

Restoration of the fortifications of Naarden, a well preserved fortified town in the neighbourhood of Amsterdam.

Part 1. Brief history of the town and its fortifications.

Naarden is actually a municipality of 17.000 inhabitants, located 20 kilometres east of the capital of the Netherlands Amsterdam. It consists of several residential areas, in the middle of which lies the old little town surrounded by 17th century fortifications. The open fields around the fortifications are the remnants of the fields of fire where the building of houses was forbidden until 1926.

The oldest mentioning of a settlement dates from the 10th century. This settlement was located approximately 3,5 km. to the north-east of the actual town. The settlement became a town, mentioned as such for the first time in 1337. This town, already threatened by the sea, was destroyed in 1350 during civil wars. A count of Holland granted the privilege to the inhabitants to reconstruct their town on the place where it is still located actually. This place was of strategic importance because it is lying on a solid, sandy passage between the sea to the north, marshlands and lakes to the south. Naarden defended thus the county of Holland against invasions by the troops of the bishop of Utrecht. (Later in history the county of Holland became the richest and mightiest province in the republic of the Netherlands and the name Holland is therefore often used to denote the whole country) Until 1926 Naarden kept its importance as a stronghold in the defence lines which protected this western part of the Netherlands.

So in 1351 the new town was constructed with a planned network of streets in a geometrical pattern, just like many new towns were planned in Europe in the 14th century. This pattern of streets still exists to the present day. To defend the town it was surrounded by a brick wall with towers and gates. Just outside this medieval wall to the north-west there was a little harbour along the wall, linked to the sea by a canal. This harbour functioned until 1681, when the canal to the sea became so silted up that it was abandoned. Naarden was then linked directly to Amsterdam by a canal. Besides agriculture, weaving caused the prosperity of the town during the Middle Ages.

In 1380 the building of a church in the centre of the town started. In 1455 the enlargement of the church to a basilica started, which was consecrated in 1479. From 1510 to 1518 the wooden vaulted ceiling was painted with biblical scenes from

the Old and the New Testament. These paintings, quite unique in Europe, were restored in the sixties of the previous century.

To explain some important events in the history of Naarden it is necessary to tell in a nutshell something about the history of the Netherlands. From 1568 to 1648 there were many struggles and battles during what we call the 80-years war. This was a mixture of a rebellion against tax- and other civil measures of the Habsburg king Philips II of Spain and civil war between Roman Catholics and Protestants. Eventually it became a war for the liberation of the Netherlands from the Spanish rule. Events far too complicated to explain in a few words, but at the end the Netherlands became a republic.

During this war, Spanish troops arrived in 1572 outside the town gate of Naarden. Because they promised not to do the inhabitants any harm, they were let into the town without struggle. Once in town they started to murder the population and to burn nearly the whole town. They ordered to demolish the town walls.

The political situation changed and Naarden started at the end of the 16th century to rebuild the defence of the town in a more modern style with bastions.

In 1601, a new town hall was built.

The execution of plans to modernise the fortifications for a second time were blocked by the invasion of the Netherlands by the French army of king Louis XIV in 1672. A French garrison occupied Naarden from 1672 to 1673. Prince William the third, stadtholder of the Republic of the Netherlands and later king of England, besieged Naarden and threw out the French garrison.

Immediately after the relieve of Naarden from the French it was decided to execute the plans for the second modernization of the fortifications. This started in 1676 with the bastions at the northern side, the seaside which was most exposed to enemy attacks. One complete bastion and the halves of the two adjoining bastions were constructed according to a system called the old-netherlands system of fortification. Later the three southern bastions and the other halves of the two adjoining bastions were constructed according to the system called the new-netherlands system of fortification, with flanks of a more complicated shape.

These works were finished in 1685. What we see today are these 17th century fortifications that remain completely in their original shape.

In 1688 a beautiful Arsenal was built on one of the bastions.

In 1876, after the war of 1870 to 1871 between Germany and France when the whole of Europe became aware that the improvement of the artillery caused the defence systems to be

revised, barracks and casemates built of bricks and covered with earth were constructed on the 17th century bastions.

In the beginning of the 20th century the fortifications of Naarden became obsolete and eventually the fortress of Naarden ceased to be a military stronghold in 1926.

Naarden was once an important and rich town in the region. During the 19th century and at the beginning of the 20th century however, the inhabitants of Naarden became very poor. Nearly the only source of income was due to the presence of the military garrison.

The town council and the population experienced the presence of the fortifications as an undesired alien at that time. The government's decision to abolish the status of Naarden as a military fortress was therefore heartily welcomed. Plans were made to erase the bastions and ramparts, to fill up the moats and to build new residential quarters on these places.

The population of the town inside the fortifications was relatively poor until the sixties of the 20th century. Then some people started to buy old houses and farms there to restore them with government subsidies. From then on the town grew prosperous again. Prices of real estate went up, causing a gradual change of the sort of people living in the town. Shops changed from shops for the day-to-day needs to shops for luxury goods, antique and art dealers etc.

There are two museums in the town. One is the museum for the commemoration of Jan Amos Comenius, a Moravian educationalist in the 17th century who lived in Amsterdam and was buried in Naarden in a chapel, the remnant of a cloister. This chapel has been transformed into a mausoleum for Comenius by the government of Czechoslovakia before the second world war. Today the museum and the mausoleum are still visited by many people from Czechia and Slovakia. The other museum is the Netherlands Fortification Museum, located on and in the bastion called Turfpoort since 50 years. It receives some 23.000 persons yearly.

The little town with 1500 inhabitants within the fortifications, has on a very small scale nearly everything a town should have. People live and work here and there are many restaurants. A lot of volunteers work in the museums, as tourist guides and as skippers of the round-trip boat on the moats. In the big gothic church in the middle of the town many concerts are given and antiques and other kinds of fairs are held there. These happenings attract thousands of visitors. The mayor and one of the town councilors are promoting Naarden, looking at its potential as a tourist attraction. They want to preserve and make the most of the historic values, as well as to make the town more attractive visit and to live and work in.

Part 2. Actual condition and restoration of the fortifications.

Nearly all the bastions, ramparts and moats, surrounding almost every town in the Netherlands in the 17th century, were erased or transformed into parks when the towns grew bigger. Naarden however is still one of the rare examples of a complete 17th century fortress, because it kept its military significance until 1926. After this, the inhabitants of Naarden and the town council wanted to demolish the fortifications, but important people in the Netherlands used their influence to prevent it.

In 1932 the government eventually recognized the importance of the fortress Naarden as a historic monument. The Menno van Coehoorn Foundation was then founded and that is still the organization which aims at the preservation of historic defence systems in the Netherlands. In 1988, the town, the fortifications and the remnants of the open fields of fire were put on the government's list of protected townscapes and thus they are protected by the law on monuments.

All the fortifications of Naarden are still owned by the Dutch government. The government's Department of Buildings started in 1964 the restorations with the restoration of the western half of the bastion "Oud Molen" (Old Mill) Restorations went on until 1989 and stopped then for ten years, during which the moats were dredged and brought to their original depth.

Restorations started again in 1999 with the transformation of one of the three roads leading into the town. This transformation brought the moat more back to its original shape and made the adjoining ravelin, the bastions and the courtine more visible.

When this work was finished, the restoration of the adjoining ravelin started and the bridges in the original road were reconstructed, showing partly the original construction of these crane bridges.

In 2004 the envelope, or continuous counterguard between the inner- and the outer moats surrounding the entire fortress, which had become totally overgrown with a kind of a jungle, was reshaped. This work is completely finished. Now, in the first quarter of 2007, only one and a half bastion, a curtain and a ravelin remain to be restored.

On nearly all the brick walls of the bastions, curtains and ravelins which have already been restored, the natural colour of the bricks disappeared and became black, caused by algal growth. A large variety of algae grows on the walls

of the fortifications of Naarden. This is partly due to the moisture of the brick walls, caused by the moisture of the air above the wide moats.

The reason why more varieties grow on the walls of the fortifications of Naarden than in the rest of the Netherlands is not yet known. The occurrence of varieties which normally grow in warmer countries, even in the tropics, is probably due to the Global Warming.

Very special and seldom is the growth of *Trentepohlia aurea*, an alga with a beautiful orange colour. This variety is only found on the northern side of one of the two *batardeau's*, the eastern one, linked to the bastion named "*Oranje*".

On more dry parts of the walls grows a tremendous variety of lichens: 67 species.

Moss also grows on the walls, in 16 varieties.

The many white and brownish stains, causing the walls to look ugly in many places, are not of biological origin but they are caused by the washing out, through the brick walls, of calcium and iron in the soil behind the masonry.

Plans for the restoration of the bastion named "*Katten*" (*cats*, named after the *cat* or *cavalier* on top of this bastion) are being discussed now. It the last bastion, the one to the north, that has not yet been restored. It is in a poorly state actually, but the restoration will start in 2007.

It took some time before these plans were ready for execution, because the Government Department of Buildings started to study all the previous restorations in order to examine if the restoration techniques, used until now, ought to be changed or improved.

One of the conclusions of these examinations was that the continuously held assumption that trees are always harmful for the brickwork of fortifications is not true. On the contrary, trees keep the underlying masonry dry. Where the brick masonry is solid and not damaged, roots of trees can not enter into the joints and thus don't cause damages. But of course many places can be seen where roots of trees could enter into the brickwork because it was already in a bad shape; thus the roots make the deterioration grow worse.

The examinations led to another discovery. During the more than forty years of restorations, plastic foil was used under the earthen covering of the walls to prevent the rainwater in the earthen ramparts to filter through the brickwork of the revetments of the bastions, curtains and ravelins. This plastic foil was meant to lead the water deeper into the

earthworks, away from the masonry. But on the foil pockets of water were formed and the foil proved to be damaged on many places, because it had teared of the place where it was fixed under the bluestone covering of the brickwork. On other places the foil was damaged by pins driven through it, to fix the scaffoldings for the huge photographs of the photo-festival that is held every two years in Naarden.

The water, thus filtering through the brick walls, causes the white stains of calcium and the brownish ones of iron on the outside of the revetments. Besides that, the water keeps the brickwork moist and this moisture causes the growth of algae. Most of these algae give the revetments an ugly black colour.

Investigations took place during 2006 and continued until now. Very recently, in March 2007, for this purpose a big and deep hole was dug just on the inside of the curtain-wall near the left or western flank of the bastion "*Katten*". This hole was inspected by several scientists: a building historian, an architect, an archaeologist, a soil scientist and their assistants.

In this hole, the inner side of the masonry could be inspected. It was in good condition and the conclusion was that it was the original 17th century brickwork. Buttresses against the inside of the brick wall were discovered.

Furthermore the vertical wall of the hole showed a very interesting cross section of the earth behind the masonry, showing the shape of the original defensive earthen wall, which was later covered with sand when this wall was raised to a much higher level. This was investigated and recorded by the archeologist.

Holes were drilled in the brick walls and the drillcores were sent to a laboratory for the examination of the moisture, of the mechanical and chemical properties and the consequences of frost.

Eventually the hole in the ground was dug deeply enough for the soil scientist to examine the original ground, still untouched, as it was in prehistoric times long before the building of the town and its fortifications.

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