

# SOME ASPECTS OF THE DEVELOPMENT OF THE WOODEN TOWNS IN THE NORDIC COUNTRIES UNTIL THE 20TH CENTURY.

By

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## 1. BUILDING MATERIALS AND TOWN PLANS.

The most distinctive feature of the preserved historic towns in the Nordic countries, particularly in Finland, Norway and Sweden, is that most of the houses and buildings erected before the 20th century are wooden buildings. In many small towns as well as in parts of larger towns, historic wooden houses still dominate the townscapes.

Apart from the western coast of Norway, where the climate is more humid, the general type of climate is fairly similar in the Nordic countries; it is a dry climate with cold winters and warm summers. Furthermore, the three countries have an abundance of coniferous forests where spruce and pine have been the dominant species. These forests have yielded excellent building materials throughout history.

Because of the favourable heat capacity of wood and because the straight-grown logs made it possible, the walls in the town-houses as well as farmer's houses in these countries have been constructed as solid timber walls. The logs have been barked and shaped into specific forms: round, or flattened on each side. The logs have then been placed horizontally, one above the other, and the corners have been joined by different techniques. This technique has been called "the North-European technique of corner timbering", but may preferably be called the notched log construction.

From the 17th century onwards, the saw mill products became more sophisticated, due to the introduction of fine-bladed saws. The miller was now able to make fine-cut boards which were used for outside boarding on the houses, mainly in towns. At the beginning of the 19th century, most houses in the Nordic wooden towns were boarded. Together with the boarding specially-planed boards around windows and doors were also introduced, shaped or planed with profiles which were in harmony with the latest European architectural style. These styles were originally conceived in stone, but were transformed into wood in the wood-building Nordic countries. Cornices and other architectural elements were also introduced into the Nordic town architecture over the years, and in most cases all the new elements were made of wood. Because the houses were constructed completely of wood and because of all the wooden details, the Nordic wooden towns were particularly exposed to the dangers of the open fire.

Even if the houses were built of wood, the materials and

methods applied for the covering of roofs, were obviously of great importance as far as fire prevention was concerned. The town houses and buildings in the Nordic countries, like the buildings in the countryside, were in the Middle Ages covered with turf laid upon a layer of planks. The turf-covered roof was the most common form of roof covering in the towns for centuries. The first time roof covering with tiles was introduced in Norway was in the 15th century, but tiles did not become a widespread roof covering material until the 18th century. In the smaller towns, turf continued to be used until the 19th century, and in fact turf was considered by the authorities as a "fireproof roof covering material" until the end of the 19th century.

In the early Middle Ages, not only the towns in the Nordic countries, but also most of the towns in the central parts of Europe were wooden. Everywhere, there was a vivid wood-building tradition, and in many places, as in several districts in Germany, this wood building tradition in the towns existed until the 13th and 14th centuries. To understand this fact, one must remember that at that time this part of Europe was covered with rich coniferous forests. Wood was the cheapest and most easily available building material, and for this reason, the town inhabitants were reluctant to use stone or bricks as building material for their houses and buildings.

The construction method applied for most wooden town houses in Europe in the Middle Ages was the frame construction. The frames were in most cases filled with some fire-proof material, such as bricks, or as was common in towns in the British Isles, wattle and daub. The wood frame construction also dominated the Danish towns.

However, the wooden town buildings were gradually replaced by stone buildings. This transition was mainly due to new building codes issued by the central or local authorities after a conflagration had destroyed the buildings in the town. Thus, by the 15th century most central European towns and the towns in the British Isles had become stone towns instead of wooden towns.

Generally, the medieval towns in Northern Europe were densely built. Most of them had developed without any town planning; the streets were usually narrow (3-5 meters) and the street pattern was irregular. A similar type of street pattern was common in most European towns founded during the Middle Ages. Only a few towns grew up along streets planned in advance through a formalized town plan. Many towns in the Nordic countries were founded during the Middle Ages (10th-15th centuries), and again many of them were founded without any preconceived town plans; they were more or less "self-grown" and densely built with narrow streets.

## 2. WOODEN TOWNS AND CONFLAGRATIONS.

All densely-built wooden towns, regardless of the construction technique, are subject to the ravages of fire. In earlier times, unless special precautions were taken, fires in

wooden towns would inevitably result in a conflagration.

How has the threat of fire affected the development of the wooden towns, and what precautions have been taken to avoid future disasters? In my opinion, this is a crucial question in the history of European town development.

After such a catastrophe as a conflagration, the respective town authorities, whether a king or locally appointed men, necessarily asked themselves the question what could be done to prevent a new conflagration in the future. They chose between two solutions and in several cases adopted both of them: The first method was to draw up new town plans with wider streets to prevent the fire from spreading from one side of the street to the other. The second method was to make new building regulations, prohibiting the building of wooden houses.

When the possibilities for conflagration in the old wooden towns were assessed in the 19th century, the Norwegian fire insurance companies took the following factors into consideration:

1. The way of building (stone or wood).
2. The town plan (wide or narrow streets).
3. The organization and equipment of the fire brigade.
4. The topography and wind circumstances. In towns built on hilly terrain, the danger of conflagration was greater than in a town built on flat ground because the fire would spread easily from the higher parts to the lower parts. Unfavourable wind conditions, both in direction, but perhaps more important, in strength, increased the danger for conflagrations. Most of the old towns of Norway were situated on the western coast, where both the latter mentioned disadvantages were present. This is the main explanation for the occurrence of frequent town fires in the old wooden towns of Norway.

### 3. MILESIAN TOWN PLANS AS FIRE PREVENTION.

In many cases, the adoption of a fundamentally new town plan after a conflagration, was very difficult to carry out in practice. The redistribution of land under a new town plan was a controversial affair. To understand this, one has to take into consideration that even though the buildings might be made of wood, the foundations and the cellars were made of stone and bricks. Building a vaulted stone cellar was expensive, and these cellars in most cases withstood the fires. Of course the owners of the sites wanted to rebuild their houses on the old foundations and above the old cellars to save money.

If we examine the towns in the Nordic countries, and particularly in Finland, Norway and the central and northern parts of Sweden, it was not until the 17th century that the authorities made new town plans for towns devastated by fire. At that time the town planning ideals of the Renaissance had been adopted in Northern countries.

The new town plan ideal was, however, not particularly new at that time. It was the chequerboard type of plan, a type which

is called the "Milesian plan" in European architectural history, after the old Greek city of Miletus which was laid out on such a plan probably in the 6th Century B.C. and is the first known example of chequerboard plan in Western civilization. However the plan is age-old and can be found in many cultures: That is the gridiron town plan which divides the town by straight streets crossing at right angles. In Miletus the streets were of uniform width and cityblocks were of fairly uniform dimensions.

This town plan ideal was introduced in the town of Trondheim, the third largest town in Norway, after a fire in 1681 where all buildings were destroyed, apart from the stone churches. No new building regulations were issued by the authorities after the fire; the inhabitants were allowed to continue the wood building tradition. The authorities were probably hoping that the very wide streets in the new plan would prevent further disasters. The more important streets were from 30 to 35 metres wide and secondary streets 20 to 25 metres wide.

However, through this plan, adopted by the King, the city blocks became too large to accomodate the buildings in a desirable way. For this reason, several alleys were cut through the blocks. Many of the alleys were in reality the old streets from the medieval town. So although the town was rebuilt on a new town plan after the fire in 1681, some of the medieval street pattern survived with alleys approximately 4-5 meters wide.

To understand why the inhabitants of Trondheim accepted such a drastic redistribution of the town sites after the fire in 1681, we must take into consideration the fact that the town had been ravaged by two town fires which devastated all the buildings during the 17th century; that is, within one generation. Probably, several fire disasters in a row somehow prepared the inhabitants mentally for accepting radical changes.

Twenty years earlier, in 1661, the larger part of the city of London had been destroyed by fire. New town plans were proposed, but the authorities decided that new town plans were impossible to accomplish. Instead new, severe building regulations were issued, totally forbidding the inhabitants to build wood frame houses. Of course a new gridiron town plan would have been much more difficult to carry out in London than in Trondheim. At that time there were 400.000 inhabitants in London, while Trondheim had only 4.000! Trondheim was then, as now, the third largest town in Norway. The largest town in Norway at that time had 20.000 inhabitants, which give an impression of a less densely populated country.

#### 4. BUILDING REGULATIONS AS FIRE PREVENTION.

In many cases, and foremost in Central Europe and the British Isles, it seemed that it was easier for the authorities to adopt new building regulations instead of radical new town plans. Through such regulations the inhabitants were forbidden to build wooden houses; in other words, the authorities compelled them to construct their houses and buildings of compact stone or brick walls from the foundations to the tops of the walls.

When the authorities in the Nordic countries chose to adopt new town plans instead of strict building regulations, this was mainly because of the strong objections from the town inhabitants against using stone or brick as building material.

The opposition to the use of stone materials for house construction in the Nordic countries, and particularly in Norway, was not solely based on economic arguments; that wooden buildings were cheaper to build than stone or brick buildings. The most important argument, recorded over and over again from the 17th to the end of the 19th century, even among educated and high-ranking people, was that stone houses were unsuitable for the climate of the Nordic countries. They claimed that the heat-capacity of the compact stone wall was not good enough for our cold winters. The stone houses were too cold and too humid to live in and would give the inhabitants infections or diseases. In comparison, a wood house, they claimed, was nice and warm to live in. Furthermore, the argument for building wooden houses in the towns was that this construction had been used for centuries and was therefore in harmony with the nation's traditions and other cultural conditions.

## 5. CONFLAGRATIONS AS URBAN RENEWAL.

But even if the towns in Finland, Norway and the greater part of Sweden remained as wooden towns for a considerable historic period, about 800 years, this does not mean that the architectural design of the houses in one and the same district, was similar through this considerable historic period of time. On the contrary, the design, from general composition down to architectural details, was under constant change. The major factors which caused changes, were influences from the historical styles in European architecture, like the Renaissance, Baroque etc. In most cases, details conceived in stone materials were, so to speak, transformed into wooden details.

Obviously, the wooden towns and frequent fires put a heavy strain on the national economies. Vast resources were put into the rebuilding of the towns after conflagrations. That these resources should rather have been used for building the nation's prosperity, was an argument claimed by more and more people in Norway during the 19th century. This was a strong argument for fire-proof construction techniques.

On the other hand, several of leading figures of the nation regarded the conflagrations as a necessary town renewal process. The new, more convenient town plans and the new buildings erected after these disasters created, in the eyes of contemporaries, a more beautiful and modern town.

Thus, the town fires or conflagrations also served as a form of "town renewal" process. Because of the fires, the town inhabitants and authorities had several opportunities to introduce the latest fashions in town planning and in architecture on a large scale. In many cases we will find examples of how elite models of architecture were widely introduced into the vernacular tradition.

Two conflagrations in Trondheim in 1841 and 1842 where more than two-thirds of the town was destroyed, did not simply change the townscape through the Milesian town plans adopted for the destroyed parts of the town. After the fire in 1841, the local authorities under approbation from the central Norwegian authorities, issued a new building act for the reerection of the town. According to this act, the house owners were allowed to rebuild houses and buildings in wood, but several restrictions were put on their freedom. The facade to the street could only be built to a stipulated maximum height and should be even, without bay-windows or other projecting parts. The roofs should have a fixed slope to the street and be covered with tiles.

The buildings which were built in compliance with this building code and the regulations given in the town plan, became remarkably unified and more or less represented a realization of Alberti's town ideal with houses "...ad lineam et libellam". Even now, in large parts of Trondheim, there are areas with quite well-preserved wooden houses from this period.

## 6. WOODEN TOWNS AS ANACHRONISMS AND CULTURAL HERITAGE.

It was not until the beginning of this century that new wooden buildings were totally prohibited in the centres of the towns in the Nordic countries. This happened in Norway in 1904, after a conflagration in one of the larger towns on the west coast. The destruction caused by this fire was so great that the news of it became a major sensation all over Europe. Finally, the authorities in Norway decided that tough measures were necessary: but this step also implied the final blow to the existence of the wooden towns as a living tradition, which partially explains why we today treat the old extant wooden towns as cultural property, worthy of preservation. This is an acceptance of the fact that the use of wood in the construction of houses and buildings in towns or villages reflects unique national characteristics as adaptations to particular physical or cultural conditions.



A typical part of Trondheim with wood houses, erected after the fire in 1841.

This picture was taken in 1878, but large areas with wooden houses from this period can still be seen in this town which is the third largest in Norway.

Knut Einar Larsen: Some Aspects of the Development of the Wooden Towns in the Nordic Countries until the 20th Century. - Summary

The most distinctive feature of the preserved historic towns in the Nordic countries, particularly in Finland, Norway and Sweden, is that most of the houses and buildings erected before the 20th century are wooden buildings. In many small towns as well as in parts of larger towns, historic wooden houses still dominate the townscapes.

In the early Middle Ages, not only the towns in the Nordic countries, but also most of the towns in the central parts of Europe were wooden. However, the wooden town buildings in the last mentioned parts were gradually replaced by stone buildings. This transition was mainly due to new building codes issued by the central or local authorities after a conflagration had destroyed the buildings in the town. Thus, by the 15th century most central European towns and the towns in the British Isles had become stone towns instead of wooden towns.

Generally, the medieval towns in Central and Northern Europe were densely built. Most of them had developed without any town planning; the streets were usually narrow (3-5 metres) and the street pattern was irregular. All densely-built wooden towns, regardless of the construction technique, are subject to the ravages of fire. In earlier times, unless special precautions were taken, fires in wooden towns would inevitably result in a conflagration.

How has the threat of fire affected the development of the wooden towns, and what precautions have been taken to avoid future disasters? In my opinion, this is a crucial question in the history of European town development.

The authorities chose between two methods for preventing future conflagrations, and in several cases adopted both of them when a town was to be rebuilt after a fire disaster: The first method was to draw up new town plans, most often on a "Milesian plan", with wider streets to prevent the fire from spreading from one side of the street to the other. The second method was to make new building regulations, prohibiting the building of wooden houses.

When the authorities in the Nordic countries chose to adopt new town plans to provide better fire protection instead of strict building regulations, this was mainly because of the strong objections from the town inhabitants against using stone or brick as building material. Besides, wood was also the cheapest material.

It was not until the beginning of this century that new wooden buildings were totally prohibited to build in the centres of the towns in the Nordic countries. But this step also implied the final blow to the existence of the wooden towns as a living tradition which partially explains why we today treat the old extant wooden towns as cultural property.

Knut Einar Larsen: Quelques aspects de l'évolution des villes en bois dans les pays nordiques jusqu'au XX<sup>e</sup> siècle. - Résumé

La particularité la plus marquante des villes historiques encore conservées dans les pays nordiques est que la plupart des bâtiments antérieurs à notre siècle ont été construits en bois. Les vieux bâtiments en bois dominent encore de nos jours le paysage urbain de nombreuses petites villes comme de certains quartiers de grandes villes.

Dans la première moitié du Moyen Age, les villes n'étaient pas en bois dans les seuls pays nordiques; la plupart des villes d'Europe Centrale et du Nord étaient également bâties avec ce même matériau. Mais celles-ci se sont peu à peu transformées à la faveur de la pierre. Cette évolution s'explique principalement par le fait de lois nouvelles régissant la construction et de décrets émanant des autorités centrales ou locales après que le feu avait réduit en cendre les bâtiments de la ville. C'est pour ces raisons mêmes qu'au XV<sup>e</sup> siècle, l'Europe Centrale ainsi que les îles Britanniques ne comptaient plus que des villes en pierre.

On peut dire en règle générale qu'au Moyen Age les villes d'Europe Centrale et d'Europe du Nord se formaient de constructions serrées les unes contre les autres. La plupart s'étaient développées sans nulle planification urbaine: les rues étroites (3 à 5 m de large) et le dessin de leur réseau était irrégulier. Le feu menaçait sans cesse toutes denses agglomérations en bois, et ceci indépendamment de la façon dont étaient conçues les maisons. Dans le passé, à moins qu'on eût pris quelques précautions particulières, un feu qui se déclarait dans une ville en bois ne pouvait pour ainsi dire aboutir qu'en un vaste incendie qui ravageait la ville entière.

Quand une ville dévastée par un incendie devait être reconstruite, les autorités avaient le choix entre deux méthodes pour empêcher qu'une telle catastrophe ne se reproduise, et il n'était pas rare qu'elles recourussent à ces deux modes de prévention: la première méthode consistait à réaménager le réseau urbain avec des rues plus larges et le plus souvent perpendiculaires, afin d'empêcher tout incendie de se propager d'une côté à l'autre de la rue. Le second moyen était de promulguer de nouvelles lois relatives à la construction qui interdisaient tout simplement de bâtir en bois.

Quand les autorités des pays nordiques décidèrent plus tard d'élaborer de nouveaux plans urbains en tenant compte des problèmes d'incendie, si elles n'interdirent pas de construire en bois dans les villes, c'est que l'opposition des citoyens contre l'utilisation de la pierre ou des briques comme matériaux de construction, jugés inadéquates au climat nordique, était forte.

Au début de ce siècle, il fut également interdit de bâtir en bois dans le centre des villes nordiques. Ainsi tout nouveau bâtiment édifié dans un centre-ville ne pouvait être qu'en pierre. Mais ce tournant de l'urbanisme nordique fut aussi comme un coup de grâce pour la ville en bois proprement dite. Ceci explique donc en partie pourquoi nous considérons aujourd'hui les villes en bois des pays nordiques comme des vestiges liés à un patrimoine historique.