

Early Modern Ideal City Planning and Military Architecture, especially in Northern Europe

By Kersten Krüger

1. Renaissance and *ideal town*

Every society builds for itself towns after its ideal – *ideal towns*, which document as stone witnesses their builder's conceptions. Foundations of towns are part of the process of urbanisation that had its climax in central Europe around 1200, and after that again first with the beginning of industrialisation, as illustration 1 shows. A politically intended urbanisation happened in northern Europe, especially in the Swedish governed Baltic area, with a certain delay in the 17th and early 18th centuries. It tightened the wide net of towns and served the goals of social modernisation and development of military power. But central Europe also had a number of town foundations in early modern times, there was a smaller rise in the long wave trough after the Middle Ages, as can be seen in illustration 1. Heinz Stoob typified these new towns appropriately as residence, expatriate, mountain, garrison, and excise towns. However, the modernisation of already existing towns after the early modern *ideal town* designs was of much larger significance. According to the new fortification techniques many towns surrounded themselves with large-scale fortifications; it came to numerous town expansions and redevelopment of older building structures.

The Renaissance ideas of order were realised everywhere in an extensive use of geometry in building structures. Suggestions for this came from a retrospect on Antiquity, in architecture mostly from the book on the subject by Vitruvius. In chapter I (6, 5-8) he gave instructions on how to found a town and especially recommended to consider the direction of the wind, as well as to use a compass and measuring stick in order to draw up a regular ground-plan for the town. As illustration 2, a reconstruction on the basis of his specifications, shows, he planned a polygonal town developed from a circle with square or rectangular building blocks on the inside. Winds were supposed to break on the corners of the town and blow less intensively through the streets. While circle and square served here as means of optimal ventilation, they were exalted by the town-planners of the ideal town in the Renaissance to general, sometimes competing basic figures of their cities.

An early attempt to combine both figures was undertaken by Averulino, also known as Filarete, with his design for the town of Sforzinda of 1460 which was supposed to serve as place of residence and capital for the dynasty of the Sforza (illustration 3). He set two squares, that he had turned diagonally into one another and so came to a circular *radial town*. The centre square with the most important public buildings and the market place is situated in the middle. From there, the streets lead radially outside to the eight gates, interconnected by ring streets with squares at the crossings. Had the plan been realised, a representative and regular *radial town* with the functions of residence and capital would have been developed under the management of the sovereign and without perceptible participation of the proud bourgeoisie.

A number of sketches of ideal towns by Francesco di Giorgio Martini from 1478 have been handed down, one of them composing the inner town from squares which however gains an almost circular shape through omitting the edges (illustration 4). Here, too, square and circle are used as geometrical basic figures of early modern town-planning. They should remain obligatory for a long period of time.

2. Rectangular Town (Vierungsstadt)

In Germany it was Albrecht Dürer who presented his principles for fortress and town building in a small volume. He dedicated his book to the Roman King Ferdinand, Emperor Karl V.'s brother, with the comment that the king had to erect fortified towns at the military border in Hungary which was directed against the Turkish and therefore needed relevant plans. His design continues to follow the figures rectangle and square. The lavish fortifications, positioned in a square with long embankments and twelve small jut out bastions, enclose a square municipal area. An equally strong fortified castle district is positioned in the centre of the municipal area (illustrations 5 and 6). The town's building blocks form rectangles of standardised size, opened up by a regular net of straight streets. The plots of land are also standardised; in most cases they include 194 or – half – 97 square metres and allow the building of terraced houses with the long end of the roof facing the street in style of the *Fuggerei* in Augsburg or the *Nyboder* (which translates to new huts) later built in Copenhagen. Dürer did not instruct on the details of the buildings, he just commented that the king would undoubtedly know to erect his castle after the recommendations by Vitruv.

Dürer connects the distribution of the 1.045 plots of land with an assignment of gainful employment that follows an early modern segregation pattern: close to the castle the traders, who offer their goods for sale under the arcades of their rows of houses, at each corner an inn. The church is located in the east corner together with *quiet* trades. Officers live in the south-east close to the town hall. Metal trade and foundry have their location in the south, so that the predominant west winds do not drive the smoke into town. In the south-west, building and wood tradesmen are to settle, who are largely involved in the maintenance of the fortifications. The arsenal and the storage facilities for wood are also located here. Textile and leather tradesmen are to live in the north-west, together with goldsmiths and smiths and small traders. Bakers, butchers and brewers are to work in the cool north-east. The storage facility for food is to be erected in the north corner.

Dürer's regulations concern approximately two thirds of the planned population, a good third shall be called into the new town by the king as required. The laid-down part clearly shows the character of a garrison, in which metal processing for armament (29%) and officers (27%) make up the largest groups of professions, followed by the building trades (17%), textile and leather use (15%), food production (10%), trade (4%), and luxury trades (3%). In addition there are the mercenaries during war who are not supposed to find accommodation in the town but in the spacious fortifications.

Dürer's design was seen for a long time as a utopian idea without a chance to be realised. Even though the for his time usual size of the town, as well as the structure of employment speak against it, with Freudenstadt there is a town that followed his plan. Duke Friedrich von Württemberg founded in the Black Forest a mountain town for protestant miners in direct proximity of silver ore deposits in 1599. The miners had been driven away from Carinthia (Kärnten) during the counter reformation. Through this, Freudenstadt became both, a mountain and expatriate town.

The lay-out of the regular squared town (Vierungsstadt) after Albrecht Dürer's *ideal town* pattern caused considerable problems in the terrain which had to be levelled off with difficulty. The five-row-plan (illustration 7), designed by the architect Heinrich Schickhardt, assigned a large square location in the centre for a ducal castle, which was never built due to a lack of money. Four streets lead to the town gates from here. Parallel to the sides of the central square five streets were planned for dwelling-houses, built in one row on lots of standardised size, respectively. The houses were erected with the gable-ends, not the long end of the roofs facing the street, as could be suspected in the Dürer town. The houses facing the square got arcades; into the corner lots Schickhardt put representative public buildings: church, town hall, hospital and market storehouse. An engraving by Merian from 1643 conveys a vivid image of this successful foundation of an *ideal town* (illustration 8).

Nevertheless, there was a way leading from Dürer to utopian ideas. In 1619, Johann Valentin Andreae published his *Christianopolis*, a protestant outline of living-together of people in a utopian *ideal town*. Andreae showed the town as a squared town (Vierungsstadt). His plans correspond to such an extent with Schickhardt's design for Freudenstadt that he had to have known and used his plan as well as Dürer's book (illustrations 9 and 10). He on the other hand puts a church in the centre – a round church as it is appropriate for the protestant service. On the upper level of the building the elected highest council meets, that has both spiritual and secular responsibilities. This is the structural expression of utopian theocracy. Andreae imagines the rows of houses adjoining either side of the square as terraced houses with several storeys. The occupants of these houses work in the outer streets in the dirtier trades, in the middle streets in finer, less bothering trades. Close to the central square live scholars and other workers of the service industry.

One may be tempted by the utopian idea of Christianopolis to interpret Dürer's design also as utopian. However, it stimulated town-planning over long periods of time into the 19th century. For example, one of the first outlines for the town of Geestemünde, the later Bremerhaven, from the year 1819 is a squared town (Vierungsstadt) after Dürer's design – certainly not realised but it is evidence of long effectiveness.

3. Radial Town

The *radial town* which had already been designed by Filarete, results from the basic figure of the circle. Daniel Speckle was its most influential supporter in Germany. As a fortress engineer he designed the town from the outside, from the round ring of fortifications of the bastion system (Bastionärsystem), to which the development of the town was secondary. In his fortification theory from 1589 he presented an octagonal *ideal town*, protected by eight bastions, which are connected by embankments, moat and installations of the fore fortress belonging to it. The central, also octagonal market place, is not reinforced as in Dürer's design, at four of its sides the most important public buildings are located facing each other: church in the east, residence of the ruler in the south, market store in the west and town hall in the north (illustration 11). The streets lead radially onto the embankments, four of them to the town gates. At the outer borders of the town the hospital and the storage facilities for food are located in the north, the arsenals, granaries and storage facilities for wood are located in the north-east. Speckle does not suggest explicitly how to build on the lots inside the town; he marks – maybe with slight indifference – with hatching the trapeziform building blocks for bourgeois houses. Their use can not be optimal as it is sensible to build rectangular houses.

The number of inhabitants can be estimated at 1.300 households. The town offers a third more room than in Dürer's design, while less space is needed for the fortifications. The protection they grant surpasses Dürer's fortifications by far and is very modern for its time. The inner embankment has short sides and offers little possibility for an attack. The sides of the embankments, as well as the complete territory situated in front of the town can be bombarded and so defended effectively. In Speckle's design of the ideal town, military viewpoints clearly predominate. The triumphal march of the polygonal bastion system in town foundations and modernisations, which lasted into the 18th century, shows the effectiveness of the principle of the *radial town*.

The renunciation of a second fortress inside the town for a ducal castle or a garrison lowered the military security. Because of this, Speckle developed from two circles put into one another the figure polygon with fort. In this, a small, particularly strong reinforced fortress, which could hold a siege longer than the town itself, moved to the side of the actual urban area (illustration 12). A design guided by this principle can be found in the fortification theory by the Dutchman Georg Ginther Kröl from 1618 who explicitly refers to Speckle. He suggests a nonagonal urban area, secured by six bastions and a fort, fortified in itself

(illustration 13). Half of the nonagon is used for urban development with a central square, from which five streets lead to the embankments, as well as to both town gates and open up irregular, mostly trapeziform building blocks. There is no indication how the blocks are used. One of the best known *radial towns* in Europe is undoubtedly Palmanuova in Italy. It was founded by the Republic of Venice on its Terra ferma in 1599 as a military location. In Germany, Glückstadt, situated at the river Elbe, should be mentioned. It was built in 1616 as an expatriate and garrison-town by the Danish king Christian IV. who was at the same time duke of Holstein and Schleswig.

The new town, happy already by name, was supposed to offer a militarily safe new home to refugees of faith of all denominations in which they should set up export manufactures and form distant trade relations in order to establish a competition with Hamburg.

Georg Ginter Kröl was probably involved in the planning of Glückstadt, in any case the figure polygon with fort can be found in the design. In the triangle of the mouth of the river Rhin into the Elbe, a *radial town* was built as far as the terrain permitted (illustration 14). In the north-east, it was a half-hexagon with all characteristics of Speckle's *ideal town*. A channel with banks that formed streets closed this part of town. On the central market place church and town as the most important public buildings were located; the streets radiated out to the embankments and to the only town gate; this resulted in trapeziform building blocks. The blocks did not allow optimal use which becomes obvious by looking at the plans for the town expansion on the southern Reethövel: here it was planned to build rectangular building blocks, however, they were never realised.

A lavish system of bastions (Bastionärsystem) protected the town towards the land. In the south-west between Rhin and Elbe there was a triangular marsh which allowed extension of the town only to a certain degree. In the farthest corner, where the Rhin flows into the Elbe Christian IV. had a castle built for himself – at the location where Kröl in his ideal town planned the fort. In Glückstadt a fort was neither necessary nor appropriate because the marsh offered natural protection. In all sieges Glückstadt proved to be impregnable. Even though the economic hopes were not fulfilled, the newly founded town remained to be an important military and administrative location for the dukedoms Holstein and Schleswig.

4. Hybrid Forms

Glückstadt showed that the best military protection was offered by the polygonal, but close to circular, lay out of the fortifications. It also showed that the resulting radial system of streets did not allow optimal use for the building of houses. The expansion of the town, which has never been realised, tried to combine on the inside the principles of the squared town (Vierungsstadt) with rectangular building blocks, and of the radial town with circular fortifications. In short: It sought to unite Dürer and Speckle. To illustrate this, some examples have to be mentioned. The founder of Glückstadt, King Christian IV. also sought to tighten the existing net of towns in Denmark through the foundation of new towns and with this, modernise the country. In 1617, in order to promote activities in the overseas trade, he founded a town for distant trade on the island of Amager opposite of the capital Copenhagen, literally a stone's throw away, that proudly carried his name: Christianshavn. The earliest plan that still exists, shows a hexagonal radial construction with a navigable canal running through it (illustration 15). The plan that came into effect however, which is handed down from the year 1632, shows rectangular building blocks with a corresponding system of streets (illustration 16). The new town developed, according to the hopes that had been placed on it, into the location for the beginning Danish colonial trade. In a sense, it was a competition for Copenhagen until both towns were united at the end of the 17th century.

The need for a centre for distant trade connected with the political intention to strengthen activities in this sector, led in Sweden to the foundation of Gothenburg in 1609 and 1621.

Until 1658, Sweden had only a narrow strip of land at this location in the area where the Göta River flows into the Kattegat. The special value of this strip of land was the direct access to the North Sea, and further to the Atlantic, while avoiding the long way through the Baltic Sea and the Danish Sound (Öresund). For the export of Swedish goods, especially from the western parts of the country, existed upstream since the late Middle Ages the predecessor towns Old- and New-Lödöse. Their location was not so favourable, not least militarily. The foundation of a new town in the area of the fortress Älvsborg at the mouth, which could fulfil its economic function only with strong military protection, therefore suggested itself.

The first foundation of the new town – Gothenburg on the Hisingen side (the north bank of the Göta River) – had King Karl IX. carried out in 1609. The town plan assigned strong fortifications with bastions and with rectangular building blocks on the inside (illustration 17). The town never made it further than modest beginnings, as it was taken and destroyed by the Danish troops during the for Sweden unfortunate Kalmar War (1611-1613). The fortress Älvsborg was given as security to the Danish king until the war compensations that had been inflicted on Sweden were completely paid off. Because of this, the plans for the foundation of a town could only be resumed again under the rule of Gustav Adolf II. Then, the plans lead to the most successful foundation of a town in Sweden in early modern times. The new, final Gothenburg arose at the southern bank of the Göta Älv as large-scale fortifications in which foremost financially strong Dutchmen were supposed to settle who would bring innovation in distant trade and commercial production. The foundation privilege from 1621 was distributed in German and Dutch in the Netherlands. It granted immigrants economic and constitutional freedom that other Swedish towns did not have, and religious tolerance within the wide frame of the Lutheran state church. Dutch was recognised as official language aside from Swedish. Gothenburg was immediate Estate and instantly got a seat and vote in the Parliament at the honourable position next to Kalmar. The hopes that had been placed on the town would be fulfilled but not in a short period of time.

Hesitantly, the new settlers came. The construction of the outer fortifications, as well as the inner building blocks including the big and the smaller canals for shipping into the town, was the crown's task, while municipality and townspeople had to erect municipal buildings and private houses. After the town plan, a ring with bastions of fortifications after Speckle's system was intended, at times also a fort. The town's building blocks however, were thought to be rectangular after the division Dürer had recommended, so they could be used in an optimal way. The large canal ran through the town from the Göta Älv eastwards; its section close to the river served as seaport. Two crossways and the main canal divided the town into five quarters. The market place in the northern part with the town hall and the so called German Church for the foreign immigrants marked the centre. The southern centre was formed by the Swedish church, the Gustavs Cathedral.

Construction work was more difficult than expected. Until Sweden's entry into the Thirty Years' War, the military and farmers from the surrounding area had roughly finished canals and streets, and erected the first private houses. The outer protection was poor, and first with Sweden's serious confrontation with Denmark after 1644, the construction of fortifications came under way. They were complete in 1660. Possibly somewhat idealised, the town map from 1719 shows the final extension at the end of the 17th century (illustration 18). In the Danish-Swedish wars from 1656 until 1660 and from 1676 until 1679 the new fortress stood its ground and offered late, but not too late, the necessary military protection for the economic activities that connected Sweden directly with world trade. It was a lasting success. Until today, Gothenburg has developed into the economically most active town in Sweden in secret competition with the capital Stockholm.

5. Fortification of existing towns, redevelopment of the existing building structure

The development of the new heavy artillery made the medieval town fortifications that had been built in brick vulnerable. A few cannon shots could make breaches in the town walls and open up the way for conquerors. Effective defence could only be reached through the construction of extensive high ramparts made from soil with wide moats in front of them. For the modern rings of fortification the geometrical figure of the circle was more suitable than that of the square or the quadrangle, because it was difficult to protect long and straight portions of the rampart. On the other hand, bastions that stood out from a circular rampart and were equipped with cannon could manage an evenly effective barrage which could scare away and hold off any aggressor. Dürer's suggestion for twelve rectangular bastions standing out from his long ramparts was militarily inferior to the system of bastions Speckle had developed from the circle, and Dürer's fortification also needed significantly more space. Moats kept possible enemies at a distance and their excavations served the raise of the ramparts. Low fortification islands, called ravelins, that were also equipped with artillery were built in them. In front of the moats the contrescarpe was developed, a fore-fortification with a rampart at the height of a man, that declined flatly to the outside, and could be defended by mercenaries with hand guns who had been posted behind it.

Every town that wanted to strengthen or just keep its ability to protect itself, in the interest of political independence, had to adjust its fortifications to modern requirements and go to great expenses for it. Only few could do this by themselves. The sovereigns also had a political interest in new fortifications for the towns in their territory, in order to form a connected system of fortified towns which offered extensive military protection before the time of the standing army. The pressure to build fortifications concerned practically all European towns in the 16th and 17th centuries. Heinz Stoob recorded this change cartographically and presented it in an impressive way.

Among the early modern towns it was especially capitals and residence towns that were affected by modernisation directed by the state. In the process of the early modern state formation, functions and resources that worked as impulses for the growth of towns concentrated here. With the set-up of the central administration, with the numerous members of the court society and with the reinforcement of the military, a growing number of well and highly paid office-holders arrived in the capital, where they had to satisfy their simple and higher needs: residence, clothes, food, luxury goods. Growth induced by the state led to town development that was directed by the state and that did not only serve communal purposes anymore. Additionally needed living space had to be created through town expansion or the redevelopment of existing building infrastructure. Representative and functional buildings for the court, the central administration and the military had to be built, as well as modern fortifications in the interest of outer protection. This development can be seen exemplarily in the capitals of Denmark and Sweden, Copenhagen and Stockholm.

In Copenhagen, King Christian IV took the initiative for the development of the capital when he assumed government. He began with the construction of a harbour with the function of equipping the navy to which the arsenal and the provisions house belonged, in direct proximity to the castle, and the conversion of the old town fortifications into a system of bastions. Work on this lasted from 1598 to 1616. The sister-town Christianshavn, which was founded a year later - as mentioned earlier -, can be seen as the town's first expansion. A plan for a large-scale town expansion was handed down from the year 1629: a radial town was to be built in the north which would at least double the town's expanse (illustration 19). Christian's IV tendency towards the ideal town after the figure of the circle was expressed here again, but the designed building blocks followed the rectangular principle, so they could be used in a better way. A remnant of the radial arrangement of streets can be perceived only in the quarter for the navy, the Nyboder (which translates to new huts). The building of the large town expansion came under way in 1630. The condition of 1649 with further plans was handed down in a map (illustration 20). The outer ring of fortifications obtained mainly the

ideal shape, polygon with fort, while the newly won inner town area was equipped in part with rectangular building blocks. A large section stayed without buildings and won the shape it has until today first in the 18th century. The developed space went far beyond Christian's IV time. In this, his town-planning shows to be generous and forward-looking.

With similar preconditions, the development of the Swedish capital Stockholm took a different course: it was not fortified but the government subjected the suburbs in the north and south to rigorous area redevelopment. Together with Sweden's rise to a European great power, its capital experienced rapid growth that took place without steering by town planners until around 1635. The medieval town was situated on an island in the Mälars Lake - Stadsholmen -, until the end of the 16th century it was still surrounded by walls and towers. The island was too small to take in a growing population. Because of this, Norrmalm and Södermalm, the suburbs in the north and in the south, developed. In both, buildings had developed without regulation. Corresponding to the hilly and rocky ground, small wooden houses stood in narrow and crooked lanes. Stockholm was far from the image of a European great power's capital.

When Axel Oxenstierna, who led government business as chancellor after Gustav's II Adolf death, returned from the theatre of war in Germany in 1636, he saw to it that a town-planning modernisation of Stockholm and its suburbs was carried through. The government's decision to regulate the suburb Norrmalm after Gustav's II Adolf plans was consequently carried through from 1637 to 1644. It was a first large area redevelopment of modern times. Norrmalm was surveyed, the land was temporarily expropriated, equipped with a rectangular net of streets and then, after it had been newly parcelled out - handed to the townspeople so that they could build on it. The regular arrangement of streets had priority over natural geography - hills of sand were carried off and levelled, only rocks had to remain.

The town plan from 1648 (illustration 21) shows the redeveloped suburb Norrmalm and connected to it in the east the development area Östermalm which was also opened up with rectangular building blocks. In the west, on the island of Kungsholmen, another building area was provided that had a fixed connection with Norrmalm via a dam. In the southern suburb of Södermalm the redevelopments were carried through slightly later after the same pattern; they were finished in 1648. Nevertheless, rocks - marked dark in the plan - prevented a completely even grid of streets. Each town quarter got its own rectangular net of streets which bend from one another by 20 to 30 degrees. Was this coincidence or intention? The latter is Marianne Råberg's interesting hypothesis, according to which the outer borders of the town probably indicate a dodecagon that was possibly object of a radial overall plan. Such a plan has not been handed down though.

The expanded Stockholm was not fortified. It is doubtful, if there were plans for this. Apart from the lack of financial means, the strong Swedish army could suggest a renunciation of extensive fortifications, as it guaranteed safety from aggressors already beforehand. Nevertheless, it is hypothetically possible to imagine a belt of fortifications, as a projection of the developed ideal town plan onto a modern map by Marianne Råberg shows (Illustration 22). With all due caution: at least an option for later fortification can be seen as possible. On the other hand, there is no doubt that Stockholm was transformed after the principles of the ideal town into a modern capital that can be proud among other capitals in Europe.

6. Summary

The process of urbanisation experienced a slight upswing in early modern times, especially in northern Europe. Aside from the foundation of new towns, the modernisation of already existing towns was on the agenda. In this, political, economic, and military goals were connected in the framework of a new politics of power. Different from the towns of the Middle Ages that had grown slowly, now the conscious planning of the town after

geometrical patterns that expressed the Renaissance striving for order, regularity, and discipline, moved into the centre of attention. Reverting to Vitruvius, from now on circle and square determined the planning of towns. Both were combined by Filarete to his ideal town Sforzinda. Dürer's town (Vierungsstadt) corresponded with the square, Speckle's *radial town* with the circle; for both realised foundations of towns can be named with Freudenstadt and Glückstadt, respectively. However, most newly founded towns predominately used a combination of both basic figures. The building blocks on the inside of the town were – following the square – arranged in a rectangle, the bastion-like ring of fortifications was circular. The optimal use of the area was the goal. This led to a symmetrical arrangement of the building blocks in a chequered pattern, to the standardisation of the sizes of the plots of land, and with this, the inhabitants' needs. Embankments and bastions were constructed with compass and ruler and virtually forced on the natural terrain through extensive movement of soil. Through this, the Renaissance's new image of the human being in the urban society gained a structural expression/form: order and discipline in an almost military formation.

This ideal served as orientation in early modern town-planning, and was carried through in the new foundations that were still frequent in northern Europe, as well as in the town expansions and renewals of fortifications. The town-planners had to decide between *radial town* and squared. In their designs the tendency towards the *radial town* can be seen again and again. Its realisation however, failed, mostly because of the constraints of sensible land utilisation. The pattern of the modern town was shaped for centuries by the *ideal town* of the Renaissance. Interrupted by romantic ideals of an irregular town with crooked streets, represented by Camillo Sitte, the geometrical regularity was recognised again by the new functionalism of the 20th century. Most of the time people build their towns and cities after ideal conceptions. The continued existence of buildings in our towns and cities gives information about their change in the course of time.

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Illustration 13

Georg Gintler Kröl: Polygon with fort 1618 after Kröl, Georg Gintler: Tractatus geometricus et fortificationis. Arnheim 1618, last illustration.

Illustration 14

Glückstadt 1616 and plan for expansion 1649 after Köhn, Gerhard: Die Bevölkerung der Residenz, Festung und Exulantenstadt Glückstadt von der Gründung 1616 bis zum Endausbau 1652. Neumünster 1974.

Illustrations 15 and 16

Christianshavn opposite Copenhagen 1617 und 1636 after Eimer (1961), p. 158 f.

Illustration 17

Göteborg på Hisingen 1609 after LANGENBACH Henning: Festungsbau in Göteborg 1619 bis 1660. Bauruine und Rekordprojekt. Hamburg 2004, p. 281.

Illustration 18

Göteborg 1621: Krüger, Kersten: Urbanisierung in Skandinavien im 17. Jahrhundert. In: Recht und Alltag im Hanseraum. Lüneburg 1993, p. 316, after CEDERBOURG, E.: En kort Beskrifning öfver ... Siö-, Handel- och Stapelstaden Götheborg. Gothenburg 1739.

Illustration 19

Copenhagen expansion plan 1629 after Lorenzen, Vilhelm: Christian IV's ByanlØg og andre Bybygningsarbejder. Copenhagen 1937, Illustration 34.

Illustration 20

Copenhagen expansion plan 1649 after LORENZEN (1937), Illustration 39.

Illustration 21

Stockholm redevelopment plan 1648: Krüger (1993), p. 318, after RΔberg, Marianne: Visioner och verklighet. Ent studie kring Stockholms 1600-talsplan. Stockholm 1987, vol. 2, p. 39.

Illustration 25 (englisch 22)

Stockholm hypothetical ideal plan: KRÜGER (1993), p. 319, after RΔBERG (1987), vol. 1, p. 148 and 172.