

The concept of the ideal city: the case of Finnish orthogonal towns

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Abstract. *Most old towns in Finland are characterized by their orthogonal structure. During a period of about 300 years the architectural principles of the Renaissance were followed. The concept of the ideal city was applied to an environment with a building tradition totally different from that of the countries in which the concept was created. The ideal grid structure could be transferred into this part of the periphery of Europe without difficulty, but the resulting townscape with its wooden buildings was far from Renaissance ideals. There was a constant dialogue between the goals of fire safety and stateliness of the townscape, on the one hand, and the actual urban environment on the other. The battle against fires was waged by restructuring towns and by developing new guidelines for building. Even when town plans were restructured, characteristics of Renaissance ideals were preserved. Rows of deciduous trees, which were introduced as a new structural component in the late-eighteenth century, eventually proved decisive in creating an ambience suitable for wooden towns. A specific type of grid plan characteristic of Finnish wooden towns was created. The new block was divided into plots with wide fire streets which were planted with deciduous trees. Finland was able to create its own concept of the ideal city.*

Key Words: *town plans, urban design, orthogonality, ideal cities, Finland*

An important aspect of the history of planning has been the development of ideal cities or city models. The way in which people understand the universe and how they consider the city as its symbolic interpretation has, from the very beginning of urban development, affected the development of urban structures. Even in Europe the building of cities was, until the beginning of the Renaissance, guided by ideal models based on religious symbols, often without the inhabitants being conscious of it.¹

During the Renaissance, after perspective had been discovered, the building of cities became a matter of deliberate spatial design. The concept of the city had changed. The town in the Middle Ages had been considered as an entity assembled from various pieces, whereas the Renaissance ideal city was planned in its entirety, though its various components could be recognized. However, the Renaissance city was not purely an architectural and aesthetic composition, it also had social, economic, hygienic, and

defensive aspects.²

Once the idea of the city was no longer inherently associated with religion, well-built cities became symbols of the realm and its power. Stateliness of townscape became a goal in town building, and this could be achieved by using the Renaissance idea of a city as a planned whole.

The principal ornament to any city lies in the siting, layout, composition, and arrangement of its roads, squares and individual works: each must be properly planned and distributed according to use, importance and convenience. For without order there can be nothing commodious, graceful or noble.³

Behind this goal were three motives, which had appeared in town building since the early years of the Italian Renaissance: the purely aesthetic motive, the wish to exceed everything others have accomplished, and the wish to build eternal monuments to oneself.⁴

In urban planning in Sweden and Finland, stateliness included regularity, orthogonality and uniformity. The emphasis on the last reveals, in particular, the influence of Simon Stevin (1548-1620), an influential fortification planner and leading Dutch urban theoretician. A new concept – regularity – was born to express these planning principles.

In highly-urbanized central and southern Europe, planning was mainly used for the partial renewal of existing towns and their extensions.⁵ However, the majority of new towns with orthogonal layouts designed according to Renaissance principles were built outside the urbanized core of Europe. This group includes the towns founded in Sweden and Finland in the sixteenth and seventeenth centuries. Unlike the rest of Europe, Finland and Sweden were then still areas of low urbanization. There it was possible to implement Renaissance ideas of urban design in planning completely new towns. In addition, repeated fires in wooden towns provided the opportunity to begin anew. The most serious limitation was the lack of economic resources.

Grid plans of Finnish towns

The era of planned cities began in Finland when it was part of Sweden in the early-seventeenth century. At the time there were eight towns in Finland. In the course of the seventeenth century seventeen new towns were founded, followed by four in the eighteenth century and nine in the nineteenth century. Many more towns were designed during this period than were actually created. In nearly all cases the urban structure used was orthogonal – a grid plan.

The influence of ideal cities spread into the peripheral areas of Europe by several routes. The theory books of the Renaissance became known to European rulers and their courts. Information about several towns in Germany had been disseminated during the course of military campaigns, and city planners may well have travelled to France and Italy. In the case of Finnish towns, one important route of influence, from the time of the Great Nordic War onwards, was through St Petersburg. In the early-eighteenth century, Swedish/Finnish officers and men worked, as prisoners-of-war, as surveyors, staking-out the city plan and building the newly-founded St Petersburg. When they returned after the war they brought with them not only impressions of a new capital of a great empire, but also maps, plans and other drawings of the city.⁶

It was initially rather problematic in Finland to build according to new planning principles. The townspeople who were responsible for the actual building did not know what kind of town the rulers and other powerful men were seeking to create. The merchants and some others knew Stockholm, which only then had begun to spread outside the old town, and on their travels they had occasionally seen Tallinn and a number of German towns on the Baltic Sea. What they had seen tended to be characterized by Swedish kings in the late-sixteenth and early-seventeenth centuries as well-built towns. However, none of these towns and cities could serve as an example for the application of Renaissance planning principles.

The names given to some of the planning periods of the grid plans in Finland are still debated. The term 'regularity', introduced by Gerhard Eimer in 1961, is fully accepted for the period 1620-1743, as is 'Neo-Classical' for 1827-1856. There are differences of opinion about the precise extent of the periods. The period between has been divided into two, 'Classical' and the 'Classical tradition' by Henrik Lilius. The difference between the two periods is not in period-related differences between the various town plans, but largely in the fact that, during the latter period, the houses built were in the neo-classical style. Hence, in this paper, the whole time-span has been referred to as 'Classical', using the term 'Classical tradition' to refer to the last 20 years of the period. The last period, post-1856, has been referred to as 'the normative period', as an ordinance in 1856 specified all street and plot dimensions, their structure and the distances between houses, and was to be obeyed in all towns. The name has not yet won general acceptance.

Only after the first Renaissance towns of the 'Regularity' period had been built in Finland was it practicable for Finns to see, for example, what a street of a certain width looked like when it was built and how certain building types could be placed on plots of particular dimensions. Only then was it feasible for the majority of inhabitants, as distinct from planners and political leaders with knowledge of architecture, to envisage the appearance of a Renaissance town.

With few exceptions, the plans for Finnish towns followed the orthogonal principle. This was partly a reflection of Dutch influence: the majority of Swedish fortification officers at the beginning of the seventeenth century were trained in Leiden, which was Stevin's centre of activities. According to Stevin, a town should be built on flat land and its basic form should be quadrangular. A rectangular block should be enclosed with uniform façades on all sides. Even the expansion of a town should be symmetrical.⁷

The Regularity period

One of the plans of the first period of planned towns, the Regularity period, was the plan for Pori (Björneborg⁸). This was prepared in 1642 by Anders Torstensson, the city engineer of Stockholm (Figure 1). Pori was a perfect example of the Renaissance ideal city. It was a complete rectangle and its structure was symmetrical with regard to the two axes crossing each other in the middle of the central square. Pori had a central focus, although it was not a radial town. The ideal city aspect is further emphasized by the fact that the plan drawing provides no information about the site. The town was actually built in a slightly different manner. It was denser than planned, and subject to repeated fires. The present structure of Pori is based on a plan of 1852.

The plan of Kristiinankaupunki (Kristinestad; 1652) – by another planner – was orthogonal, but in other respects its structure differed from that of Pori. Both the plan and the way it was built were sufficiently spacious for the town to have had the good fortune to escape fire for 350 years. The present town structure is based on a slightly modified plan of 1652 (Figure 1). Many of the houses date from the late-eighteenth century.

Even though Tornio (Torneå; 1718) was an unfortified town, its structure was in spirit similar to that of the fortified towns of the period (Figure 2). In the Tornio grid there were two intersecting 24-ell (about 15 m) wide streets, with a closed-cornered square at the crossing. At the end of the axis of the north-south main street was the church, which had survived a fire.

The plan of Hamina (Fredrikshamn; 1723) is the only example of a Renaissance radial town in Finland (Figure 2). However, Hamina is not a pure example of the type as in the ideal town streets radiated from the corners of the central open space towards the bastion ends,⁹ whereas in Hamina they radiated from the centres of each of the eight sides of the open space to between the bastions. This placing of streets resulted in

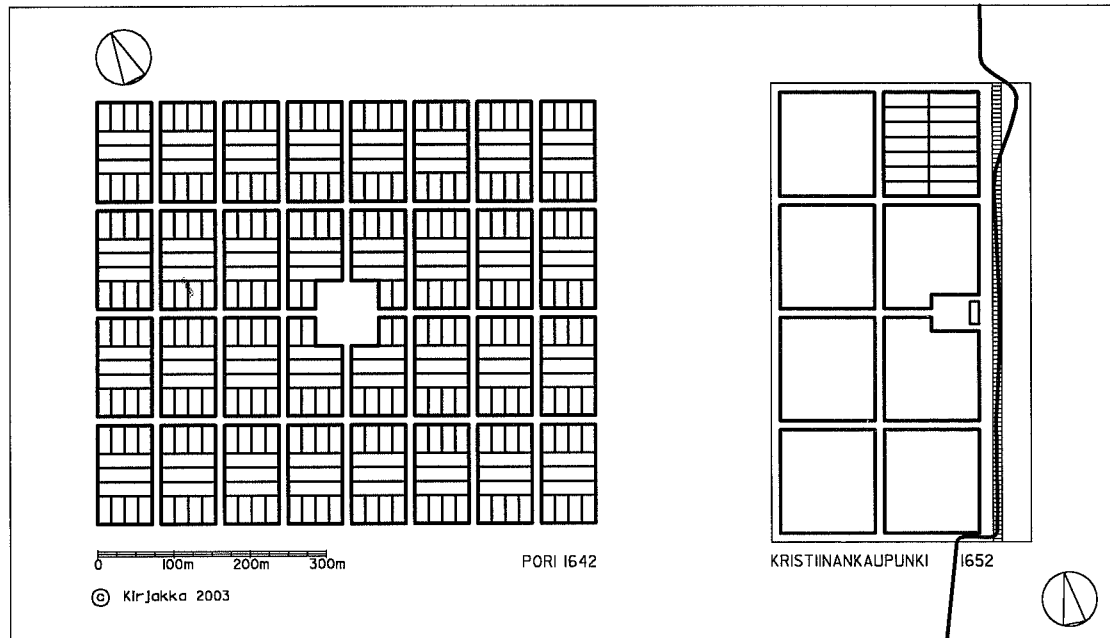


Figure 1. Ground plan of Pori, 1642 (left) and Kristiinankaupunki, 1652 (right). If more than one plan was made for a town, plot boundaries were either not shown on the original plans or they were shown in only one street block.

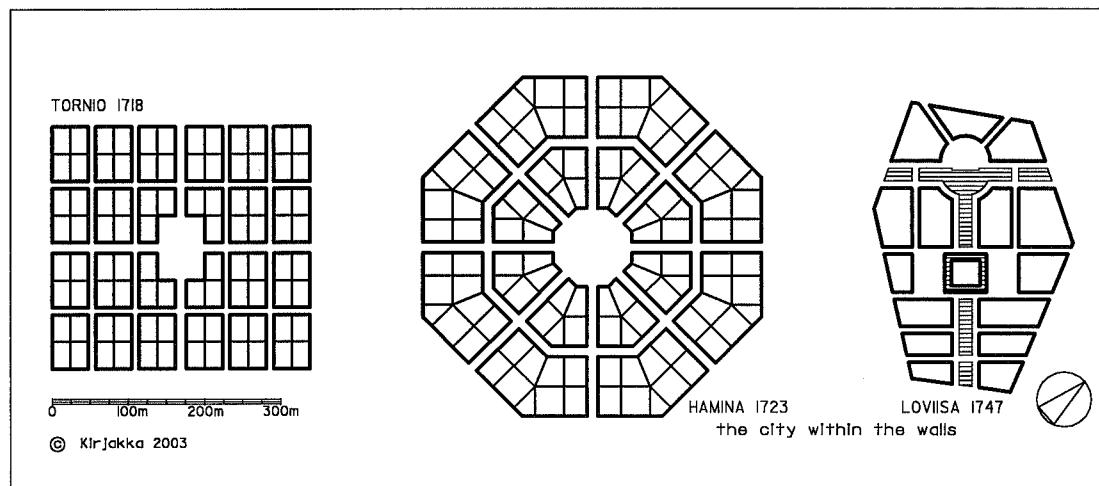


Figure 2. Ground plan of Tornio, 1718 (left) and Hamina 1723, within the city walls (middle). Proposed street plan of Loviisa (right), 1747, within the city walls. Plot boundaries were not shown on the original plans.

a spatially more closed central focal area than in the ideal type. Plot shapes were more rational since the radial streets intersected the 'circular' street orthogonally.

As the dominant building material was wood, towns were repeatedly destroyed by great fires. Another reason why fire spread

so extensively was the high density of building. As economic resources were too limited to allow building in stone, which would have given better protection against fires, attempts were made to reduce the spread of fires by making layouts more spacious. The aims behind the layout of

towns were primarily aesthetic, but as the aesthetic aspects also meant greater protection against fires, those aims were more easily achieved.

The Classical period

During the Regularity period only the simple basic components of urban structure had been used in planning: the arrangement of street blocks provided for only one open space in each town. From the middle of the eighteenth century onwards, new orthogonal ground plans were introduced. A town was still a planned entity, but the number of components was increased along with the number of variations within each component. Street blocks of similar size and form, often with plots of equal size, were replaced during the Classical period by plots and street blocks of varying sizes and even of varying shapes, though most plots were rectangular. Alongside plans with homogeneous street networks appeared others in which functional or symbolic main streets were emphasized by designing them with a greater width than other streets. The importance of open spaces was emphasized where compositions of several squares were created, often symmetrical to the street axis.

Tree-lined streets appeared in the urban fabric and in urban design when deciduous trees were planted along ordinary streets from the 1750s onwards. In addition to tree-lined streets, nature also became a component in urban design in the form of planted public squares, the so-called 'promenades'. The amount of nature in towns also increased as various types of gardens became more common on private plots. Water as a design component was also introduced. In addition to embankments, canals were constructed and vistas were opened up towards the water. The fire alley, planned to make the street-block structure more spacious, was of great importance in improving fire safety.

In plan details, the beautiful rectangles of the Renaissance were recalled by quadrangular plots and street blocks: even the plot form $1:\sqrt{2}$ appeared simplified in a four-plot

street block with the ratio of sides being 1:1.4. A plot form as close to a quadrangle as possible seems to have been a common aim in the town plans of the Classical period. It resulted in a relatively long street front even when plots were small. One possible explanation for this was that buildings were larger than before. However, another factor was the growing importance of streetscape in urban design.

The first plan of the period was made for Loviisa (Lovisa), a new fortified town (Figure 2). Loviisa was to act above all as an important part of the defensive system of the eastern border region. Fortification was of major significance in its planning. This limited the urban design possibilities. Extra difficulties for both the fortifications and the civilian activities of the town were caused by the topography of the chosen site. It was difficult to combine a polygon suited to fortifications and a rectangle suited to urban structure in the narrow pass left between the cove, the river and the ridge.

The Loviisa plan (1747, revised version 1753) by Augustin Ehrensward was one of the most diversified designs ever made for a town in Finland. A canal, bridges spanning it and different types of open spaces create a highly varied urban scene. The plan was never implemented. The central idea in the plan was a T-shaped canal, which was achieved by channelling the river flowing into the end of the cove of Loviisa. The town boundary was an irregular hexagon. In its original form the plan was symmetrical in relation to the longitudinal axis. The canal, together with the streets lining it, formed a 60-ell (35.6 m) wide division of the town. In addition to its value in the urban landscape, it was important in improving fire safety. At the intersection of the canals, Ehrensward had proposed two semicircular spaces facing each other. The outer semicircle was a distinct open space, from which two streets radiated towards corners of the plan. The inner semicircle was limited by curving buildings. It was a most peculiar open space, as most of its surface consisted of a semicircular water basin at the canal junction, limited by curved

embankments.

The importance of building material in achieving fire safety was emphasized when small plots were used. However, the specifying of two-storey stone-built houses in Loviisa may also have had an aesthetic motive: a striving for a more closed street space.

The town planned at Mikkeli (St Michel) was placed on the south-eastern side of the existing church. The design combined relatively wide streets (24 ells) with very small street blocks (rectangles of 1:1, 3:4 and 3:5). The rows of narrow street blocks crossed each other on the southern side of the church, and at this crossing (an unbuilt-up block) was a market place (Figure 3). The churchyard fence with its gate fronted the open space. The plot divisions are not shown on the plan.

Rethinking of city models took place. Recognition of the importance of spaciousness for fire safety increased the design problems. The architectural solution could no longer be based only on the aesthetic goals for urban space: it became necessary to take account of other, sometimes conflicting, factors.

Making urban structures more spacious could be achieved by having wider streets, larger plots, or both. A combination of wide streets and small plots guaranteed a certain spaciousness. However, there was always someone who needed a larger plot, and large amounts of street space tended not to accord with prevailing aesthetic values. A combination of large plots and narrow streets was spacious when a town first came into existence but, as the number of houses on a plot was not restricted, a congested pattern could ultimately result.

The introduction of fire alleys in Kuopio (1775) was an experiment to achieve greater spaciousness in urban structure (Figure 3). At the beginning of the 1770s people had noticed that it was much easier to maintain public open spaces intact than private spaces. Fire alleys were an attempt to create public, or at least semi-public, space in the block interior. This could be supervised so that it

remained unbuilt-up.

The next phase, 2-3 -ell (1.2-1.8 m) wide fire alleys, was the only feasible means of introducing fire protection in old towns. Such alleys made it possible to penetrate into the heart of fires in the street block interior.

The combination of aesthetic considerations and the reduction of fire hazards was more feasible when the number of buildings on a plot, and thus within a street block, was reduced during the next period, the Neo-Classical. Nevertheless, the most disastrous town fire took place during a period when the aesthetic ideals of spaciousness and horizontality were emphasized.

The Neo-Classical period

The grid plans of the nineteenth century were totally different from those of the seventeenth century. However, as geometric compositions, there are several connections to Renaissance ideal cities. Their structure was difficult to expand without destroying the original geometric design. Even these plans can be considered to fulfill Alberti's definition of the essence of beauty: 'beauty is the harmony and concord of all the parts achieved in such a manner that nothing could be added or taken away or altered except for the worse'.¹⁰

A demand to renew a town plan was usually the immediate result of a fire. The great fire of Turku (Åbo) in September 1827 was the greatest town fire in the whole of Scandinavia: within Europe it was the second largest peace-time fire after the Great Fire of London in 1666. The catastrophe was so great and its reasons so obvious that, quite naturally, fire safety became the most important practical goal of urban design. Spaciousness became the dominant factor in town structure. C.L. Engel, who had come to Finland through St Petersburg and Tallinn after studies in the Berlin Bauakademie, and at the time was active in designing the monumental centre of Helsinki, was appointed as the planner of post-fire Turku. An important part in developing the new urban structure was played by the Russian

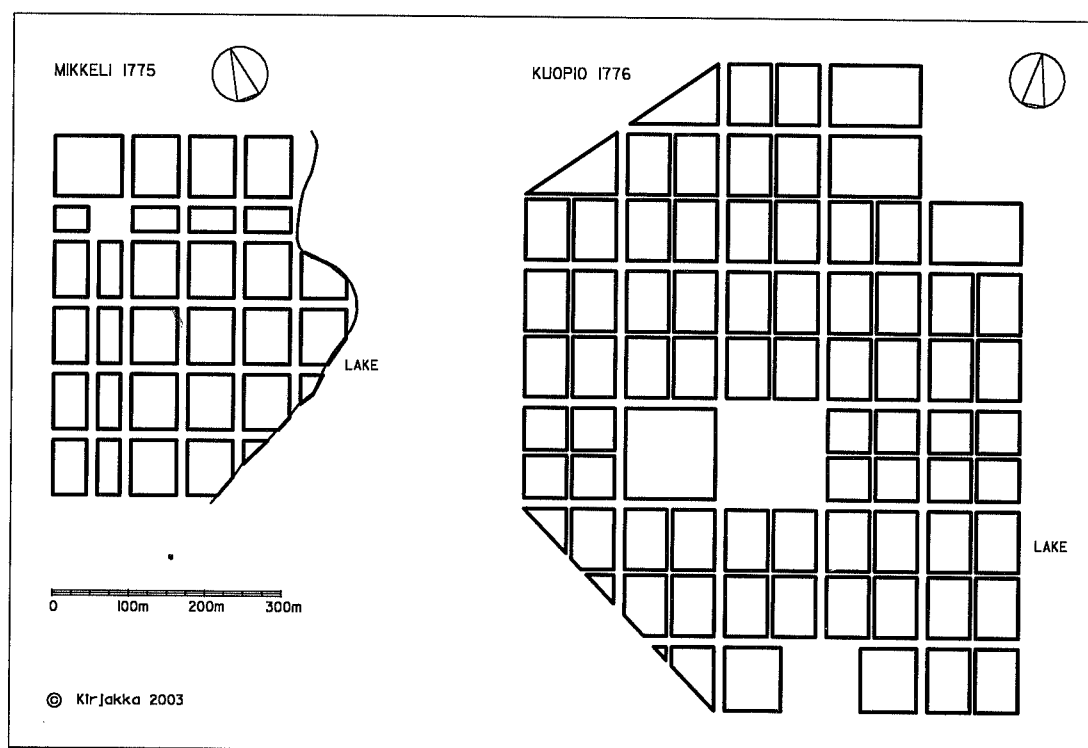


Figure 3. Proposed street plan of Mikkeli, 1775 (left), and ground plan of Kuopio, 1775 (right). The street blocks of Kuopio consisted of four plots separated from each other by open fire alleys.

Governor-General and the enlightened burghers of Turku.

The features which became characteristic of Neo-Classicism in Turku were a synthesis of the experiences of the town's inhabitants during the fire, the precise instructions of the Russian Governor-General on dimensions and the horizontal emphasis of the Neo-Classical architectural concept, all of which the architect had to adapt to the very difficult terrain of Turku.¹¹

The new planning principles that were adopted in the post-fire planning of Turku also meant restructuring the street block. The street block typical of the nineteenth-century wooden towns, where one side of each plot was left unbuilt at least 25 ells (14.8 m) wide and planted with trees, was developed during the planning process in Turku (see street blocks in Figures 4-6). The street-block type in its final executed form was in fact the burghers' proposal, and it can be regarded as a particularly Finnish idea for improving fire safety. Necessary prerequisites were, how-

ever, a creative use of opportunities, and knowledge and experience of how spacious urban structure and vegetation improved fire safety.

As in the previous planning periods, Neo-Classical urban design had the goal of creating a distinct entity. This can be seen in, for example, Engel's striving to give at least accurate limits to the town plans where he found it necessary to abandon the plain rectangle. He often added a row of trees along the outer edge of the bordering street, as if to emphasize the limits. In a way, Engel's plans can be regarded as intellectual heirs of the Renaissance ideal cities. They were almost the last in a long series of planned entities, in whose design regularity and the relation of parts with the whole were carefully considered. A later expansion of this type of town plan is extremely difficult without compromising the whole plan.

The town to be founded at Mikkeli was to be a trading place and the seat of the provincial governor. Thus a large market

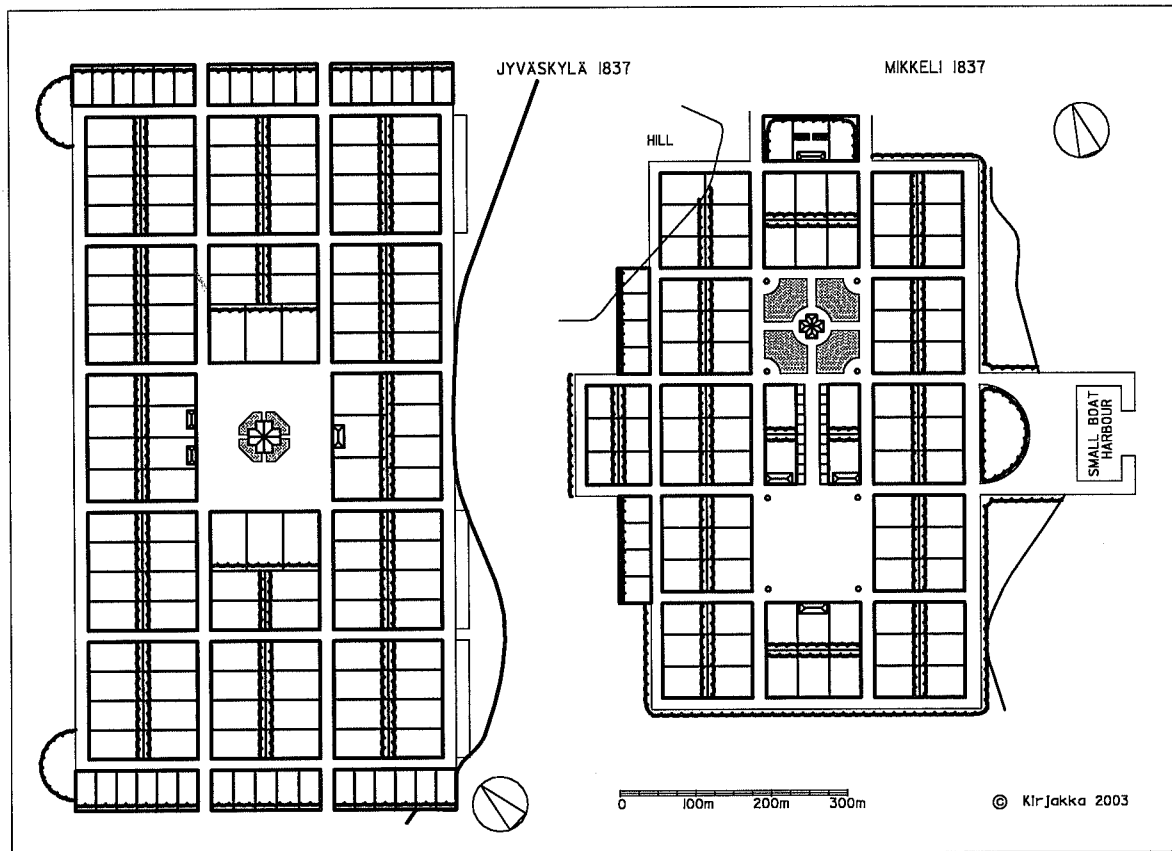


Figure 4. Ground plan of Jyväskylä, 1837 (left) and Mikkeli, 1838 (right). Each street block is divided into two groups of plots by rows of trees.

place was needed in addition to numerous public buildings. The town plan was based on a rectangle of 3 by 5 street blocks. A steep hill cut one corner of the plan and smaller street blocks were added to it on flat land between the hills. The street network consisted of 30-ell (17.8 m) wide longitudinal streets and 25-ell (14.8 m) wide transverse streets (Figure 4).

Engel emphasized public functions by collecting them into the central row of street blocks as a monumental axis, a part of which was a market arcade uniting the market place and the open space around the church. The axis began at the town hall and continued into the market place which contained public wells. It then continued to the provincial governor's and provincial administrative buildings, through the market arcade to the church, which was surrounded by trees, and then to the school. Even the hospital,

surrounded by a park, was placed on this central axis, even though it was hidden behind the school block. Only the prison was placed completely outside the town plan area.¹²

The plan for Jyväskylä, which was symmetrical, consisted of 3 by 5 large street blocks, of which the central one was reserved for the market, and six smaller street blocks (Figure 4). Engel reserved the blocks of small plots for inhabitants with limited means and placed them in rows at opposite ends of the plan area. He noted that the small plots were indispensable, as in towns planned without them it had later become necessary to permit the division of large plots.¹³

The new church, which had the plan of a Greek cross, was placed in the middle of the market place, surrounded by trees arranged to form an octagon. Engel placed the town hall at the front of the southern street block as he

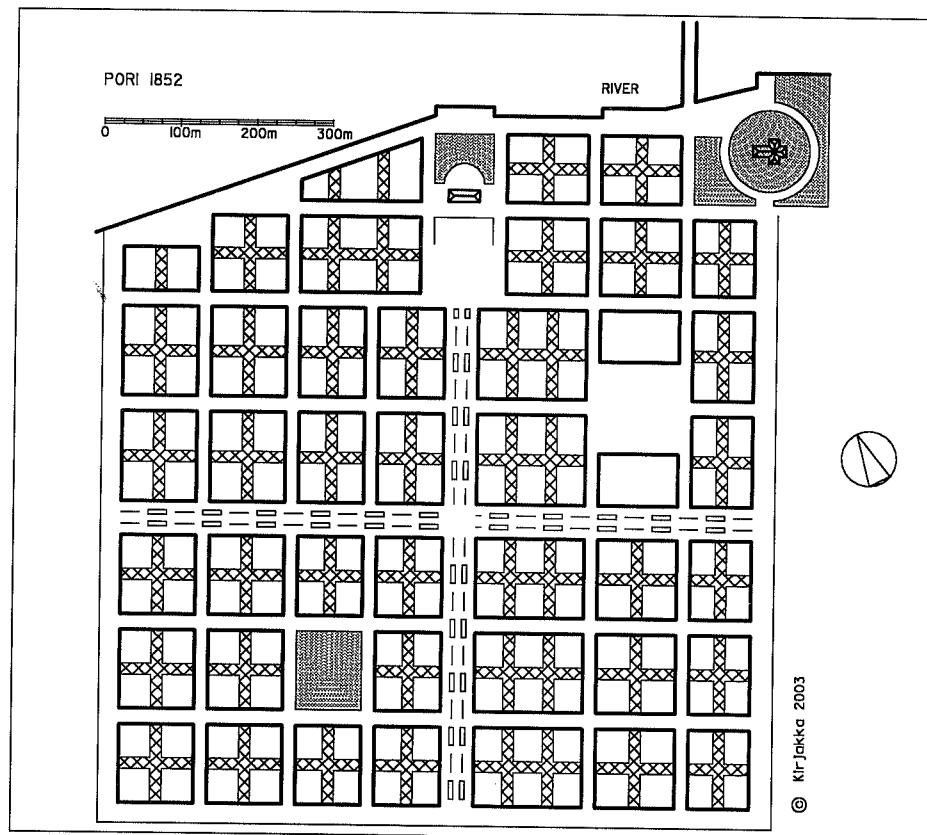


Figure 5. Ground plan of Pori, 1852. In each street block, plots are separated from each other by gardens.

considered that a building that needed auxiliary structures could not be placed on a square. The town hall was to be distinguished from the private houses only through its architecture.¹⁴

The orientation of the plots in the centre of the plan emphasized the market place as the most important component of the town. As the market stands would not be in daily use, Engel considered that they made the market place, the best part of town, deserted and dull. However, in view of their utilitarian value, he proposed that the future inhabitants be given the opportunity to decide whether they should be fixtures.¹⁵

The normative period ¹⁶

Great fires, followed by demands for a more spacious town structure, better building practices and a renewed town plan, became a recurrent feature of urban planning. A fire in

one town affected other towns. The effects on urban design of the fires at Pori and Vaasa (Vasa) in 1852, and the legislative reforms that followed, can be compared to the great fire of Turku in 1827. In earlier decades such catastrophes were followed by higher-density building and a further fire.

In May 1852 fire destroyed three-quarters of Pori. In the densely built-up old plan area, 288 of the 301 houses were burnt down, whereas in the newer plan area – which had a decidedly more spacious structure – only seven of the 92 houses were destroyed. The inhabitants proposed that the streets should be widened and the plots enlarged. A 60-70-m (36.5-41.6 m) wide tree-lined street was also regarded as necessary to make fire extinguishing easier and to prevent fire from spreading into the whole town. Moreover, the inhabitants proposed that plots should be allowed to be built up on only three sides, and that on every plot a garden of suitable

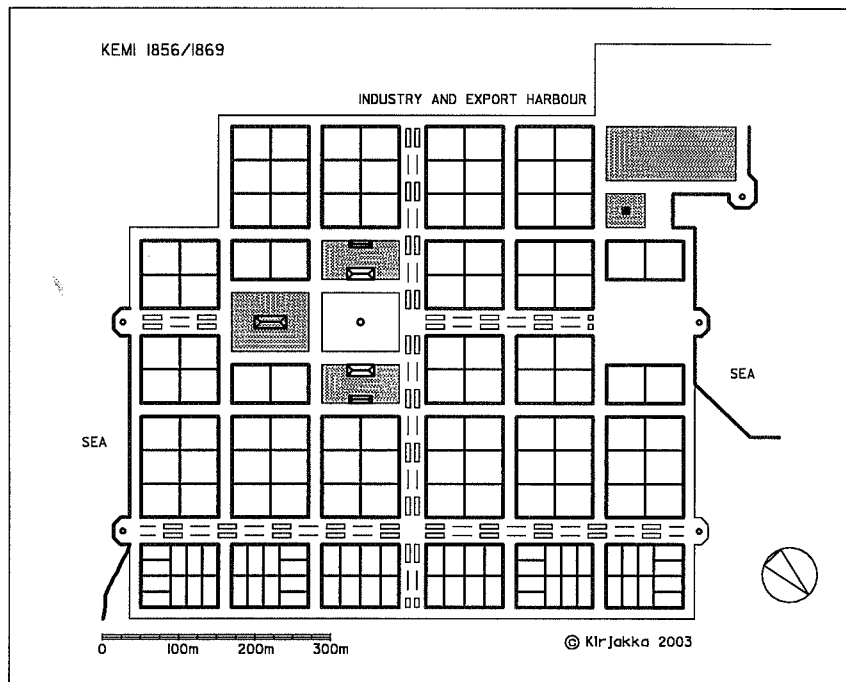


Figure 6. Ground plan of Kemi, 1856 (implemented from 1869 onwards). In each street block, plots are separated from each other by rows of trees.

width should be placed next to the neighbour's house, as had been specified in Turku after the fire of 1827 (Figure 5).¹⁷ This was complicated by the requirement that the remaining basements and cellars of the otherwise destroyed town hall and the private stone-built houses should be reused.¹⁸

The Stockholm-educated provincial architect Chiewitz divided the town into four parts with two intersecting, wide, tree-lined streets and also widened the ordinary streets. A majority of the proposed new street blocks contained 4 plots. The plan was supplemented by the governor, who proposed that only stone houses should be allowed on the plots lining the town hall square and in the street blocks between the square and the church, and that only single-storey wooden houses should be allowed elsewhere.¹⁹

A few months later the town of Vaasa was also destroyed by fire. As a result of these two extensive fires, new legislation concerning the building of towns was prepared. The new legislation was completed in 1856. Even though both street width and

plot dimensions were strictly defined, the best architects were able to create well-designed grid plans.

The first town plan following the new legislation was made for the new town of Kemi. It was based on a structure in which two avenues crossed each other orthogonally and divided the town area into smaller districts, as was required by the 1856 Building Ordinance. The general street width (30 ells, 17.8 m) also conformed with the ordinance (Figure 6).

The area of small plots (reserved for people with limited means) was a coherent part of the whole plan. The structure was based on two crossing avenues. The market place, containing the well, was placed on the transverse axis and surrounded by a row of deciduous trees and each of the public buildings in its own park-like street block. The south-west shore area was reserved for harbour and dock functions, and the dwelling plots were separated by a 250-ell (148.5 m) wide landscape garden.

Conclusion

Thus the ideal city of the Renaissance was reformed into a new city model, suitable for the needs and prerequisites of the periphery, built with one-storey wooden houses and structured with tree-lined streets and fire streets. In the late-nineteenth century it was still, at its best, a geometric composition – ‘nothing could be added or taken away or altered except for the worse’.²⁰

In the 1860s and 1870s, the new Finnish town plans were considered interesting in Sweden. At the time a new master plan for Stockholm was being prepared, as was new building legislation. One man, Albert Lindhagen, was deeply involved in both processes. In 1874 he published a collection of good town plans to help planners. It contained nine town plans, eight of which were plans of Finnish towns from the late 1850s and the early 1860s. Besides Pori and Kemi, described in this paper, there were Kuopio, Loviisa, Uusikaarlepyy, Uusikaukunki, Vaasa and Sortavala.

The old tradition continued in Finland until the end of the nineteenth century: new towns created towards the end of the century, for example Lahti and Iisalmi, received traditional grid plans. However, in the late 1890s, when a town plan competition was arranged in Helsinki to create a new district, there was an intense discussion on principles of urban design. As a result, the winning proposals all followed Sittean ideals. A new era had begun.

Acknowledgement

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Notes

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10. Alberti, *op. cit.* (note 3) book VI, chapter 2, passage 5.
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12. Engel's statement 11.3.1837. KD 88/8 1838. Papers of the Senate Economic Department in the Finnish National Archive.
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14. *Ibid.*
15. *Ibid.* Engel's statement 2.12.1833. Draft copies of letters from the Chief Architect's Office and KD 115/10 1837. Papers of the Senate Economic Department in the Finnish National Archive.
16. The word 'normative' is used here in the sense usually used in architectural planning.
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General Meeting of ISUF

The 2003 General Meeting of ISUF took place on 6 July 2003, at the end of the Conference held in Trani. As the weather was so hot, even at 7pm, the meeting was held in the shade of the courtyard of the Castello Svevo, the conference venue (Figure 1). This resulted in a somewhat less formal meeting than is usual.

Anne Vernez Moudon began her short President's Report by expressing thanks to the organizers of the conference, and to those who had been able to stay for the General Meeting itself. As ISUF approached its tenth anniversary it was clear that its business procedures required consolidation, although the aim was to avoid undue bureaucracy. A number of possibilities were under active consideration by ISUF's Council.

Three positions on the Council had fallen vacant, and the only three nominees were elected unopposed; these being Attilio Petruccioli, Michaël Darin and J.W.R. Whitehand. However, the possibility of expanding the Council membership was discussed, particularly to seek a more even geographical and disciplinary representation.

The ISUF web site had been upgraded considerably during the year, and Elwin Koster

was thanked for his work on this. Further developments were still needed, for example to facilitate on-line conference registration, and ISUF would be seeking further assistance for the web site.

It had become traditional at this point for the President to announce the venue for the next large-scale ISUF international conference. However, Council had decided to draw up a more formal specification for the conference, and would be piloting a new bidding process from institutions interested in hosting the 2005 event. The venue will be announced later this year. The President closed her report with a reminder that the Council meeting in mid-2004 will be held in conjunction with sessions on urban morphology organized as part of the International Geographical Congress in Glasgow, UK, and a Post-Congress Symposium in Urban Morphology to be held in North-East England.

Michaël Darin gave a brief Treasurer's Report. The number of individual members, including those who had joined at the Conference, was approximately 300, each paying an annual subscription of £15; the number of institutional members was about 100, each paying an annual subscription of £35. The majority of individual