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**Transformations and City Extensions:
Some Observations of Copenhagen's City Form
at a Time of Global Change**

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Transformations and City Extensions: Some Observations of Copenhagen's City Form at a Time of Global Change

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On a clear winter day, the green towers of Copenhagen silhouette crisply against the blue sky. A visitor to the city is likely to remember Sankt Nikolai's church spire towering above Amanger Square. Some towers appear in unexpected vistas. A glimpse of the Parliament tower at Christiansborg, on a walk across Kultortv at the other end of the inner city, comes somewhat as a surprise. There is no obvious relationship between these two places, except that both locations define the edges of historic Copenhagen. Seeing Christiansborg from this vantage point reminds me that medieval Copenhagen was not a small city. The towers of Copenhagen dominate street views through their placement, shapes and color, but more importantly, they help me to understand the structure of Copenhagen's urban form.

In the winter of 2000, when I took many walks through the center of Copenhagen, I observed major changes. Military and industrial closures had triggered new developments along the former inner harbor. On the Christianshavn harbor-front, a large financial institution had taken over a shipyard and had erected a row of administrative buildings. Directly opposite on Slotsholmen, a striking black monolith opened to house the new Royal Library. To the south from there along Christian's Brygge from where, until recently, ships had sailed, a row of bulky office and hotel towers was under construction. Many of these new structures appeared disjointed with the rest of the historic city. The large bank held the neighboring population at arm's length. Like the former shipyard, the bank now claimed the water's edge, but for the bank's representative purposes. Likewise, the siting of the new library forced the public away from the water more so than the embankment buildings had done. Inside the new building, as visitors to the library, the public was given a magnificent sense of the Kalvebod Stream, the waterway to which Copenhagen owes its existence. But the siting of the building directed the major movement of people and cars away from the harbor-front and, once away from that edge, the public was separated from it by the emerging long row of commercial buildings. Largely invisible in early 2000, but on the drawing board, a public-private corporation had started construction on Ørestad, a 5-kilometer-long linear city to connect an area near the Copenhagen airport with the historic center. Finally, the old naval station Holmen had been converted to civilian use. New housing was under construction on left-over land between buildings where ships once were built and serviced.

As someone who has been familiar with Copenhagen for 30 years, I observed an apparent discord between the various new projects and the existing spatial patterns of the inner city. I took my winter walks through the old parts of Copenhagen, intending to learn first-hand about the city throughout history. I wanted to discover those traces of historic transformations that are still visible. Through the process of walking and observing, I hoped to discover principles that might be brought to bear on how current city transformations and expansions could be directed.



Ladies Walk — Kongens Have

The many towers of the inner city provided my first clues; some appeared in the most surprising vistas, like the tower of Sankt Petri Church in the center of Rådhus Stræde seen from the far away Frederiksholm Canal Bridge. Not until I saw the green cupola of the Roundtower's observatory lining up with the tower of the Church of Our Lady in a view from an allé in Kongens Have (King's Garden) did I become curious about regularities between towers and Copenhagen's streets. I could easily imagine reason and willful design in the layout of Christianshavn in relation to Holmen's Church. The small belfry saddling the main axis of this beautiful Renaissance church appeared on center in a view framed by Torvegade, Christianshavn's main street. Both church and the Christianshavn street plan of the 1620s date from the same period.

Answering questions about regularity and coincidence between Copenhagen's streets and towers quickly led to the map rooms and picture galleries. And from there, a new image of the city emerged in my mind, an image that gave me a general understanding of the city's transformations and expansions. I became aware of the changing city structure and people's attitude towards the transformation of their city, including the long lasting controversy of the most recent proposals to create Ørestad, a new city for the global economy. Throughout history, when it came to changing the design of their historic city center, the people of Copenhagen had a remarkable skill for not rushing into things, but sitting back and watching developments carefully prior to taking action. And when they acted, they did not make too many decisions at one time, but left some for later. Although some bad mistakes slipped through, most planning disasters were avoided.



Map of Central Copenhagen

All major transformations and expansions of Copenhagen followed significant changes in society; at all times there was good reason to make a clear break with the old and to say, “We can no longer use the old urban pattern.” But none of the transformations and expansions happened as quickly as they might have been anticipated. Over time, the “old” asserted itself over the “new.” New additions have grown together with greater harmony than in many cities of similar size and stature. The lessons I learned from my walks through the city were that really big mistakes in the layout of new streets are almost impossible to correct, and that the edges of the urban fabric, where new meets old, require major design consideration for a very long time. Most importantly, it appeared to me that the people of Copenhagen are never afraid to change a course of action when it becomes obvious that a better way of doing things has been discovered. This conclusion made me optimistic about people’s ability to re-evaluate the complex forces that bring change to the city. If my optimism is justified, then even major new developments like Ørestad can be linked to historic Copenhagen in a positive manner and the City can define itself anew at an age of global change. Marshall Berman’s thoughts on modern cities came to my mind: “The contemporary desire for a city that is openly

troubled but intensely alive is a desire to open up old but distinctively modern wounds once more. It is a desire to live openly with the split and unreconciled character of our lives, and to draw from our inner struggles, wherever they may lead us in the end. If we learned through one modernism to construct haloes around our spaces and ourselves, we can learn from another modernism—one of the oldest but also, we can see now, one of the newest—to lose our haloes and find ourselves anew” (Berman 1988).

The Old City

Looking at some of the edges between old and new, I came across an interesting, battered map from 1730 depicting the proposed street widening after the great fire of 1728 (Lorenzen 1942). Fanned initially by strong northwesterly winds, the fire started on Wednesday evening, October 20, burned until Saturday, and destroyed the entire northern half of the city. The map is interesting because it shows Copenhagen’s medieval street grid as it existed prior to the fire. To improve circulation and to prevent future fires from spreading across narrow lanes, a street-widening program was proposed by the authorities. Furthermore, masonry construction was made mandatory instead of the traditional half-timbered building method. The owners of properties were required to start the rebuilding on new stone foundations leaving a street width of not less than 20 alen (12.5m) and 24 alen (15m) on more important streets. The map shows how such requirements defined future property lines after more than doubling the width of many streets.



Gray Friars Square, Rebuilding Copenhagen after the 1728 Fire

Maps that direct rebuilding efforts after wars and natural disasters are always controversial. Public support for large-scale innovations is limited at such times. Not all improvements can be carried out. For example, the authors of the map straightened the many curving streets, making them more uniform and orderly in the process. Naturally a property owner is reluctant to give up land between the existing curve and a new, imaginary line drawn across the front of his property,



1730 Detail of the Fire Damaged Area —
Street Widening Proposal

Present Day Block Configuration

Proposed improvements to the Street Grid of Copenhagen after the 1728 Fire. The maps show a comparison of before and after conditions. Fire damaged area in black.



Christian Gedde's 1761 Map of Copenhagen (detail), redrawn

especially if the neighbor on the other side of the street reaps the benefit of that transaction. The town people of Copenhagen kept many of their curving streets. Judging from the map, the ratio of street space to buildable space changed from 15% to nearly 30% in favor of street space. Rebuilding went slowly, but the pace accelerated when the requirement to build with masonry was temporarily lifted. Also, property owners seem to have used the buildable area more intensively. A map from 1761, prepared by the military engineer Christian Gedde¹ and fashioned after Turgot's famous 1731 bird's-eye view over Paris, showed most properties rebuilt to a three- to four-story height. All buildings were depicted with strikingly similar building façades, which made me suspect that Gedde used symbols rather than reality as a guide. However, the unified appearance of new construction was apparently a concern; the Crown's chief architect, Johan Cornelius Krieger had prepared a building typology complete with elaborate façade drawings. Although the new buildings were more modestly executed, the so-called 'Fire Houses' gen-

erally follow Krieger's design of an additional flat under the roof illuminated by windows set in gables perpendicular to the roof line. These gables gave Copenhagen's streets a very distinctive appearance. As a result of the fire, Copenhagen transformed from a city with low, largely single household dwellings to a more urban, multi-storied city. The trend continued after the second large fire of 1795 and during the rebuilding that followed the British bombardment of 1807.

Probably the most forward-looking improvement that resulted from the 1728 fire was the introduction of a new continuous east–west axis that made possible Strøget, Copenhagen's main pedestrian promenade. It was done by breaking a wide new street through the rubble in a straight line near the place where the fire had started. Here, between Nytorv and the West Gate Sankt Clemens, Copenhagen's first church had stood at the edge of Copenhagen's oldest nucleus. The new street, Frederiksberg Gade, is one example of the desire for improved cross-town circulation. Moving goods and people from the city gates through town had become as important as movement within the center. The second example is an alternative north–south street, parallel to the existing Nørregade–Rådhusgade axis. A much-straightened Fiolstræde was carried through the entire fire zone, almost to the shoreline at Slotsholmen. In the northern part of the city, a new square emerged on the map in nearly present-day shape and placement as that of today's Kultortv. Købmagergade was linked up with the new square and connected directly to the northern city gate.

Streets as routes of passage towards the shoreline, like Nørregade and Købmagergade, have in all likelihood existed since the earliest history of Copenhagen as a settlement. The placement of parish churches in relation to such routes is still apparent from the 1730 map. Early, at the height of medieval expansions, the Nørregade–Rådhusgade axis took on great civic importance. Nørregade became home to the Cathedral, the Church of Our Lady. It was built on a slight rise of the land. Nørregade ran down the slope to the old Town Hall at Gammeltorv and continued as Rådhusgade on to the old shoreline at Slotsholmen. The civic significance of this axis was obvious to C. F. Hansen. He exploited the relationship of the city's main north–south street to Our Lady's Church, when he redesigned the Cathedral after it was damaged during the British bombardment of 1807. An ink drawing by J. P. Lund (Lange 1998) from the 1860s illustrated how Hansen linked his designs of the two porticos, cathedral and courthouse at Nytorv along this axis. Lund gave the colonnaded cathedral entrance a very severe expression.

Prior to the 1728 fire, Farvegade–Kompagni Stræde–Lederstræde served as the main east–west axis. Sankt Nikolai as the eastern parish church dominated portions of that axis. Sankt Nicolai also dominated the north–south streets in its vicinity. In fact, the map shows that all streets were brought into an exactly parallel or perpendicular alignment to the church axis. The same regularity can be studied for streets in the vicinity of Sankt Petri, the northern parish church.

It was the apparent regularity between church towers and city streets that sent me to the map rooms. Although the church towers we see today—and especially their spires—are of relatively recent design, the placement of these towers was indeed old and they were willfully placed. During my walks, I have wondered why the tower of Helligaands Church (Holly Ghost) has such little visibility in the image of the city. Although located in the geographic center of the old city, Helligaands had its origins not as a parish church, but as a monastery and hospital chapel. I also wondered about the placement of Trinitatis at the Roundtower and Holmen's Church near the old navy yard at Bremerholmen. The last two churches were built after the Reformation when the strict east–west orientation of churches was no longer as important. The two churches were rotated to follow new geometries. It seems that during the reign of Christian IV (1577–1648) their axes were pointed towards the city extensions of his period. He had Holmen's Church² pointed towards Christianshavn and Trinitatis towards the northeast, where he intended to build a new center for his capital, on monastery land acquired by the crown through secularization after the Reformation.

The 1730 map confirmed that the Roundtower I saw from an allé in Kongens Have was visible from that vantage point prior to the 1728 fire; the street Lande Mærket existed and made a visual connection to Kongens Have, then outside the old city walls.

One question remained: Did the original garden design for Kongens Have reflect the importance of that axis? Luckily, a 1649 landscape architecture design plan survived, the oldest of its kind in Denmark (Lund 1999). It showed the garden and depicted it in a condition prior to the introduction of Gothersgade. The map showed two cross axes to Rosenborg's main axis and between them three elaborate pateres. The cross axis further away from the palace was lined with Linden trees in 1700 and named "Ladies Walk;" it is in line with the tower of 'Our Lady's Church' and the Roundtower. In a larger context, the garden design can also be clearly seen on the 1649 Puffersdorf (Lorenzen 1942) map of Copenhagen.

The symbolic quality of the Roundtower (1637–1642) was important to the crown. The tower had a dual purpose; it served as a marker for Trinitatis, the new University chapel, but just as importantly, on its top, it housed the latest technology of Western civilization, an observatory. The professionals working for the King placed the tower in line with the cathedral tower and projected the axis outside of the old city walls, through the pleasure garden towards the northeast. To strengthen the anchor, they placed the new colleges, Regensen and Borch's near the Roundtower. As a link of the new expansion back to the medieval city, the designers selected the Cathedral tower as the most meaningful focal point. Of course, when these designs were carried out, the Cathedral had a tall, pointed spire that dated from 1514. It was decorated with four much smaller spires in each corner of the church tower, which gave the tower the appearance of a thorny crown. The tower must have been a significant sight, and a person looking at it could make no mistake in

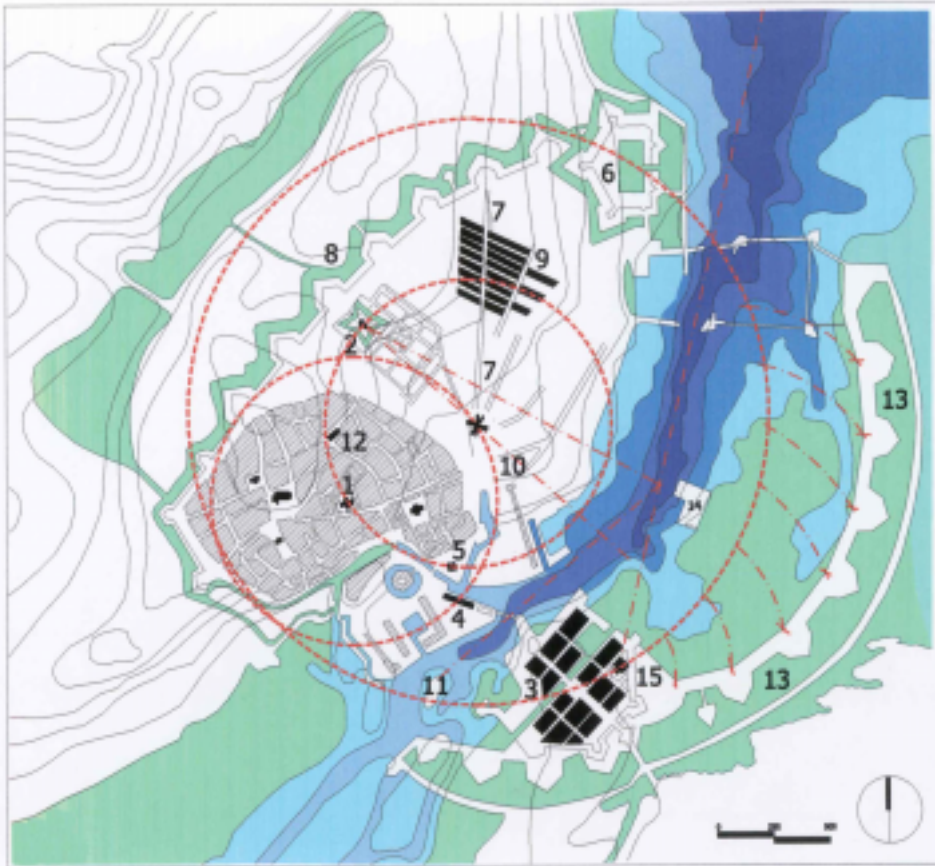


The fire at The Church of Our Lady seen from Landemærket. Watercolor, G. L. Lund after C. W. Eckersberg, 1807

recognizing the building for what it was—the main church of the city. The spire burned in 1728, and the architect Lauritz von Thurah (1709–1759) designed a new baroque spire, which lasted until 1807 when it became a target during the British bombardment. G. L. Lund preserved the view of the tower in flames in a watercolor. The artist depicted the scene along the same view axis that started me on my inquiries into Copenhagen’s city expansions during a walk in Kongens Have.

The City as a Circle

It has been said that the many town-planning schemes of Christian IV (1577–1648) lacked coordination. Although the new city geometry that related the Cathedral to science, pleasure garden and city expansion was carefully thought out, the concept remained apparently unresolved when it came to the layout of the town to the northeast of the palace garden. The reason might be that the king, at the beginning of his reign, imagined for his capital an ideal Renaissance City plan with a clear radial geometry modeled after the latest Italian town planning schemes like Palmanova from 1593. There is a 1629 map (Lorenzen 1942) showing such a design. Today we can only see fragments of the radial concept. One such trace is the direction of the Rosenberg main axis. A set of large marble balls defines a beautiful broad allé that starts at the Rosenberg moat, but with no apparent ending. A line drawn on a map does not meet important places. It points to the harbor. Geometry abandoned? Partly, traces have remained and are still visible on today’s city map: the row houses of Nyboder, a Garden City concept three centuries before its time. Three wedge-shaped blocks point towards a common center. Their streets define the pattern of these yellow-ochre colored row houses built for Navy personnel. Secondly, the large star-shaped pattern of the harbor defenses; both are still prominent on the map image of the city. It took some time to find the center point of this large star. As I was triangulating lines and circles that resulted in three



The City as a Circle

Map showing elements of Copenhagen's urban form built from 1520 until 1700, and still traceable, that follow a circular city expansion concept. The map is drawn on a map showing the topography of Copenhagen prior to 1500, after H.V. Ramsing 1940. (1) Hellig Aands Kirke, chapel and tower in the center of the old city 1523; (2) Rosenborg Palace, 1606 and garden, 1649; (3) Christianshavn, fortified harbor city, 1617–1619; (4) Børsen, 1619, dragon spire, 1640; (5) Holmens Kirke, 1619, expansion of a 1563 anchor forges; (6) St. Annæ Skanse, fortifications at the harbor entrance 1625–1629; (7) Store Stenbro, new highway to Helsingør; 1630; (8) New eastern city wall, 1630; (9) Nyboder, homes for Navy personal, 1631; (10) Store, Lille Strand Gade, the old highway out of the eastern gate along the shoreline; (11) Leda med Svanen, a marble column in the harbor off Slotsholmen, disappeared; (12) Rundetårn, tower for Trinity Church and university observatory, 1642; (13) Nyholm and Nyværk, the star-shaped seaward defense of Copenhagen 1676, 1685–1700; (14) Christiansholmen, 1696; (15) Vor Frelsers Kirke 1696, spire 1744.

different center points all in vicinity of Kongens Nytorv (King's New Square) and Garnisons Kirke (Garrison Church), I was given a beautiful book on the subject of Copenhagen's city expansions between 1500 and 1856 by Nies Nissen (1989). The author tells an interesting story of a renaissance city extension in the form of a large circle with a star-shaped street pattern. The evidence is compelling: Copenhagen prior to the 1600s had a somewhat circular shape. The geographic center lay at the tower of Heligaands Church and the city measured 320 roder, approximately 1192 meters in diameter. The tower of the 1619 Mercantile Exchange Building, completed in 1640 with its beautifully intertwined dragon spire, sits exactly on this perimeter circle. The circle intersects twice with the Rosenborg main axis. And here at the eastern intersection was apparently the center point of the anticipated new Copenhagen, at the site of the present Baron Boltons Gaard near the King's New Square.

One can easily imagine a group of Renaissance “geometers” practicing with their new magnetic compasses and eyeglasses from Italy or Holland, surveying and triangulating the perfect geometry of a new city and the placement of important buildings. The new plan—hypothetical because an original was never found—is reconstructed in the Nissen book. Drawn around the center at Baron Boltens Gaard a second circle of an equal 320 roder in diameter intersected the tower of Heligaands Church. It defined the location of the Rosenberg Palace’s main tower and the guardhouse at Nyboder. A third circle of twice the diameter, 640 roder or 2.4 km, drawn also around the new center at Baron Boltens Gaard, defined the location of the outer defense lines, both on land and the Oresund side. The large circle also defined the location of Christianshavn’s main square and cut with stunning precision through the tower of Vor Frelsers Kirke, the Church of Our Savior. I had



Our Savior's Church, Christianshavn

admired the church before, but now knowing its place in the geometry of the city, the church took on new importance for me. The plan consisted of one large room in the shape of a Geneva cross, a magnificent but simple Baroque design. Engraved in the entrance steps I found the construction dates, from 1682 to 1694. A climb to the top revealed a view over the land and water contained by this large, 2.4-km wide circle, a city expanse that was anticipated in the early 1600s but took until the 1850s to fill to its limits.

The top of Our Savior's Church is one of Copenhagen's special features. Lauritz von Thurah designed the spire 57 years after completion of the church in 1749. He modeled his design after Borromini's spiraling staircase of Santo Ivo at the Chiesa Della Sapienza in Rome. Standing up there in the clear, cold winter air with seemingly boundless visibility, the geometry of Renaissance and Baroque city expansions no longer appeared as arbitrary as they had been when standing on the ground. There is a clear line of sight from the tower to the harbor entrance and out to sea. Sea captains were greatly aided by the shining spire in their approach to Copenhagen. A topographic map confirms that the church tower was placed exactly in line with the deep-water channel. Ship pilots would hold their course onto the tower until they were in line with the Rosenberg palace. This was apparent to them when the two smaller Rosenberg towers lined up and shifted in relationship to

the main tower. At that point, the pilot corrected the ship's course towards starboard and held the new course towards "Leda with the Swan," a white marble statue on a column placed in the water off Slotsholmen at a location where the new Royal Library extension is located today. Discovering these details made me appreciate how significant and meaningful geometry has been to the related professional fields of navigation, surveying, city building, architecture and the building of fortifications.

Our Savior's spire also determined the final geometry of the outer defense line towards the Øresund side, the Holmen Naval Base. Apparently the naval base was too constrained by the geometry of the large circle that had been drawn around Boltens Gaard, and just outside of the circle lay a run of water sufficiently deep for navigation. Thus the circle had to be extended, and this was done in the most ingenious manner. Taking Our Savior's spire as a center point, radii at the various distances of the anticipated bastions were staked out (in what must have been water) and shifted eastwards 80 roder apart from one another. The plan was prepared by a Dutch engineer, Henrik Ruesen in 1660, and when the defense work was completed in 1700, Copenhagen had achieved a closure in its form that embraced city, harbor and defense works on par in beauty and elegance with any major European city.

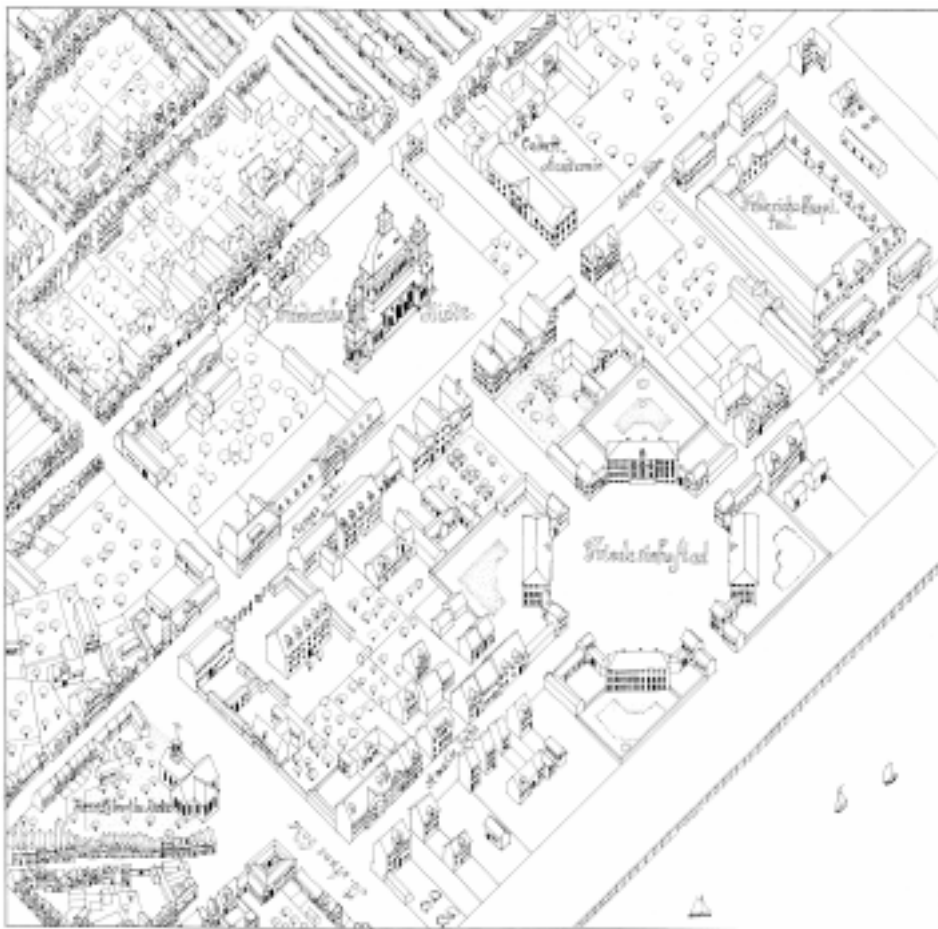
Within the new semicircular defense line lay a large body of protected water, and on this artificial lagoon a naval city emerged to house the many industries necessary for shipbuilding. Residents from Nyboder came across to Holmen via the "chicken bridge," a movable barrier that closed the harbor at night. Once there, people moved around on boats and, as the number of islands increased, drawbridges were constructed wherever needed. I walked out to the very tip of Holmen and looked across the harbor entrance. The Customhouse on the other side is only a stones-throw away. Standing there, the golden spire of Our Savior's Church dominates the entire harbor. Maritime matters must have guided people's thinking in setting clear priorities; the movement of boats determined the placement of islands and the design of the many specialized buildings, with plenty of room around them. Goods and materials needed inside these buildings came from the water and went back to the water. A fixed link with the rest of Copenhagen was not needed. The islands grew from north to south; a permanent bridge connecting Holmen with Christianshavn, and thus the rest of Copenhagen, was not made until the 1880s when the shipyard converted to the production of steel ships.

Wonderful opportunities exist to convert the islands to civilian uses. Above all, Holmen's orientation towards the water should guide design decisions. A future visitor to the city should be able to see and understand the spatial pattern that generated the many islands and the orientation of their buildings. Now that the ships have left the harbor, this large semicircular lagoon looks like an empty room. Among the many silhouettes, the rigging-shears stand out; many other structures are prominent—the dome of Frederik's Church, the spires of Sankt Nikolas, Christiansborg and the Dragons above the old Mercantile Exchange. But more

than all the other structures, the spire of Our Savior's Church stands out as a marker for the geometry that created Holmen. Preserving the silhouette of the harbor should be high priority. Subtler, but important to the character, is the building pattern of Holmen. It is very different from the rest of Copenhagen. Unlike anywhere in central Copenhagen, where buildings contribute to city blocks and orient themselves to streets, the buildings of Holmen orient towards the water and do not form blocks, but stand unattached with shared courtyards to their rear. A design principle consistent with the character of Holmen should be to respect all water-edges as places for circulation and primary access to buildings and places from which to view the towers. The nature of the access and orientation of buildings should differ depending on the relationship between the various waterways to the land. For example, there is a large body of water that is lined with historic wooden sheds where gunboats once lay hidden. Today this part of the lagoon has a quiet appeal; industrial design research and development companies have moved in and are fixing the sheds for their purposes. On the other side of Holmen, very long warehouse buildings placed along quays once stored the rigging for the reserve fleet. One of these buildings has been converted to design studios for architecture students; another will accommodate apartments. Again, the detailed appearance towards the waterfront will become important. The activities inside the structures should not turn the embankments into private backyard spaces.

The most spectacular stretches of Holmen still await detailed decision making. Most important is the edge of the former Dock Island across the harbor from Amalienborg, the Royal Palace where a new Opera House is proposed. Two other stretches are still occupied by the military; of them, the edge along the Arsenal Island has great architectural merit. There in 1742 the architect Phillip de Lang designed the King's Gate, entrance to the Holmen naval yard for royal visitors and place of embarkment when the King went on sea voyages. The King's Gate leads into the Cannonball court, a beautifully proportioned yard still closed to the public. My favorite building is located near the old rigging-shears. It is the office of the Naval Station Commander, a building made whimsical by an oversized, green crown on top of its roof. The dimensions of the crown threaten to topple the whole thing over.

Great importance lies in the redesign of Holmen. It is part of the geographic center of Copenhagen, but at the same time it is still very remote from it. Compared to other harbor waterfronts that have become available due to industrial or military closures, the Holmen waterfront is to a much greater extent associated with the nation's history. One should expect that Holmen's waterfronts would not be subject to laissez-faire development, but be recognized for their great civic importance.



Detail of the 1761 Christian Gedde map of Copenhagen, redrawn; Nye Kongensgade is today's Store Kongens Gade, Bredgade was formerly named Norges Gade, and Garnisons Kirke (1703) was originally named Der Herre Zebaoths Kirke.

The City as a Grid

The urban form of Frederikstad has been imprinted into my mind ever since I first saw Steen Eiler Rasmussen's axonometric drawing of it in his book on Copenhagen (Rasmussen 1969). Its main axis extends from the domed Frederick's Church to the harbor right through Amalienborg palace. The palace, in the form of an open octagon and on axis with the monumental volume of the church, is a composition of forms unique in the spatial language of cities. But Frederikstad is even more memorable on direct encounter. On my walks through Frederikstad, I saw an area full of design compromises along its northern and southern edges.

In contrast to Holmen, Frederikstad grew from south to north. Its official history began in 1749, but this northeastern extension was conditioned with the building of a new city wall of the 1630s between Copenhagen's North Gate and the fortress at the harbor entrance. Thus land between the old and the new walls became available for city expansion. Initially, the same radial street design that shaped Holmen's defense line was considered and, consistent with that concept, a diago-

nal “stone road” was built to connect the former East Gate, more or less where present day Kongens Nytorv is located, with the new East Gate at the fortress. Between 1647 and 1649, however, in a flurry of design activities the authorities developed a better circulation system that gave up the diagonal pattern and worked out the beginnings of a new, grid geometry. It took 30 years to sort out all the details. The decision to construct a new shoreline parallel and closer to the harbor’s deep-water channel might have decided matters in favor of an orthogonal street layout for the entire northeastern city expansion. The terminus of the coast highway from Helsingør shifted to Store Kongens Gade and it was laid out in true Copenhagen fashion. A person arriving into town from the northeast through the new East Gate was, and to some extent still is, directed towards the tower of Christiansborg. This effect was even stronger in the past. The historic tower of old Christiansborg Palace was placed further out in the square, thus in a perfect line with Store Kongens Gade.

A map (Lorenzen 1942) from the late 1640s depicted a new street, Gothersgade, at right angle to the new harbor front, leaving room for a large square where Kongens Nytorv is now located. But construction proceeded slowly and properties remained unadjusted. A 1658 map (Lorenzen 1942) still showed remnants of the old moat zig-zagging along where Gothersgade was slated to run. Construction of Kongens Nytorv started in 1672 and took 11 years to complete. One year into the construction of the new square, the properties north of Kongens Nytorv were studied again (Lorenzen 1942). There was, for example, the large property of an Admiral Jens Rotstein at the corner of Strandgade and Sankt Annø’s Plads at what appeared to be the edge of town at the time. His land was cut into halves by the introduction of Toldbogade, a new street leading in a straight line to the new Customhouse. He and his neighbors received a windfall of property rights with additional street frontages.

Across the street from the Admiral’s property, the Amalienborg gardens appeared for the first time in 1687. They took up a large rectangle of land. In 1749, after a fire destroyed an earlier palace, the architect Nicolai Eigtved³ designed the street layout and building regulations for Frederikstad. I never found an answer to the obvious question: did Eigtved borrow the idea of an octagonal central palace square from the earlier radial plan, or was it the ceremonial and political pretense of the ruler that gave Copenhagen this flamboyant composition? It is an interesting question because the four Amalienborg Palaces were originally not intended for the royal family. On his 1761 map, Christian Geddes labeled the octagonal square “Friederichs Stad,” the central square of the new city extension. High ranking court officials commissioned the four palaces, Moltke, Levetzau, Brockdorf and Schack. The royal family did not move to Frederikstad until 1794 when the city palace at Christiansborg was damaged by fire. Also, when Geddes prepared his map, Frederick’s Church did not exist. He drew the proposed volume of the church like a two-dimensional theater backdrop in his otherwise three-dimensional map, telling his contemporaries what was proposed, but not there in reality. And it is not the design of Eigtved, who died in 1754, but of Nicolas-Henri Jardin that Geddes

depicted. Neither design would be completed, but Ferdinand Meldahl, who also designed the fashionable flats that surrounded the church, constructed the domed church onto a neo classical base as late as 1874.

When compared in size, the proposed 21st century Ørestad covers more than eight times the land area of the 18th century Frederikstad. From the 1630s, the time when the new city walls were built that made the northeastern city expansion possible, it took over two hundred years to complete Copenhagen's northeastern extension. The real challenges for the design of Frederikstad laid in the pre-existing conditions. The Nyboder row houses, of course, were there and followed the older radial geometry. Older still, in all likelihood, were the property rights outside the old East Gate. A faubourg must have existed here since medieval times. Its streets can still be walked today.



The Flute Players

One of my winter walks took me to the Garrison Church at Sankt Annæ Plads in search of the center point of the older radial plan. Naturally I did not find the center there; the church was built much too late to serve as a focal point. But I did find the streets of the faubourg and an older street geometry that must have predated the designs of the Frederikstad expansion. To my eyes, Store and Lille Strandgade leading away from Kongens Nytorv to Sankt Annæ Plads appeared to be much older than the rest of Frederikstad. The same seemed to be true for Bredgade and Store Kongensgade. But I would not have guessed so without gathering first some clues at the two Strandgades. There, at a small triangle where the two Strandgade come together, I found a beautiful green sculpture of a fisherman teaching his boy to play the flute. Looking at the statue I decided to search on old maps for the natural shoreline. The search revealed, as one might have guessed, the proximity of the statue to the former beach. Strandgade was the beginning of the old highway that led out of the East Gate and followed the shoreline to the north along the Øresund.

Outside of the old city gates a significant number of properties had been established for a very long time. The direction and orientation of these properties, normal to Strandgade, still exists today. Along Bredgade it is even clearer. Bredgade also once curved towards the old East Gate. Today's property lines are still normal

to the former street line, although Bredgade has been running in a straight line since about 1660. The permanence of property lines and their importance to the morphology of a city can be impressive.

Ownership patterns are generally the reason why city expansions rarely reach the state of completion envisioned at the outset. For the last 250 years, the people of Copenhagen have tried to straighten out the older geometry around the old former East Gate and make it conform to the clear geometry of Frederikstad. For example, generations of design students have envisioned a continuation of Sankt AnnæPlads towards Borgergade. Indeed, the area centered on Borgergade became a redevelopment district in the late 1930s; a competition was held to select a forward looking design for this former faubourg to correct once and for all the inherited irregularities of crowded narrow lots with little light and air. A few of the irregular lots and streets that have survived the slum clearance process have added to the richness of Copenhagen's urban form. Guided by an interest in the city's history, a person can walk through these streets today and, simply by looking, perhaps with some help from historic maps, can understand how the edges between old and new have evolved over time.

The Linear City

An imaginary future visitor to Copenhagen will in all likelihood make the similar observations after a visit to Ørestad. The connections of Ørestad to historic Copenhagen and to Amanger will take a long time to resolve. The emerging form of Ørestad has the appearance of a simple diagram drawn on paper. On first glance, Ørestad is a 500-meter-wide and 5-kilometer long city shaped by Copenhagen's new Metro that starts at the southern end of Ørestad, west of Amanger, and runs in a straight line for much of the 5 kilometers along elevated tracks towards Ørestad's northern end near Islands Brygge. Here the Metro submerges under the historic city.



Copenhagen in the palm of a hand that has grown a web between the base of its fingers. Ørestad and Frederikstad in relation to the larger city and to the 1947 finger plan.

Spain's early modernist Arturo Soria y Mata and the Soviet planner N. A. Miliutin advocated the concept of linear cities. Some examples were built, but did not stay linear for long. The intent of a linear city is to concentrate urban development along a transit route and flank it with ribbons of landscape. Allotment gardens separate Ørestad from Amanger to the east. A large marsh defines the new city on the west. The wetlands were gained from the sea in earlier decades and, until recently, used by the military as a shooting range. The linear form of city expansion follows a Copenhagen planning tradition that was established by Steen Eiler Rasmussen's and Peter Bredsdorff's legendary "Finger Plan" of 1947. Their plan envisioned urbanized development along the historic highways and rail lines in the form of five fingers that grew out of the palm of a hand where the historic city was located. But his plan was modified in the 1970s by a Regional Plan that gave greater emphasis to a radial pattern laid onto the linear finger concept; ring roads connected the urban "fingers" by cutting through the green wedges and gave access to new growth areas. The plan designated Ørestad, although under a different name, to accommodate 25,000 dwellings.

From the outset, Ørestad designers have used a combination of the linear and the radial planning concepts in guiding the design of the new city. Passengers sitting inside the future Metro on elevated tracks will experience the linear planning concept in the best of Copenhagen's planning traditions. They travel on a straight line in view of the green wedges on either side of the urbanized area towards the Borromonini-inspired tower of Our Savior's Church in Christianshavn. However, the majority of people will experience Ørestad as a sequence of intersections along radial routes—most importantly, for the time being, the intersection of the Metro with the new link to Sweden. Here Denmark's main east–west motorway and Copenhagen's outer ring are joined by the railroad on their way to the airport and the new bridge across the Øresund. A large shopping and entertainment center is planned at this intersection. A high-rise administrative building for a pharmaceutical company broke ground in early 2000. Later, apartment buildings are anticipated. The many people traveling on the submerged rail line and highway through this intersection see very little of Ørestad. The expectation is that motorists will get off the highway and shop or seek entertainment at the Ørestad center. The location was chosen to attract customers from southern Sweden and much of Zealand.

Further north, the next intersection is already established at the existing Bella Center. Thus far, visitors have come to this exhibition hall by car along Vejlands Alle and have parked in large lots facing the march. North of the Bella Center will be the new City Hospital at Sundby. A future residential community will emerge here. Then Ørestad's urban form is disrupted by a 1-kilometer-long gap with an artificial lake and constructed wetlands along the elevated Metro line. (In a typical linear city, such features would have no place inside the development along the transit line, but would be easily accessible in the flanking open space ribbons.) Urban form resumes with some concentration at the proposed National Archives, the Broadcasting Center, and finally the Amanger Campus of Copenhagen University. Here Metro leaves its straight alignment towards the spire of Our Savior's

Church and aims towards the far less inspiring tower of the Radisson Hotel.

The building of Ørestad is motivated by the need to finance the new Metro. Revenues from properties sold there are intended to pay for the building of the new transit system. Also, an argument has been made for some time that the historic fabric of Copenhagen cannot accommodate new types of buildings required by the rapidly changing demands of office and retail industries. Copenhagen can only remain in the league of “strong European players” if land is made available for such uses. What is argued here is the need for large shopping centers modeled after suburban American examples, as well as regional office headquarters of large multinational companies mainly in the electronics and biochemistry industries. The argument is not new. It is not only made in Copenhagen but in all major cities around the globe. In light of the recent arrival of some of these new headquarter buildings along the southern portion of Copenhagen’s harbor, the people of Copenhagen could relax a little under the apparent weight of a threat that would make their city slip into the back waters of Europe. One does not need to imagine another row of these buildings in Ørestad to understand that forceful design ingenuity is needed to better accommodate these large structures in any city, new or old.

The new buildings of the global economy are large and frequently ostentatious in their sameness when seen in a row in one place or when seen again on a drive near the airports of Madrid, Milan or Munich. As building types, they resist integration. They are oriented to the automobile and parking lots and less so to pedestrian movements along sidewalks. At the top of the list for Ørestad is the proposed Field’s shopping and entertainment center. Its 110,000 square meters of floor area amount to only two and a half times the floor area of the Magasin Du Nord department store in downtown Copenhagen, but measures six and a half times the land area of the same department store. Land for the necessary parking spaces would easily double the surface area needed for such a structure. In the future, pedestrians from nearby residential blocks would be greatly discouraged to walk alongside a 165-meter long building towards the Metro station. Ørestad designers need to invent a new buffer type building; “liner buildings” that encapsulate the large structure with neighborhood oriented stores at ground level. These stores could be part of the shopping center, but most importantly they would open towards the streets that ring the center. The liner buildings would have residential flats on floors above the stores. The buildings would mitigate the large scale of the shopping center with its introverted functions and transition to the smaller residential scale along the neighborhood streets. The liner building type would be applicable not only at Ørestad but also in many other locations where shopping centers separate urban development like at Høje Taastrup.

The detailed layout of Ørestad’s streets and public spaces will be all-important. I am not thinking of the elegant, light colored Chinese granite curbs that I saw being laid on my visit in April. The dimensions of these spaces concern me. A granite-covered space of 20,000 square meters is large in scale, if not monumental, when



The Linear City. Plan view of Ørestad.

lined with big buildings that have few entrances. I imagine the square crossed by a pedestrian on a cold and windy winter day; it would seem to take forever. By comparison, Kongens Nytorv also measures approximately 20,000 square meters. But many busses and cars circle around that square. A seemingly large area in the center of 8,200 square meters is dedicated to pedestrian use. The pedestrian area of Copenhagen's Town Hall square measures half the size of Ørestad central plaza.

It cannot possibly have been the intent of the Ørestad planners to create a public space designed to hold large crowds of people, simply because a large enough crowd will not gather there. Take, for example, Amangertorv. With a size of only

4,200 square meters, the funnel shaped square holds large crowds extremely well. Here a pedestrian flow of 90 people per minute coming in and out of Købmagergade intermingles in the afternoon with 140 people per minute walking in east–west directions. About 400 people become stationary and stay in the square to sit in a café, to wait for someone near the fountain or simply to watch others (Gehl and Gemzø 1996). Nowhere else in Copenhagen does the movement of people get any better or busier.



Frederiksberg Allé

Copenhagen is famous around the world for its well-designed public spaces. Extensive research has been carried out over many decades to improve design and use of the city’s public realm. It seems that none of this knowledge was relevant to those who worked on the initial design of Ørestad. The design of Ørestad Boulevard concerns me as well. The boulevard is 5 kilometers long and 60 meters in width. It accommodates the elevated Metro, a dual roadway and a canal. World cities are full of good examples of linear parkways, urban boulevards and esplanades to which people flock in large numbers. There could be a line of pavilions in regular distances that make the crossing of Ørestad Boulevard easier and invite people to sit next to the canal. Knowing about the regular distance between the pavilions could entice Metro users to skip a stop and to take a stroll under a tree-lined walk that is in dimension similar to those comfortable walks on Frederiksberg Allé. I could not see any consideration of the details found in historic precedents. Ørestad wants to be guaranteed global; it still has to be made user friendly.

What to Take from History

A mirror is held up to our own eyes whenever we examine things of the past. I have focused on the urban form of Copenhagen because I was looking for a trend: how have the people of Copenhagen dealt with large-scale physical changes to their city?

I found that city extensions rarely have turned out completely as they were intended. To motivate others in accepting large-scale physical changes to their city, the proponents of city extensions simplified complex matters into easily understandable abstractions. But the actual building of extensions has proven to be a complex matter. There always seems to have been strong voices in Copenhagen advocating change in order to conform to new trends that originated elsewhere. How could it be different in our time? Worldwide, the current urge to serve global commerce has affected many cities. No city can afford to be left outside the global economy. The structures built under this trend have produced sameness and places that separate people without giving them a sense of place. What is special in the history of Copenhagen are the voices that have calmed the urge to change. Hospitable to people from many cultural backgrounds—English, Dutch, French, Germans, and the nations around the Baltic Sea—and always open to global influences, the city is endowed with a particular talent for receptivity. Thus far in the history of Copenhagen, in an atmosphere of conciliation, outside influences have been loosened and pacified. If history has any currency in predicting the future, then at Ørestad a few important structures will get built according to initial plans, but in all likelihood many other projects will take much longer to complete than anyone wanted to imagine at the outset. Not that those in charge of projects lack a sense of purpose; the initial resolve to proceed will be reconsidered and improved upon. In my view, that is good and consistent with the manner in which the people of Copenhagen have dealt with urban expansions throughout the city's history.

For Ørestad to succeed, however, there is no room for complacency. Urgent is the repair of some of the urban elements that are already being built, like the boulevard or the central square. Also a group of city design professionals should think about the connection of new to old. Luckily, the Ørestad Corporation does not own two large key properties along Amanger Boulevard. This land to the south of the old Christianshavn Bastions was part of an extensive glacis and controlled by the military since the late Renaissance until recently. Over time, buildings were placed there, like Denmark's famous Serum Institute, but much of the land between the Christianshavn Bastions and a street called Njalsgade at the Amanger campus of Copenhagen University awaits detailed design decisions. It is here that a connection has to be created between Ørestad and the historic city. What could emerge here opposite the university is a "Latin Quarter"—at least, that is what it would have been called at a different time: places for students to live and study, mix and mingle. If built anew it would probably be called a "Cyber Quarter," filled with the modern day digital convergence of old-fashioned student needs. I imagine the new quarter smaller in scale and grain than Ørestad and well connected for pedestrians and bicyclists across the Stadsgraven to the historic streets of Christianshavn.

On Amanger, along much of the 5-kilometer eastern edge of Ørestad, the very low density development and allotment gardens will not stay in that form forever. The proximity to the Metro provides opportunities for higher residential densities. Future

residents of western Amanger could provide the ridership that the Metro will urgently need for efficiency along the first 5 kilometers of its northbound run.

It is a fundamental premise of this article that change to the center of Copenhagen can be positive. Clearly any judgment about what constitutes positive change is loaded with controversy unless change is measured over a longer span of time. The center of Copenhagen is a very handsome example of an art form that I like to call city design. It is a composition that has been developed over time, damaged severely at times, never fully destroyed, worked over, added to, and repaired by many people. Each age has left something. The city is an endless compression of lives that were lived here with much continuity. It is a cultivated place and a very fortunate one.

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Notes

- ¹ The three dimensional map of Copenhagen by Christian Gedde was commissioned by the Crown in 1757 and completed in 1761. The horizontal scale is 1:2500. The vertical scale is somewhat randomly chosen. The map measures 2.5 meters square. A copy is kept on display at the archives of the Copenhagen City Museum. Gedde also prepared 12 district maps at the scale of 1:1600.
- ² A portion of the structure had housed the anchor forge for the naval shipyard.
- ³ Military Engineer, Court Architect 1701–1754.

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Illustrations

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