fort. The completion of

this moat turned the fort into an island. It was between 2 to 4 rods<sup>18</sup> wide and some twelve feet deep. At each end it had a stone lock so a constant water level could be maintained and the water in the moat remained fresh because of the twice-daily tide. Bort also had two drawbridges constructed that gave access to the fort over the river to the north and over the moat to the south.

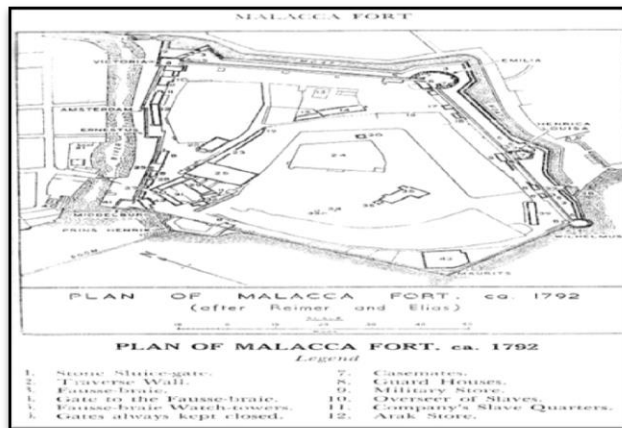


Figure 6.6: Plan of Malacca Fort (ca.1792).  
Source: Irwin (1962: 43).

### 6.3.11 Application of the ideas of Simon Stevin

In his treatise *Stercktenbouwing*, according to (Vanden Berghe & Devreese, 2010:103), of 1594 Stevin elaborated in chapter 2, 3 and 4 on the explanation of the construction and building, in theory and practice, of regular fortresses, with the bastioned hexagon as the easiest example and subsequently of other regular polygons, i.e. the 5-, 7-, 8-, 9- and 10- angle. The fort in Melaka was a rectangular pentagon (five sided) although the sides did not have the same length. Melaka was a fixed fortification.

The fort was build close to the sea due to the engineering skills of the Dutch. It was also build at the estuary of a large navigable river. The sea was, according to the ideas of Simon Stevin, a defence against any enemies. The fort had earthen walls which were not so heavy in the swampy area, brick walls and wooden stockades. It had seven bastions and two half-angels.

<sup>18</sup> A rod is about 5.5. yards or 5.0292 meters long. It was used by medieval English ploughmen and was equal to the standardized length of the ox goad. (goad means to drive cattle)



A ditch surrounded part of the fort to protect the northern tip of the fort. It was later extended to enclose the fort completely on the landside. It also had a moat from the river to the sea around the eastern part of the fort. The completion of this moat turned the fort into an island.

After the conquest of Melaka by the Dutch the intention was to reconstruct the fort according to a geometrical system, which meant exactitude<sup>19</sup> and symmetry<sup>20</sup>. Irwin (1962:34) mentions that exactitude was shown in the design of the fort by straightening out the walls and removing any irregularities which disharmonize so as to achieve a balance. It was also shown as Irwin (1962:36) describes in the fact that the bastions were almost exactly the same.

Symmetry showed in the design of the fort as Irwin (1962:34) describes that the perfect shape for a fort was a rectangular pentagon according to the military design of around 1640. A fort of this shape presented a precisely similar front in all directions and had no weak “spots” to an attacker. The fort of Melaka was a five sided rectangular pentagon and the preferred design of Simon Stevin.

Irwin (1962:34) describes that many outworks<sup>21</sup> were constructed at the fort to which the same principles of exactitude and symmetry were applied.

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<sup>19</sup> Exactitude: The quality of an instance of being exact.

<sup>20</sup> Symmetry: from the Greek: "συμμετρῆν" = to measure together), generally conveys two primary meanings. The first is an im-Precise sense of harmonious or aesthetically pleasing proportionality and balance such that it reflects beauty or perfection. The second meaning is a precise and well-defined concept of balance or "patterned self-similarity" that can be demonstrated or proved according to the rules of a formal system: by geometry, through physics or otherwise.

<sup>21</sup> An outwork is a minor defense, fortification, built or established outside the principal fortification limits, detached or semidetached. Outworks were developed in the 16th century, such as scale of warfare and the greater resources available to the besieger accelerated this development, and systems of outworks grew more and more elaborate and sprawling as a means of slowing the attacker's progress and making it more costly. These are : ravelins, lunettes (demi-lunes), caponiers to shield bastions and fortification curtains from direct battery. Fortification curtain: the section of a wall or rampart between two gates, bastions and towers. A ravelin is a triangular fortification or detached outwork in front of the innerworks of a fortress (curtain walls) and bastions). Originally called a demi-lune, after lunette, the ravelin is placed outside a castle opposite a fortification curtain. A curtain wall is a defensive wall between two bastions of a castle or fortress. A lunette was originally an outwork of half-moon shape; later it became a redan with short flanks, in trace somewhat resembling a bastion standing by itself without curtains on either side. The redan developed from the lunette, originally a half-moon-shaped outwork; with shorter flanks it became a redan. A caponier is a type of fortification structure. The word originates from the French word 'caponnière' - which strictly means caponcote i.e. chickenhouse.

## 6.4 Conclusion

Due to its strategic position and its importance as a trading post Melaka was conquered by European Nations who adapted the fort and town to their own architectural styles.

First the Portuguese (as of 1511) implemented the Portuguese style of building. On and around the steep sides of the hill a tangle of streets in the same style as the cities in Portugal developed.

Then as of 1641 the Dutch transform Melaka into a town with Dutch architectural elements. The settlement consisted of three parts: the *Fort Wilhelmus* (the former Portuguese Fort *A Famosa*), the city and an indigenous village. The network of streets remained untouched but new roads were laid out as the city grows. The city had a regular street pattern with horizontal and vertical streets.

Some of Simon Stevin's requirements were met with regard to the settlement of Melaka: it was possible to defend it properly, the soil was fertile and it was located at the estuary of a large navigable river, which was essential for trade purposes. There was only a primary, dominant axis the river.

The various governments of Melaka reconstructed the fort. The Malay fort was constructed by the indigenous Malay at the bottom of the hill that was the most prominent feature of Melaka. It was built on the left or southern bank of the Melaka river close to the estuary along the edge of the sea shore on the south-east side of the river mouth. The fort was made of a system of earthworks surrounded by wooden stockades.

In 1511 the Portuguese took over Melaka and the construction of a wooden fort was initiated because the Malay one was greatly damaged. It was built on the same site and

many elements, of this Malay fort, were conserved. It was only a make-shift to protect the Portuguese at this point from any attacks from their indigenous enemies. Work, however, was started on a stone and mortar fort, to replace the wooden one, in September 1511. The stone fort had to be built to be able to fend off any attacks from European enemies whose weapons were much more advanced than those of the Malay. Without any inhibitions the fort was built on the ruins of the Great Mosque and stones from the hill where the Malay sultans were buried are used. It is called *A Famosa*, which means the famous. The first fort became the *Fortaleza Velha* or the Old Fort.

After the conquest of Melaka by the Dutch the intention was to reconstruct the fort according to a geometrical system, which meant exactitude and symmetry. Exactitude was shown in the design of the fort by straightening out the walls and removing any irregularities which disharmonize so as to achieve a balance. It was also shown in the fact that the bastions were almost exactly the same.

Symmetry showed in the design of the fort: the perfect shape for a fort was a rectangular pentagon according to the military design of around 1640. A fort of this shape presented a precisely similar front in all directions and had no weak 'spots' to an attacker. Many outworks were constructed at the fort to which the same principles of exactitude and symmetry were applied.