

THE
ARCHITECTURE OF THE STREET

by`

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Theses

To
Valerie
My Wife

PREFACE

Most architects, pondering our present and proposed towns, would say that there is little to do about the street but to prepare the corpse for burial. Only a hundred years ago it was enjoying an Indian summer; at the turn of the century town planners were full of hopes for it; but when Le Corbusier stigmatised the evenly built city street as "la rue corridor" he sounded its death-knell. Today, as a town-planning element, the street is dead.

In these circumstances no apology is needed for attempting an account of its architecture. But although the town planner no longer plans with streets, the towns we live in are made of streets. All but a minute fraction of urban buildings for the next 100 years will face streets. It hardly bears contemplation that they will be built as ugly as those of today. Never by any reckoning has street architecture been at a lower ebb.

Music, sculpture and painting are arts that we can escape if we wish. In the street there is no escape: here we are the prisoners of our own creations. In many countries architects are trying to find ways of improving them. So far the results are tentative, for there is as yet no broad measure of agreement upon the meaning of good street architecture. Arguments swing between uniform order and informal charm.

It is in the hope of distilling some principles from the past to apply to the present that I have undertaken this thesis. My concern therefore is not so much with the building of new streets as with rebuilding the old.

In dealing with a subject so vast that within the limits of a readable work all the major examples cannot even be mentioned by name, bounds must be set. Up to the end of the Roman era, the stones and manuscripts that survive limit the subject, and it is possible to give a comprehensive if not exhaustive account. But thereafter only a few chosen threads can be followed. I have naturally taken those that I think

are the longest and strongest. The street has grown in the stress of two opposing forces. On the one hand is the Road, with its manly atmosphere of adventure, exposure and movement. On the other is the House, still and peaceful, protecting order life under the hand of woman. Standing between them is the Door, symbol of climax and crisis, of both exclusion and inclusion. I have therefore taken the road and the building as the main threads, and the minor threads of fire, by-laws to protect the city, and street life.

My conclusions are conclusions about architecture; the larger conclusions, relating architecture to economics, politics and sociology, I leave to those better qualified to make them. I have given full details of every book referred to so that, though my conclusions may be open to question, the facts they are drawn from should not.

The illustrations are intended only as aides-memoir. I have thought it wise to reproduce all building plans to one scale ($\frac{1}{8}$ " to one foot). This has precluded many examples that are commonly illustrated without a scale. For any inaccuracies that this redrawing has caused, I can only apologise; the reader is in every case referred to the original source.

My debt to the various authorities quoted is obvious. I should like to thank the following gentlemen for advice upon bibliography:

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ORIGINS OF THE STREET

The street is but one aspect of the town. Just as a plantation of trees is not made of the avenues between them, so towns are not made of streets: the street is a by-product compounded of roads and buildings, which are the town's chief elements. So that in order to trace the origins of the street we must look at the town itself. Our immediate problem is to see how the ordered network of roads and houses came from the apparent disorder of the earliest settlements.

No account of these origins can be historically accurate, for the town developed at the very dawn of written history, and we can only conjecture from such remains - typical or not - as the caprice of time has left us. What follows is an attempt to trace the byways that men trod before they reached an ordered arrangement and to describe some of the forms that went to its making.

In the Cairo Museum there lies a fragment of slate bearing incised pictographs of seven cities¹. Each city is shown as a roughly serrated square enclosing several minor rectangles. The drawing is primitive but the city wall and its bastions, the regular house blocks and the straight roads between them are unmistakable. Inscribed at the time of the first dynasty in Egypt, this is probably one of the earliest pictorial representations of a city. It gives the essential elements of the type built throughout the Ancient East and astonishingly enough it is the archetype of city that served mankind for more than fifty centuries afterwards.

Throughout the early civilized world, from the Nile to the Indus², new cities were planned and old cities rebuilt with the three elements of wall, roads and houses arranged on this model. From Thessaly to Miletus, and later from Alexandria to India, the Greeks so built their cities and towns.

¹ Bell. Arch. of Ancient Egypt, p.13

² As at Harappa and Mohenjo-Daro.

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The Romans in Britain, Spain, Africa and Arabia used the same mode. The founders of medieval cities adapted it to their needs; any citizen of medieval Europe would have recognized it, and had he been a traveller, he would have seen it, as Marco Polo did, in China. Three hundred and fifty years after the death of Marco Polo, William Penn planned his new city in America upon the same model, but without the wall. Hundreds of American, Colonial and South African towns were developed in this way, and many are at the present day extended on the same pattern.

So universally and so early in the history of the world does the simple reticulated plan occur that it appears almost as a natural phenomenon. Even during the literate age of Babylon, the origins of the city form had been lost, and were credited to a tutelary God, who, in a number of visits from the sea, confided to mankind the secrets of how to parcel out land and build cities, "since which time" added the historian¹ "nothing more has been invented."

One thing we may safely infer from its age-long use - that it has solved, with a fair amount of success, the problems of those who built the towns: if the answer remained the same, so, we may be sure, did the question. To crowd buildings into as small an area as possible without depriving them of light, air and traffic is the cardinal problem of the city planner today as then?² But the problem was not urgently posed until large numbers of people took up permanent places of settlement during that singular advance in our history - the Neolithic Revolution.

Although the building of cities was a direct consequence of the invention of agriculture, comparatively large numbers of men must have congregated before they learnt to plant seeds and tend cattle. But they were the exceptions;

¹ - Berossus (Gadd: History and Monuments of Ur.)

² - See Redevelopment of Central Areas, p.36

the enormous shell mounds in Europe such as those in Denmark and the Tagus Estuary, the piles of horse and reindeer bones at Solutré, are the mute debris of solitary groups. Large numbers of men must have mined and knapped at the large flint deposits, such as those of Grand Pressigny. Whether they lived in a community at all is not known. It is certain that when their food supply was assured men could and did build permanent settlements, and had increasingly large families.

Agriculture was invented in the Nile Valley between 5,000 and 4,000 B.C.¹ It seems that by the time 1,000 years had passed, fully formed cities were flourishing in Mesopotamia and in Egypt. Of the immediate antecedents of these cities, little has come to light. Archaeological research in Egypt and Mesopotamia has yielded insufficient material of the mesolithic and neolithic periods to form a connected chain of development. There lies too great a gap between Merimde, the neolithic agricultural village in the Nile Delta, and Kahun, planned not only to a reticulated system, but to a reticulated system modified for the special needs of a worker's town. Of prehistoric remains in Western Asia very little have escaped the pressure of time.

It is to the Mediterranean islands and shores that we must look, to where sand has not worn, nor floods have eroded, the remains of the earliest dwellings. Particularly our eyes turn to Crete, which played the foremost role in passing on to the West and North its peculiar version of what it received from the East.

Houses

The dwellings hold the key of the town. As we shall notice from time to time in the course of history, the city was always the true macrocosm of the dwelling's microcosm: until it grew beyond his reach, man always saw the city as an enlargement of his house, embodying the same affections and enshrining the same hopes for security and peace.

¹ Mackenzie: Ancient Civilizations: Introduction

In the Mediterranean, the first rectangular houses were built in Neolithic times. Simultaneously with the round huts of Thessaly there existed in Crete and upon the mainland two-roomed houses made of unhewn stones. They took the form of the Asiatic "but and ben" - one outer and one inner room. The slightly trapezoidal house at Magasa (Figure 1a) and the tomb at Mochlos¹ are examples. Neolithic builders seem to have shown no sudden preference for rectangular over round houses: in Sicily round and square huts persisted together until well into the Bronze Age. For building settlements the rectangular house was preferable: by adding three walls to one side of it, another room to house the growing family was ready. The two houses found in the latest Neolithic levels at Knossos started from "but and ben" nuclei and finished as agglomerations of more than fourteen rooms (Figure 1b).

Obviously it was much more difficult to enlarge circular huts, or by using them to give proper expression to the *genos* under one roof. At Tyrins over an older stratum of round huts, the German archaeologists found the remains of a great rotunda embracing a number of circular constructions - an arrangement that must have been abandoned for an easier roofing system. Much later, in the Middle Minoan period, the great house at Chamaizi repeated the oval outline, but had straight partition walls inside it, suggesting that the roof was flat.

As the *genos* disintegrated, and numbers of small families took its place, the large house broke up with it, giving way to a collection of contiguous but separate houses². Minoan ossuaries, which reflect contemporary dwellings, were rectangular chambers, each with its separate entrance³. At Dimini, Zygouries and Sesklo⁴, houses of the earlier "but and ben" type reappeared. The "House on the Hilltop" of the second Early Minoan period at Vasiliki was built true in line and

¹ Evans: The Palace of Minos at Knossos, Vol. I, p.72

² Glotz: The Aegean Civilization, p.136

³ Childe: The Dawn of European Civilization, p.24

⁴ Evans: Op cit, II, p.20

angle, with a long straight wall on the south-west showing pre-conception and forethought - a great step forward from the Neolithic house.

By the time the earliest towns in the Aegean were built, the rectangular house was the general rule. In Amorgos¹ not all the houses were rectangular and it is likely that rectangular building prevailed only over the course of centuries, but the first settlement at Phylakopi² the first at Troy³ and the third at Orchomenos⁴ were all built with rectangular dwellings, those at Troy having several rooms. So that before the end of the third millennium B.C., rectangular town houses were in use in Crete, the Cyclades and the mainland of Greece.

The simple system of growth by accretion in any direction seems to have been the general method of building in these towns⁵. (See plan of House A at Vasiliki, Figure 1c). How light and air found their way into all the rooms, if indeed they did, is not certain. The only way of roofing their growing shape was with a flat or slightly pitched plane. By omitting this over one of the cells the builder could provide a small "light well". It is difficult to see how the Neolithic house could have been habitable otherwise, particularly as the hearth was often in the first room to be entered. In Middle Minoan times when the palaces of Phaestos and Knossos were laid out, their builders made full and imaginative use of the light-well. Evans counted five of them in an area of 2,150 square feet at Knossos. He also pointed out that inside the enceintes, here and at Phaestos, the various parts of the palace were methodically distributed into "insulae." When the lanes between these blocks were roofed, the whole plan of the palaces took on their labyrinthine character. These observations suggest that the way of building cells into blocks lit by light-wells had become a strong tradition. (Figure 1g).

¹ Childe: *op. cit.*, p.49
² Ibid, p.77

² Ibid, p.49

³ Ibid, p.53

⁵ Even in Late Minoan times, small huts clustered about the walls of the Chamaizi house.

Within the block, each house shared its walls with its neighbours. Gournia was built in this way on its limestone hill. Knossos and Phaestos were lifted above the rock by some 26 feet of debris from the Neolithic occupation, and instances occur here and there where the builders, not trusting older walls, built new walls a few inches away.

Upper Floors

There were two ideas that could have inspired the building of second storeys. To a people that had a long tradition of underground tombs, the making of basements under houses would present little difficulty. Cellars have been found under the most ancient houses at Koumasa and Chamaizi¹. On the other hand, when houses were built upon hillsides the ground floor, level with the road, would form a tapering but useable shelter underneath. This arrangement later characterised Gournia. The flat roofs of the houses provided the most obvious suggestion of adding more walls and another roof - an upward application of growth by accretion. By whichever way it was reached, the two-storey house is found from the second Early Minoan period onwards. One of the few early two-storeyed houses is that at Vasiliki mentioned above. It was built of sun-dried bricks laced with timber beams with a protection of lime plaster.

For the appearance of early two-storeyed houses, we have the evidence of one of the most evocative finds of archaeology. In the rubble filling under a basement floor of the Palace of Knossos Evans found the well-known faience plaques, the remains of a mosaic representing the siege of a Middle Minoan seaside town. Some fifty-two house fronts, cast complete from moulds, painted and glazed, show two and three-storey facades² (Figure Id). Surprisingly many of them are symmetrical. They have framed windows in four or six panes, and flat roofs. Some, with no openings at the ground floor, represent houses on the

¹ Glotz: The Aegean Civilization, p.109

² Glotz: Op cit, p.108; Evans: Op cit I, p.301

town wall; of the others, some have centrally placed doors, some two doors directly under first floor windows. The fronts are narrower than their height; this and the liberal provision of windows suggest that they had no courtyard nor light-well. The suggestion is strengthened by the vertical projections at roof level. In some instances, these are directly over doors and windows, making it seem that the stair tower was at the back of the house, the fronts being pictured in true elevation as a force attacking from the sea would see them. If this supposition is the correct one, the houses were two rooms deep and were contiguous. The symmetry of their fronts suggests axial planning, which does not appear in the actual remains of houses until Roman times. The Town Mosaic housefronts were gaily coloured - upon a ground of pale grey stucco, the windows were painted scarlet¹, the timber framing and disks brown, crimson and green.

Evans noticed the parallel between these housefronts of the Town Mosaic at Knossos and the third millennium votive housefronts of baked clay found by Dr. Andrae in the temple of Ishtar and Babylon. These were two storeys high, with the second storey opening on to a broad terrace at roof level.

At the Late Minoan industrial town of Gournia, the houses had light-wells, but the slopes of the limestone ridge upon which the town was built was no site for a fixed plan: the houses grew around the palace, and stood upon the slope with a lower storey entered from the back. With its twisting alleys and frequent changes in level, it had as many differing plans as a medieval hill town, such as Eze or La Turbie on the Mediterranean. The houses were built of mortarless stonework, leant against one another and were separated by party walls. In fact the whole town may be considered as an extension of the domestic system of growth by accretion. Second storeys were an obvious sign that concentration had started - at

¹ Windows of the Middle Minoan period were glazed with oil parchment (Evans) or talc (Martienssen)

Gournia through a reluctance to let the town spread over agricultural land. An important hazard was innate in the system. If new brick walls and new stone foundations were not properly bonded into the old, any movement would lead towards collapse; the whole structure would lose the strength it gained by its cellular form. The earliest surviving laws governing building recognized this danger. In the legal code cut into a diorite pillar during the reign of Hammurabi¹, law No. 7 stated: "If a man have given corn or silver or other things for a house, and the house is built onto foundations or walls belonging to the house of its neighbour, then he shall lose all that he has paid, and the house shall be given back again. If the house is not built onto existing foundations or walls, then he may buy it for corn or silver, or any other goods." Designed to keep each house and its additions under one ownership, this law shows the importance attached by the Chaldeans to the matter of stability between a house and its neighbour. That faulty building was an ever-present danger in the first cities is evident from the stringent penalties (upon the principle of an eye for an eye, a tooth for a tooth) laid upon builders who by collapse of their work, damaged their client's person. Houses built about that time in Ur² show that simple second storeys surmounted the houses. This must have sadly aggravated the results of failure.

During the Late Minoan period, it was the rule at Knossos to separate the house with an interspace which was not always wide enough for a pathway. This was possibly to localise damage from the earthquakes that have shaken Crete throughout its history and that finally destroyed Knossos.

Evans excavated four double-storey houses of this period, all of which were obviously built for upper-class families.

¹ (2123-2080 B.C.) C. Edwards: The World's Earliest Laws.

² The Larsa Quarter. A plan is reproduced in Frankfort: Town Planning in Ancient Mesopotamia (T.P. Review, Vol. XXI, No. 2)

Each of them strangely enough covered an area of about 2,350 square feet¹. From this he inferred that in this principal seat of the Priest kings, there were sumptuary laws limiting their size. The House at Zakros, also of the Late Minoan period, shows a finished type of house plan, obviously for an upper-class family².

Orientation

With the invention of agriculture, the farmer's year became the measure of time. It was vital for man to study the heavens and the results showed in the superstitious siting of his dwelling. In Egypt, throughout the Mediterranean and even in Britain the door of the Neolithic house faced east or south-east. In the tombs, those who would never see another sunrise had doors towards it. The habit persisted until the Minoan Age, for the buildings at Tylissos, the palaces of Hagia Triada, Phaestos and Knossos were all roughly orientated. It is undeniable that this must have affected the grouping of houses in early settlements - for the doors of houses to face east it would be natural to arrange them running from north to south. However, there are examples³ of huts arranged at haphazard within an enclosure, yet each orientated. Lavedan⁴ points to Bronze Age stations on the Atlantic coast of France for examples of what he calls "stations d'alignements" and infer that they were tributary forms towards the reticulated plan. But by the time the Megalithic culture which produced the remains at Finistère and Morbihan had spread from Central France, the Early Minoan period in the Aegean was in full swing, and a stronger influence - that of the road - was taking effect. These "constitutions d'alignement" are not in the main stream of development. Childe⁵ says that "the cult of the dead overshadowed all other activities" in the

¹ South house, Royal Villa, House of Chancel Screen, House
² Pendlebury: The Archaeology of Crete, p.241
³ Grimspound
⁴ Histoire de l'Urbanisme, Chap.I
⁵ The Dawn of European Civilization, p.284

Neolithic houses (as at Knossos) and the broadening of roads where they met others at Mycenae are the only concessions made by the building to the road.

Goods were carried to and from the towns by pack donkeys and oxen, over roads that in the Late Minoan period were well graded and paved with gypsum, cobbles or flags. Transit roads linked ports across Crete. Within the mature towns, shops, workshops and dwellings jostled one another along the sides of the lanes. As the roads were barely wide enough to turn a pack donkey in¹, it seems that much of the carrying was done by men themselves. Ox carts of the type found at Palaikastro² could only ply between the gates of towns: the horse, which reached Crete about 1600 B.C., was used in chariots and for processions - not for urban traffic.

The width between buildings varied between 4¹ and 8¹/₂ ft., reaching 13 ft. as an exception. From this, two footpaths were sometimes taken, leaving 8 ft. for the roadway.

Through these narrow alleys, in towns the overall density of which was 390 persons per acre³, went the raw materials of industry and trade; timber, stone and bricks for building; meat and grain; iron, tin, copper and potter's clay; bales of wool and leather; baskets of olives for the domestic oil presses. Between the blind walls of the houses⁴ they jostled shoppers, offal and refuse removers, the palanquins of high born maidens.

This constitutes one of the greatest enigmas in ancient town planning. The standard of living in the Late Minoan period in the Aegean was high - so high indeed that not until the 19th century in Europe was it surpassed; the sanitary system in the Palace of Knossos with its baths and elaborate drainage system speak of a fastidiousness on the part of

¹ The lanes ofournia are impassable to a modern Cretan pack animal (Martienssen: Greek Cities)

² Evans: Op cit II, p.156

³ I have taken Evans' figures of 100,000 persons in 1,125,000 sq. metres in L.M. Knossos

⁴ Upon only one of the house fronts of the town Mosaic is there a window at ground floor level.

those in power which they had the authority and the technical means to indulge. Yet in the port of Zakro and elsewhere, sumptuous houses faced onto the meanest lanes.

There are signs that this state of affairs was not thought ideal. At the Palace entrance at Knossos public town traffic was separated on to a different carriage way from the palace traffic. Straightening or at least smoothing out roads within living towns was carried out by setting back houses as they were rebuilt¹. In our own towns, the costliness and delay of this sort of regulation is a byword. In Middle Minoan times street drains and culverts were laid, and a complication familiar to us thus existed. Small wonder that in most towns the old lanes were allowed to stand; when Knossos was rebuilt after the earthquake at the close of the third Middle Minoan period, the street lines and drains of the old town determined its new plan².

This is as far as prehistory and the Aegean civilization takes us towards the Hellenic reticulated plan. Of towns built from the end of the Late Minoan and Mycenaean periods (about 1,200 B.C.) until the Hellenic era, those that have come to light, such as Lato, show buildings erected at haphazard with no attempt at arrangement³. With the Dorian invasion, the Aegean civilization dissolved, and of the life the Achaeans led, only the Homeric epics can tell - of the Spartans in their villages left unfortified for reasons of prestige; of the home of Odysseus, at one time thought to be a palace on Cretan lines, but now recognized as a country farm⁴. During their spell of leadership the Minoans cast wide their harvest of culture. Though the seeds they sowed lay dormant for six centuries, they flowered true to type. In architecture, pottery, religion, classical Greek culture showed clearly its Aegean ancestry.

¹ In Ur this process was almost complete when the city was sacked. The roads in one quarter were impeded by oddly placed houses - owned perhaps by influential or argumentative citizens.

² Evans: *Op cit* II, p.564

³ Pendlebury: *Archaeology of Crete*, p.329

⁴ There is an enigmatic reference in the *Iliad* Book VI to "Streets of Palaces and Walks of State" at Troy (Pope's translation)

In Ionia, where the Aegean colonies formed a lasting outpost through the Dark Ages of Greece, the Aegean influence met the Oriental. Here along the coast ended the caravan routes from Egypt and Arabia. Hither came merchants from cities built for centuries to the reticulated system. It is not accidental that here, in the town of Miletus, was born the man whom Aristotle credited with the invention of the chequerboard plan.

Conclusions

To summarise the origins of the town shape and what, for want of a better term, we may call its streets, from the invention of agriculture to the Dorian invasion, we see firstly an established tradition of rectangular house building. There was the agency of the lightwell to loosen the bonds of the agglomerate form. Secondly, we see the block as the established town unit, irregular but none the less definite. Because the house and the block were rectangular, the pattern of the town was rectangular. Thirdly, this period saw the mastery of multi-storey construction under the stress of concentration, and the use of party walls as a building expedient.

Finally, there was some attempt to regulate the spaces between blocks. This led naturally to straight roads. When the plans of Aegean colonial towns are unearthed, it is possible, if not likely, that they will show elementary reticulated plans. The technical knowledge necessary to parcelling out land on a new site (measuring in a straight line and setting up a right angle) were well within their compass - it was merely the process of house building on a larger scale.

With the possible exception of the Town Mosaic, there is no evidence that the street was recognized as a unit in the conception of the town. The reason for this is that in essence the Aegean town was an affair only of buildings; the road was an incidental, a residual necessity. The rectangular house was evolved beneath its flat roof, owing nothing to the road in its development. The block was in its origin the architectural expression of a growing family,

in its size limited by internal planning. The courtyard or light-well house was independent of the road for lighting - it needed only a door for access. Such influence as orientation had in the facing of buildings in settlements was discarded by the time houses were built in blocks with doors facing all points of the compass, though it recurred later on as the factor for determining the road system and for arrangement of rooms within the house.

The building then was completely dominant in the conception of the town¹. In each cluster of houses the familiar "but and ben" continually appeared, varying in size from 160 to 645 square feet. In essence the "but and ben" arrangement was an artificial cave. It gives to its owner a sense of complete enclosure and security: as anyone of the 20th century who has sheltered from air raids in a similar structure will confirm. The Aegeans who used it were acknowledging their troglodyte forefathers, remembered by Aeschylus, who "dwelt, like frail ants, under the ground in the depths of caves where the sun did not reach." From the walls of the fortified towns of the classical era, the Greeks gained considerable security, but enclosure was still the main desideratum in their houses.

Sea trade with the East, particularly with Egypt, which so strongly shaped the later culture of Crete, had surprisingly little influence upon the arrangement of the Aegean town. Each advance that we have noticed - the rectangular house, the light-well, the building block, additional storeys and party walls may of course have been influenced or even suggested from foreign sources. Development in Egypt and Mesopotamia remained ahead of that in the Aegean: but that is not to say that the Cretans blindly followed the Eastern lead - post hoc non ergo propter hoc. In other

¹ A recent writer rejects this, upon the grounds that many towns ancient and modern exist with rectangular buildings but an irregular street pattern. The article in question (Stanislowski: Origin and spread of the Grid Pattern Town) is more concerned with the spread of the grid pattern from a supposedly invented prototype than with its generation.

ways the Cretans showed a strong independence, and in default of further evidence we may give to them the credit for evolving their own town forms.

Whether the Neolithic predecessors of the Sumerians produced their towns from similar elements is doubtful. It seems certain that in the mature East, slave labour had released the building of cities from the bonds of economy, and that autocratic power was able to impose an arbitrary pattern upon life. We may guess that straight roads in towns had for Nebuchadnezzar the same military significance as they had for Napoleon III. Under such a regime, the human being becomes a cipher. His dwelling, for the architect, no more than a tessera in a mosaic, and the arrangement of houses, roads and buildings sinks to a problem for the drawing board alone. A matter of inches and pence.

Thus we can see why the town of Kahun and the Eastern Village at Amarna, although at first sight they appear ahead of Gournia, cannot possibly bear comparison with it; they were forced labour camps. At Tell el Amarna we get a clear view of the architectural process involved in making them.

This mushroom city, which all in a decade was built, occupied and deserted for ever, was bounded by four stones set up by the king himself: beyond setting up the main rectangles of development there seems to have been little control over the body of the city¹.

Upon the upper class houses architects were obviously employed. Along the boundaries of each plot, servants lived in rows of identical units reached from a common lane. Each unit consisted of an entrance hall with a closet at one end, a main living room and a bedroom and kitchen behind. Each was separated from its neighbour by a party wall. The same arrangement was used for housing clerks in the official quarters. In the Eastern Village, built to house the

¹ For a full description see "The City of Akhenaton" by Peet and Woolley. Also Pendlebury's "Tell el Amarna."

grave-tenders and tomb-diggers of the Royal city, the architects took many "security precautions;" a high wall surrounded the village; between the village and the city, the road was punctuated by guard houses; a patrol road ringed the hills around the village (Figure Ij). Within the wall, through which there was only one entrance, they placed rows of houses upon the model of the servants' quarters (Figure I h and j).

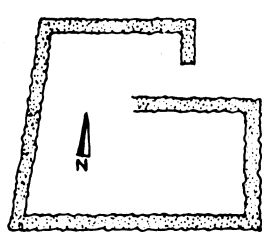
Thus was produced a reticulated plan in which the cross roads were along the walls: terraces of houses bounded by roads made up the village. like Kahun it had no shops nor public buildings.

Each house was a simplified miniature of the contemporary upper class house. The walls of the main living room were projected above the others, providing a clerestorey along east and west. These walls were not bonded into the party walls and were not quite in line from house to house - perhaps each occupier built his own. Even so, the complete terrace was in effect a prism of continuous section, similar in lighting to the hypostyle hall at Karnak.

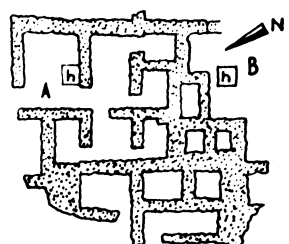
Such an architectural arrangement of identical houses would have been well within the compass of the Aegean architects. The system of magazines in the basement of the West section of the Palace of Knossos, along one side of a corridor; or that of Phaestos, along both sides of the corridor, are exactly similar to it in essence. But for people to live in identical houses there must be coercion - either from authority or economic necessity - and we see little sign of it in the Aegean.

FIGURE I

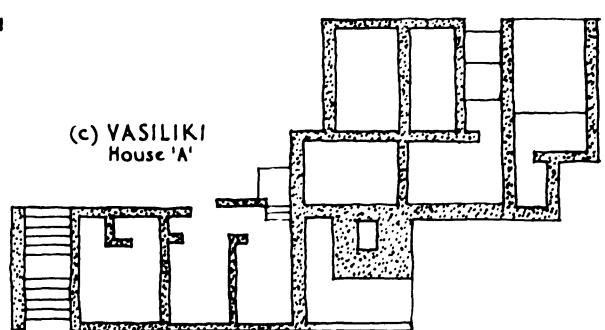
- a. Neolithic house at Magasa, Crete, from Anderson, Spiers and Dinsmoor: "Architecture of Ancient Greece Figure 1, p.14. A "but and ben" house, or artificial cave. It was built 12 yards away from a rock shelter, which it was probably constructed to replace.
- b. Plan of late Neolithic houses, Knossos, from Evans: The Palace of Minos at Knossos, Vol. II, p.18. This group typifies growth by accretion.
- c. House at Vasiliki, from Pendlebury: Archaeology of Crete, p.101. A collection of rectangular rooms without a pre-conceived plan.
- d. Faience plaques from the "Town Mosaic", Knossos, from Evans: The Palace of Minos at Knossos, Vol. I. The position of the plaques in the original mosaic is unknown; they are shown as they were probably arranged.
- e. See text page 11.
- f. Plan of Palaikastro, from Annual of the British School at Athens, Vol. IX (1902 - 3), Plate VI. An early Cretan town, showing the block as a well-established town form.
- g. Kato Zakros: House of the Late Minoan II period, built to a mature courtyard plan. From Pendlebury: Archaeology of Crete, p.240.
- h.) Eastern Village, Tell el Amarna, from "City of Akhenaton"
- i.)
- j.) by Peet and Woolley, Vol. I.



(a) MAGASA, CRETE

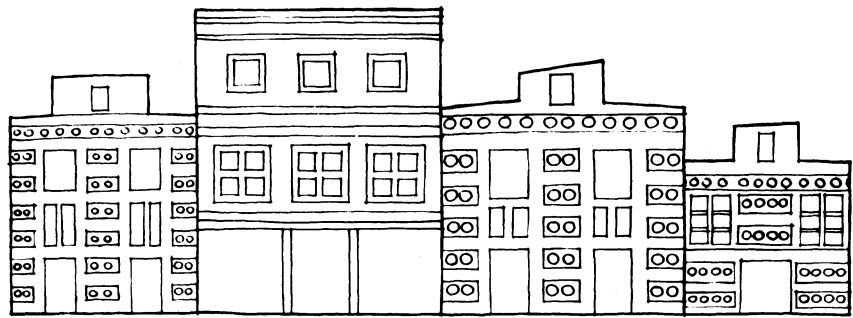


(b) KNOSSOS
Houses 'A' & 'B'
h: hearth

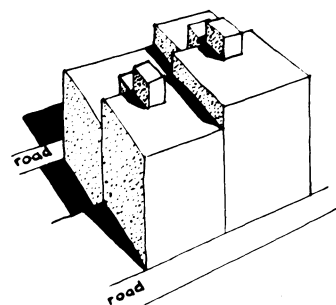


(c) VASILIKI
House 'A'

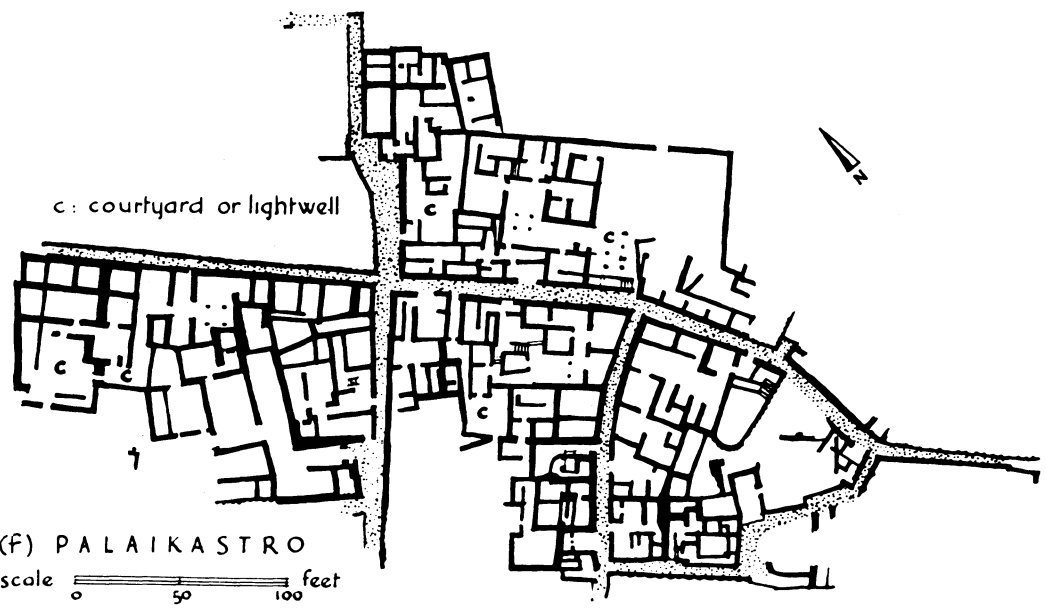
NEOLITHIC HOUSES



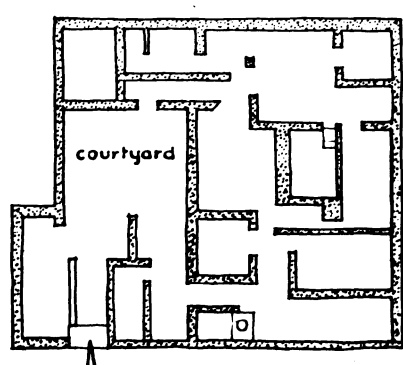
TOWN MOSAIC KNOSSOS
(d) Faience plaques



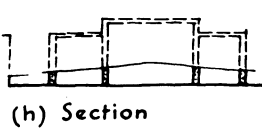
(e) Possible arrangement of houses



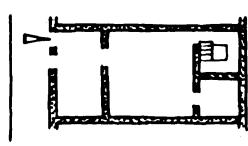
(f) PALAIKASTRO
scale 0 50 100 feet



(g) ZAKROS

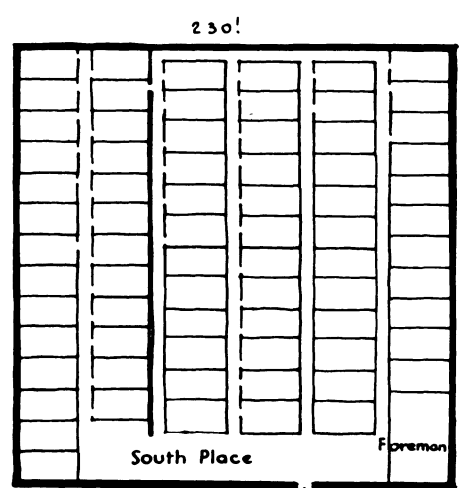


(h) Section



(i) Plan

Typical house



(j) Plan of Eastern Village



Scale of House Plans

TELL EL-AMARNA

THE STREET IN ANCIENT GREECE

When Pausanias made his tour of Greece, and wrote his description of its monuments and things of fame as they existed in the middle of the second century A.D., he mentioned streets only in the capacity of a guide, and never in appraisal. It is true that he did not record any visits to cities that we know as planned cities, but it is significant that such a percipient traveller had nothing to say of the architecture of the streets he passed through. It is a sign, and there are many others, that until Hellenistic times the Greeks did not acknowledge the street as an architectural form. Three things were responsible for this state of affairs: their conception of architecture, their lack of interest in the road, and the peculiar form of their houses.

The Greek Building

Buildings, and particularly temples, were, for the classical Greek, detached objects to be appreciated objectively. The various views by which he memorized the building and comprehended its shape were important only so far as they built up a mental image of it. As Lethaby wrote: "they aimed at perfect form, not at amusement for the eye."¹ The eye was only the servant of the mind. Since the Renaissance, sensuousness has so pervaded our art that it is difficult for us to recapture the Greek way of viewing a building: of viewing it, that is to say, not primarily as a pattern of light and shade, of wall surfaces, of shapes interplaying, but primarily as a sculptured shape. The Greek architect strove to express the form that lay behind the perceptible object: Plato's "absolute and eternal form, wholly real and wholly intelligible"²

¹ Architecture

² Herbert Read: Art and Society, p.215

In painting, sculpture and literature, as well as architecture, this conceptual attitude had its effect. The Greek vase painter represented the phenomena of nature, not by copying their appearance, but by presenting them as human symbols. The Sunrise vase in the British Museum is described as follows by Gardner¹:-

"It shows us the whole morning pageant of nature humanised. On the right appears the sun-god driving a chariot of winged horses, who rise out of the sea. Before him the stars, represented as youths, plunge into the water. To the left is the moon goddess on horseback, setting behind the hills, on one of which is a mountain god in an attitude of surprise. Before the sun hurries Eos, the winged dawn. We have the features of the daybreak; but they are all represented not as facts of nature, but in their influence on gods and men."

When we look at this vase we see the delicacy and rhythm of the figures, congruities in the pattern, balance, and so forth; the Greek would feel the elation and promise of dawn. Landscape painting - the simulation of visual effects - did not appear until the close of the classical period. In the Homeric poems, Ruskin was unable to find "any trace of feeling for what we call the picturesque."²

In sculpture the same propensity - of seeing beyond the visual image to the mental association - was evident. Mahaffy³ considered that the Greek mind was wholly satisfied with landscape presented as sculptured groups of gods, nymphs and so on, each to the observer evoking their appropriate rocks, leaping streams, springs or groves. When he coloured statues, brightening their eyes with gems, or clothing them with inlays, the sculptor did so more as a tribute to the subject or the statue itself than as a means of captivating the observer. In the statues of Olympian Zeus or Athena Parthenos, the full colouring, the ivory flesh and a setting of superimposed orders inside the temple to give height to the figure contributed towards producing "the very god, majestic personifications of the actual presence."⁴

¹ The Lamps of Greek Art, by Percy Gardner

² Modern Painters, Part IV, Chap. XIII

³ Social Life in Greece from Homer to Menander, p.471

⁴ Theodore Fyfe: Hellenistic Architecture, p.20.
See also Seltman: Approach to Greek Art, p.82

The eye was the purveyor of ideas; nothing more.

Two examples show how Greek buildings were affected by this way of thought. If we contrast the Greek theatre with the Roman, we see that the background to the Greek stage - the skene was a separate building with its four walls, roof and colonnade. In the Roman theatre only the scenae frons was visible to the audience - a wall of the same height as the auditorium and continuous with it, decorated in high relief to give a suggestion of solidity. Whereas visual suggestion could bemuse the Roman, only the real thing satisfied the Greek. Again, in the building of stoas, which to our minds are surely the most elastic of buildings, the classical Greeks kept to a solid object of preconceived length. Stoas at Athens, Corinth and Assos were built as individual buildings, quite unrelated to the surrounding pattern of roads.

This conceptual appreciation of architecture demanded a space about every important building¹. By giving each temple its temenos, to each gymnasium, treasury or council house its open space, a sort of aesthetic demesne was provided, in which the observer could move. Each monument thus kept its individuality; a humanist principle dear to the Greek.

The Greek Road

It was unusual in Greece to pave roads. Their overland routes were fairly evenly graded and consequently circuitous. But beyond removing the most obstructive boulders little was done to ease the lot of the donkeys and pack oxen that carried the merchandise². Although trade and commerce figured largely in the life of the city states, we may be sure that it was the sea routes that captured the Greek's imagination. Homer abounds in sea voyages, their hazards and joys, as indeed we should expect in the poetry of an island or maritime people.

In the cities, the roads showed little advance upon the track ways of Gournia. Steps were indispensable upon the

¹ See Hunt: Measured Symmetry in Architecture

² Neuberger: Die Technik des Altertums, p.452

hilly sites, and although the width of the town roads was probably adequate¹, the gradients must have taxed the stoutest heart.

Perhaps the strongest argument that the Greeks thought little of the efficiency of their town transport comes from the Hippodamian road grid itself. Ignoring a number of methods by which easy gradients could have been achieved, the planners chose a plan which meant steep inclines towards the city walls and cross roads every 100 feet or so.

The Greek House

If we can generalise from excavations at Olynthus, the medium sized town house of the fifth and fourth centuries B.C. obtained its light mainly from its courtyard. It seems unlikely that windows, which were never a feature of temples and public buildings figures largely in the house². It is well known that the citizen devoted his surplus money to the public buildings and did not, until Hellenistic times, vaunt it in personal show. Dull house exteriors were the result. Unbaked bricks rendered over with clay were the most common means of construction.

Planned Towns

How the public buildings, the roads and the houses stood in importance in the architect's mind is evident from the planned towns. At first glance the Hippodamian town plan appears as a network of roads, as if it were conceived as an area of buildings with roads cut through it. Closer inspection shows that the reverse is true - it is an ordered arrangement of public buildings and blocks, pre-determined in size, fitted together with little concern for the roads. Wycherley gives the key to the system: "Each block is allowed its full area, and provision is made in the original lay-out for streets of more than usual width where they

¹ In a recent survey of Cambridge, a carriage-way carrying up to 400 motor vehicles and 2,000 cycles an hour was only 15' 6" wide at one point (Town Planning Institute Summer School 1948. Transactions, p.93). This road is one foot less than the roads of Miletus.

² For a full discussion of windows in the Greek house, see Robinson: Excavations of Olynthus, Vol. VIII, p.264. In the reconstructions Robinson shows windows towards the North on the upper floors, rendering the rooms vulnerable to the Etesian winds.

are required: the framework of the plan is not simply two sets of lines at right angles, but something which requires nicer calculation; two sets of strips, which though not necessarily all of the same width form rectangles all the same size.¹ At Olynthus, the block dimensions can be expressed as round numbers of unit Greek feet: the roads cannot².

Neither at Miletus nor at Olynthus, so far as it is excavated, is there a spine or a road whose requirements dictated the size and shape of the buildings. At Miletus the roads in the three main areas did not lead to one another, and between them the agora and the majority of public buildings stood aloof from the road pattern. Where the plots conformed to the grid in one direction, they blocked the roads in the other. The architects, it would appear, were reluctant to allow anything, even their passion for order, to influence their conception of the size and form of the buildings and house blocks. That they should constrict the traditional form of their public buildings to fit into a road grid did not occur to them until Hellenistic times. That a building should be demeaned into a mere facade to contribute to a visual pattern was beyond and probably beneath them.

Thus the Greek town plan was a true descendant of its Aegean forbear: a pattern of buildings, not of roads; not a canal system, but an ordered archipelago. The blank house walls, the individual and sculptural architecture of the public buildings, their island siting, the dominance of the building over the road, all combined to prevent the street from becoming an urban form in planned towns. The street as we know it did of course exist in Greece. Shops lined

¹ How the Greeks Built Cities - Note VII, 5 (quoted from von Gerkan). Robertson's analysis of Priene supports this. (Handbook of Greek and Roman Architecture, p.190(6)). Lavedan, however, writes "Il est certain que, dans tous les cas, les traceurs du plan ont pensé d'abord à la rue et non pas aux îlots". (Histoire de L'Urbanisme I, p.164)

² Robinson: Olynthus VIII, p.29

24. THE ARCHITECTURE OF THE STREET

many of the roads. Through a process we shall observe in Syria, existing roads must have been a strong force in the growth of towns, and thereby caused street development. But in planning new towns, where the architects so to speak held all the cards, we should expect them to have siezed upon the chance for developing those elements they considered most promising - but they discarded the street. It existed only as an accidental form.

Street Life

If we follow a freeman through his day, we can gather something of what his attitude must have been towards the streets of his town.

"He rose about dawn and washed either with the help of a slave, or at one of the public fountains in the streets. Then he took exercise at home or in the gymnasia or paid calls, until it was time for him to go to the agora. This was the time when the market was frequented, when business was done, when the news was discussed, or conversation on more serious subjects was carried on. In bad weather people would congregate in the porticoes that surrounded the agora, and even in the shops; in winter, those were most popular which required a fire, such as the smithies or furnaces of Baths. Boys and young men, who as a rule avoided the agora itself, were also in the habit of loitering about the shops. At midday the agora became deserted. It was usual to take a meal of some sort, though this was not of a formal character, nor was it necessary to go home for it. Probably many people contented themselves with buying some of the food usually hawked about the agora and ate it on the spot, or in some convenient shop. It was about midday probably that places of resort such as the barbers' shops were most frequented and also the lesche which correspond in some ways to a modern cafe, while the afternoon was spent in the gymnasia or the baths. So the time was passed until the hour of sunset brought the time of the evening meal, which was more of a formal and social function, and was taken either at home or at the house of a friend. In most cases this meal was probably a moderate one and the habit of early rising seems to imply an habitually early bedtime. It was probably an unusual thing to pursue any serious employment after the evening meal, but a few studious and literary people worked late at night, and such a practice was probably necessary to those whose whole day was taken up with political and social duties."

The freeman, then, spent his daily life in places and buildings specially suited to his pursuits; apart from his evening meal, his house saw little of him during the day. The agora with its shops attracted the crowds that we now see in the streets. There was little to tempt the casual stroller in those narrow windowless alleys, unlit

at night, without sidewalks and often unpaved, and except for house doors occasionally porticoed, an occasional inn-sign or street name, quite unadorned. In Athens there was sometimes beside the door a little stone pillared shrine, dedicated to Apollo Agyeius, guardian of the roads¹. There were few trees in the city and none in the streets. Women seldom appeared in the streets: when they did, a rigid decorum was enjoined upon them².

For most of the winter, the east-west streets were untouched by the sun, and the knowledge that the houses were flooded with sunshine added to the strong feeling of exclusion. Perhaps the closest equivalent to the Greek domestic street in our age are the corridors in an ocean-going liner - a necessary means of access between the sleeping places, the bathrooms and the public rooms: no place to linger in.

The House and the City

In formulating a detailed town plan, the architect had first to decide upon the size of the house block. From it the entire pattern arose. (At Priene it even decided the size of the Agora). Compactness in the newly founded towns was not an overriding need. Houses had an ample, even luxurious floor area of 3,600 sq. ft. and upwards. Arranged within their three party walls and lit from inside, they did not make use of the road as a reservoir of light, and were larger in consequence. Many more roads than we should consider necessary were provided.

The force of concentration was nothing like so strong as it was in the Middle Ages in Northern Europe. Realizing that the poor soil of Greece could not support increasing populations, the philosophers encouraged abortion, birth control, exposure of newly born children and even homosexuality in an attempt to keep the population stationary³.

¹ Nilsson: History of Religion, p.109

² "For freeborn dame, the street door is the limit by convention fixed." (Menander). A woman who misconducted herself in the street risked a fine of no less than 1,000 drachmae. (Mahaffy: Social Life in Greece, p.339)

³ Glotz: The Greek City, p.26

In the Middle Ages the most important mathematical factor in the size of a town was the length of its perimeter, which had to be walled and manned. In Greece slavery eased this burden. At Miletus provision was made in and about the Agora for future needs, but it was only 300 years later that it was used¹.

By keeping few houses to a block, the architect left each house its individuality. By means of the many roads thus provided, all the citizens had very ready access to one another. Plato in the "Republic" gave the social basis of this need².

"A city then.....takes its rise from this, that none of us happens to be self sufficient, but is indigent of many things.... Thus, then, one person taking in one person for one indigence, and another for another: as they stand in need of many things, they assemble into one habitation many companions and assistants: and to this joint habitation we give the name city..... And they mutually exchange with one another, each judging that, if he either gives or takes in exchange it will be for his advantage."

Reinforcing this theoretical reason for a large number of small blocks was the need to localise fire.

The new towns had house plots of standard sizes³ and quite obviously in selecting them the architect had in mind the urban, close-built type of house with its courtyard. Robinson considers that the pastas type was general, the prostas type at Priene a local variation. As we have seen, the urban house in the Aegean was built about a courtyard, and it is likely that the pastas developed from the sunniest room. We are unable to compare the town house with early farm houses, for none are known, but it seems that the fifth century manor had the same courtyard and blank outer walls⁴. In making the courtyard the centre-piece, the urban Greek enshrined at once his wish for enclosure and his love of space and open air (Figure IIa, b, c and g).

¹ See Wycherley: The Agora of Miletus:

² Book II

³ Olynthus: 300 x 120' Miletus: 175 x 100'
Priene: 160 x 120'

⁴ Rider: The Greek House, p.69, and Wycherley: How the Greeks Built Cities, p.196.

Within the boundaries of the plot, each house at ground level was quite free of its fellows in its internal arrangement, and apparently so long as the courtyard was provided, any plan could be used. But on the first floor the rooms did not extend over the whole area and their arrangement, at least at Olynthus, affected the planning system of the whole town.

Olynthus

The North Hill at Olynthus provides the only evidence so far excavated for the Hellenic house. In general the arrangement of the typical Olynthian house fits the advice of Socrates in Xenophon's *Memorabilia*:

"Is it pleasant," he asked, "to have it cool in summer and warm in winter?" And when they agreed with this also, "Now in houses with a south aspect, the sun's rays penetrate into the porticoes in winter, but in summer the path of the sun is right over our heads and above the roof, so that there is shade. If then this is the best arrangement, we should build the south facing side loftier to get the winter sun and the north facing side lower to keep out cold winds¹."

Similar literary evidence of the need for careful orientation is found in Euripides, Demosthenes and others². There has been some argument about the precise application of these principles³. There can, however, be no doubt that the pastas houses of Olynthus were designed with them in mind. Each house, from whatever direction it was entered, had its pastas on the North. The prostas type at Priene and the pastas-peristyle type at Delos show the same regard for the sun and wind.

In the five blocks of houses between avenues A and B and streets V to IX at Olynthus, the most striking thing in the general variety of plans is how the pastas wall continues through all the blocks (Figure IIId). The pastas itself is sometimes broken, sometimes absent altogether, but in each block this line of wall runs through about

¹ Loeb's translation, quoted by Robinson

² Rider: *The Greek House*, pp. 230-237

³ Robinson: *Excavations at Olynthus*, Vol. XII, p.3, note 7

16 ft. from the north wall. We must suspect at once that it has a structural significance. In the light of other evidence for an upper storey over the northern part of the house, we can see in this regular distance between the pastas and the exterior wall a reasonable maximum for a joist span for the upper floor. The upper walls must have followed those below, so that the upper storey roof must have been of constant span throughout the block. Houses with continuous roofs were mentioned in drama¹, and in his reconstruction Robinson shows the Olynthian houses with a continuous hipped roof, with gable ends². They are without doubt the earliest terrace houses we know in Europe (Figure IIe).

Not all the houses in these five blocks had upper storeys. But those which had were the first to be built³. The double storey terraces gave linear emphasis to the blocks, and probably account for their exceptional proportions - 5 to 2. Many blocks were erected as one building, the foundations being bonded through from house to house⁴. There is, therefore, evidence that the architect of the city had in mind a whole residential area of high and low terraces, ensuring to all a fair share of sunshine in houses designed to enjoy it. Had it been completed, the city (perhaps it would be more accurate to call it a suburb) with its sunless streets, would have been to a pedestrian the dreariest and gloomiest of all time (Figure II f).

Let us pause for a moment to compare it with Tell el Amarna. The comparison illustrates an old principle - that moral and amoral intentions can produce similar results. Parsimony and military control produced the terraces of

¹ Robinson: Ibid, Vol. VIII, p.237, note 14

² It is interesting, in view of modern roofing methods, to consider that a simple hen-coop roof, high at the south, low at the north, would have (a) complied literally with Xenophon's recommendations, (b) avoided rainwater spilling from a height onto roofs about the courtyard, (c) justified the drainage alley in the middle of the blocks, giving an alternative reason - protection from splashes - for the rubble lining at the base of the north wall, and (d) avoided a thrust onto the upper colonnade. The antefixes may have been at the lower level.

³ Olynthus, Vol. VIII, p.34

⁴ Olynthus, Vol. VIII, p.37

the Eastern Village at Amarna. Olynthus was planned to give to each citizen a house of accepted adequacy. The redeeming feature at Olynthus was simply the size of the house, and the variety of plan such an area allowed - 3,600 sq. ft. against 540 sq. ft. at Amarna. We feel that only degraded people could live at Amarna, and if we knew nothing else of the Greeks, we would not attribute Olynthians with imagination. The knowledge that the Greek thought more of the inside of his home than the outside is sufficient to lift Olynthus into a different class.

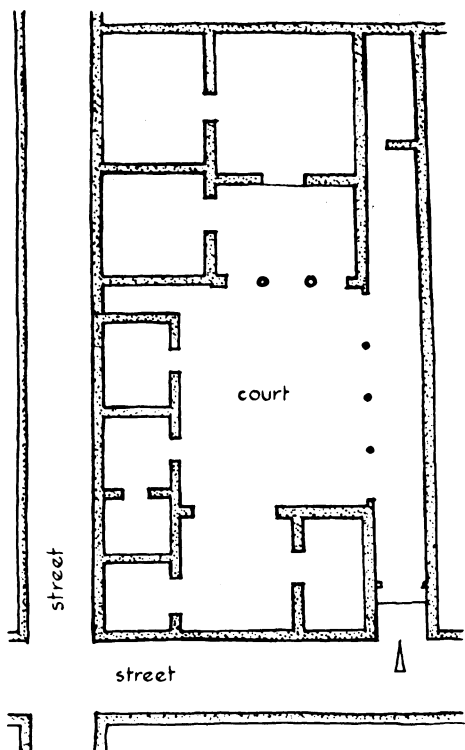
Orientation of the House and the City

The ideal orientation of the houses and of the town itself must have been related. It is difficult to establish whether, in general, the house orientated the town. In a chequerboard plan with square insulae and introverted house plans, no orientation of the city could throw a house more than 45° off its ideal orientation. Von Gorkan's analysis of the orientation of roads is based upon 27 examples, all, with one or two exceptions, Hellenistic¹. It shows a marked preference for aligning major town roads along the cardinal points. (Roads at Heraklia, Nicaea, Paestum, Selinus, Priene, Magnesia, Pergamon lay within 5° of them). He makes reservations for inaccuracies both in modern surveys and by the ancient surveyors, and the question is complicated by the terrain upon which the cities were built. Only at Priene and Delos has a recognisable house-type been found, and Delos was not a planned city. The blocks and roads at Priene were laid exactly on the cardinal points, but this arrangement also fitted the terrain and the coast line. Olynthus was orientated almost due North and South, and in default of further evidence we can assume that the houses were responsible. The flat-topped North hill admirable suited this orientation (its sides running roughly east and west), but there are no

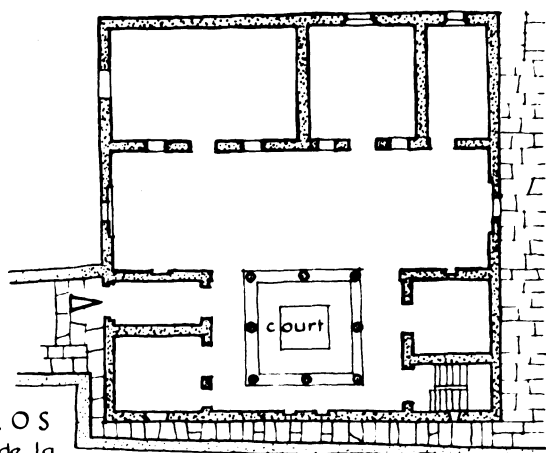
¹ Griechische Städteanlagen, p.79, fig.7

FIGURE II

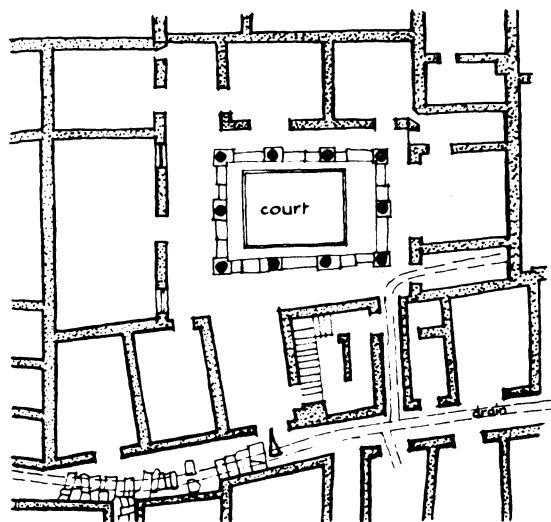
- a. House at Priene (restored) from Robertson: Handbook of Greek and Roman Architecture, p.299. Even where daylight was available at the corners of blocks, the Greeks retained the courtyard plan.
- b. Maison de la Colline, Delos, from Robertson, op cit Plate XXII. The roadway is simply the space left over by the buildings.
- c. House of Dionysus, Delos, from Royal Institute of British Architects, Town Planning Conference Transactions, p.120.
- d. Plan of five blocks at Olynthus from Wycherley: Greek Houses at Olynthus, R.I.B.A. Journal January 1947.
- e. Sketch of building system, Olynthus, from south-east from Robinson: Excavations at Olynthus.
- f. Typical Street (East-West) Olynthus.
- g. Plan of typical house on the North Hill, Olynthus, from Robinson: Excavations at Olynthus, part VIII, Plate 100 also restoration Figure 5.



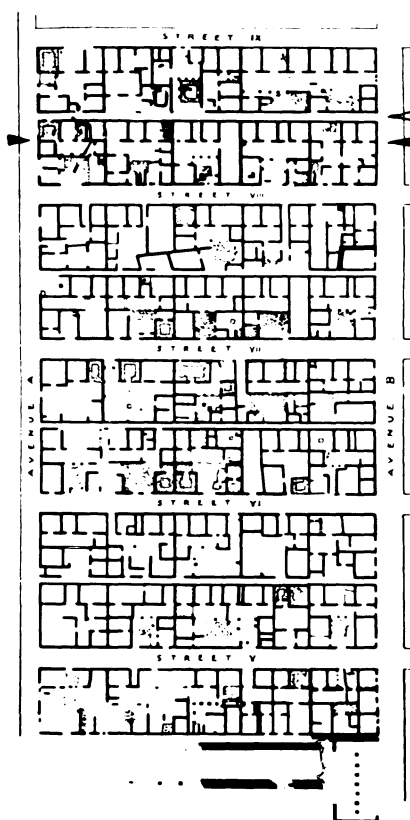
(a) PRIENE



(b) DELOS
Maison de la
Colline

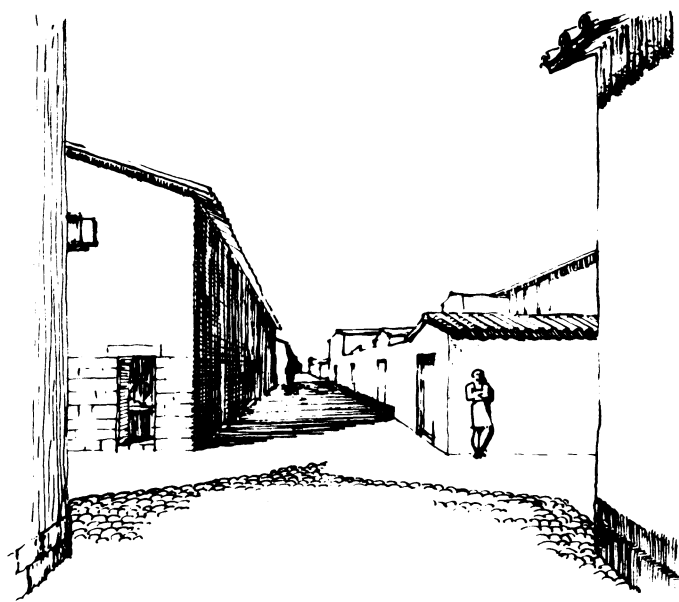


(c) DELOS
House of Dionysus



(e) Plan of five blocks on North Hill

scale 100 50 0 100 200 feet

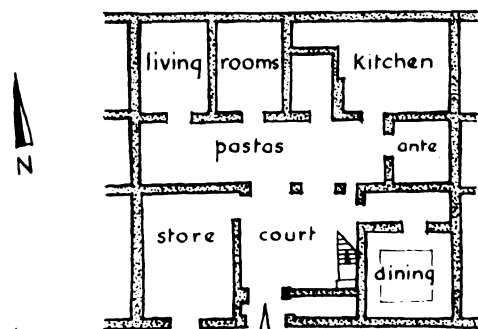


(f) Typical street



(e) Building scheme

Scale of house plans
10 5 0 10 20 30 40 50 feet



(g) Plan of typical house

OLYNTHUS

temples or anything to suggest any other factor that could contend in importance with the house¹

The Street in Unplanned Towns

The pastas house was evolved in the older unplanned cities. We may, if we please, consider the newly planned cities as the fulfilment of general trends in the old over-grown cities. What is more likely, and from our present day experience almost certain, is that in correcting faults of principle in the old cities, the new departed completely from the pattern of the old. There is as much difference between the old South Hill at Olynthus, which had been in continuous occupation since 1,000 B.C., and the new town on the North Hill, as there is between the foreshore scheme for Cape Town, and the Malay quarter of the same city. Large involved blocks, with two-roomed houses, lined the roads; conditions there must have been typical of all old Greek cities. In Athens itself the streets were notoriously difficult - only five persons could walk abreast along the Panathenaic Way. So congested were they that after the Persian wars the city could not be rebuilt to a new plan, but like London after the Great Fire, it arose upon the old. In Aristotle's time, conditions were worse than ever. In the Constitution of Athens he mentions as part of the duties of the astynomoi, to "prevent the construction of buildings encroaching on and balconies overhanging the roads, of overhead conduits (gutters) with an overflow into the road, and of windows opening outward on to the road²."

Services

In later periods of history, drainage and water supply helped towards linear arrangement in towns. It was not so in Greece; utilities for serving the houses had no effect upon their layout. Rainwater simply ran down the hill along the roadways, which, to prevent scouring, were cobbled at their steepest parts. There are few signs of house

¹ The temples at Selinus, which long antedated the new town, were responsible for its orientation.

² Loeb's Translation.

drainage even in Hellenistic towns. The theatre quarter at Delos had street drains serving each house, but the streets were narrow and tortuous¹. Water supply was communal. Even at Priene, whose site was favourable, water was supplied only to one or two houses². The people of Pergamon and Samos, who built their water supply with so much ingenuity, drew their water at public fountains³. Rainwater cisterns and wells were the usual method of supply.

Urban Buildings

A feature of the strong tradition in urban building was the party wall, which was in general use. Many examples of stepping the party wall in plan suggest that an owner building alongside an existing wall had the right to take support from it. The fact that they might remain exposed to an unbuilt site probably accounted for their thickness being the same as the outer walls. stability and resistance to weather were the main considerations. In fitting plans into the irregular sites of the theatre quarter at Delos, the courtyard was sacrificed in the smaller houses: it became an irregular light-well. In the larger houses, where there was a peristylar court, the rooms took second place, and were tapered.

Upper floors were also in general use. In the crowded quarters of Delos there are examples where they covered the whole plot except the courtyard⁴. Delos was a merchants' city: a fine view of the sea and the harbour, escape from the vapours of the roadway at night and dust and rowdiness by day must have made the upper floors preferable. The oriental habit of sleeping upon the roofs may have come with the merchant ships that anchored there. Generally sleeping rooms were placed upon the first floor. From the position of stairways it has been suggested that

¹ Laidlaw: History of Delos, p.239

² Von Gerkan: Griechische Stadteanlagen, p.88

³ For a full description of these pipelines see Neuburger: Die Technik des Altertums, p.421 et seq.

⁴ Robertson: Handbook of Greek and Roman Architecture, p.301

some upper floors were used as flats entered from the street¹. Occasionally upper floors were more luxurious than the lower. This caused the height of the house to increase: the "House of the Trident" reached an overall height of 30 ft.². The ordered houses of the North Hill at Olynthus, in which the upper floor was devoted to either guests or women's apartments, were only 17 ft. high to eaves.

Balconies, from which the sights of the city could be seen, had been common from much earlier times. According to Aristotle, Hippias taxed balconies in Athens towards the close of the Sixth Century, B.C., and later forbade them altogether³.

Shops were simply rooms in the house, with only a door to the street. At Olynthus, the north-south avenues (that is, the sunnier streets) held most of them, and street corners were the commonest position. Generally, the shopping centre was of course in the Agora.

Conclusions

The picture that archaeology and literature give us of the Greek street is very sketchy. Although at Olynthus and early Miletus the detail is clear, we should give much to know how representative it is of the hundreds of other cities that form the whole scene. In attempting a summary it is easy to overlook this - that we may be generalising from forms that were experimental, local or ephemeral.

"On the shore where Time casts up its stray wreckage we gather corks and broken planks, whence much may be argued and more guessed; but what the great ship was that has gone down into the deep, that we shall never see⁴."

There is enough evidence, however, to show that, even in the formalised pattern of the planned towns, the architectural character of the street never became more than that of its Aegean ancestor, whose shape was negative, the residuum of space between the blocks of buildings.

¹ Robertson: Greek and Roman Architecture, p.302

² Laidlaw: History of Delos, p.242

³ Themistocles also prohibited balconies in the Fifth Century (Robinson: op cit XII, p.399, No.71)

⁴ G.M. Trevelyan: The Present Position of History.

34 THE ARCHITECTURE OF THE STREET

Exclusion was the keynote - the maze of crossroads, the locked door, the blank wall, all contributed.

The street could never be seen as a positive shape. Of the three responsible factors mentioned at the beginning of the chapter, the house was the most effectual. Its sunny courtyard, born and nurtured in the tightly built blocks of earlier towns, was the strongest single factor in the layout of the city.

Common building materials and the repetitive pattern of blocks, which could have given a basis for architectural treatment, were wasted, because the road they enclosed was of no consequence compared to the buildings. What happened when this precedence was reversed we shall study in the next chapter.

III

THE HELLENISTIC STREET

In order to illustrate characteristics of the Greek street, I have, when it seemed profitable in the interests of clearness, referred to the cities of Priene, Miletus and Delos. The Priene we know from excavations is that of the late Fourth Century B.C., when Miletus also had its greatest expansion. Delos grew mainly in the Third and Second Centuries. From a chronological point of view, then, there is no justification for mentioning these cities in any but a Hellenistic context, but in essence their art carried on the classical tradition. The growth of towns and their special features is a capricious process. Climate, local abilities, the materials at hand for building, the whims of prosperity and the power of philosophy - these factors make differences between towns, but they seldom act in unison, and they seldom act continuously. An analysis by dates is all but impossible.

Particularly is this difficulty found in writing an account of Hellenistic, Graeco-Roman and Roman town architecture. In the Roman colonnaded streets of Palmyra we can see a new movement in full flood. Although in Etruria and the Orient, and in Greece itself, some of its tributaries are clearly evident, their influence, spread over some three or four centuries, is obscure. In attempting to trace it, we are armed with little in the way of concrete evidence, particularly of the period of greatest development. The problem is like the interpolation of a curve, only the beginning and end of which are known.

I propose to trace this new movement from its source in the Early East to Roman Syria. If, by doing so, historical order is sacrificed - for we shall have to retrace our steps when the Roman street is described - and Rome is thereby robbed of some of her share - I hope that there

will be a gain in the continuity of this extremely important period in street architecture. For the title of the chapter I have taken the word "Hellenistic" in its geographical sense, indicating the architecture of the Eastern Mediterranean¹.

Artistic Traditions of Greece and the East

The electrum coins of Miletus bore a lion looking backwards over its shoulder; above it was a star. It was an excellent symbol of the role that the Ionian city-states, and Miletus in particular, played in the life of Greece. Long before the Macedonian conquests, in the Seventh Century, a strong mercantile link had been forged between the cities of the East and those of Asia Minor, and the very appearance of coinage there at that time was a direct result of it. Westwards and southwards from Miletus the ship was the instrument of trade; eastwards and northwards it was the caravan. Milesian explorers founded colonies up to the shores of the Black Sea as well as upon the Nile. The caravan trade of Sumer and Babylon reached Ionia, giving it a connection over direct trade routes, protected and governed by a strong legal code, with the sea mouths of the Tigris and Euphrates 1,200 miles away. Such ports as Miletus became entrepôts between east and west, and thus, in Ionia, were mingled the artistic traditions of the two civilizations.

In many respects they were directly opposed. Classical humanism saw the god embodying divine qualities in human form: divinity in the east was suggested by men with animal additions and symbols, such as Isis and Osiris, the winged human-headed lions of Nimroud, and the ubiquitous sphinx. Individual man in Greece was always accorded his personality. In reliefs of battles and processions the sculptor attempted to make every man distinct. Compared with them the identical archers in the frieze of the Hall of Darius at Susa, all in step, have an anonymity that makes us shudder.

¹ See Fyfe: Hellenistic Architecture, p.2

The chief decorative motif in the Palace of Persepolis is the procession, either of the king's army or of subjects come to pay tribute. Mankind in the East was seen as a file of soldiers.

In Eastern Architecture, ornament was applied for its own sake. The pleasures of the eye were well known. Even in the classical period this tinge could be seen in Ionian art, in the difference between the Doric and Ionic capital. The Doric capital clearly expressed its structural origins, whereas whatever derivation we accept for the Ionic order, we can only view the finished capital as the solution of a visual problem: how to resolve the vertical lines of the column with the horizontal line of the architrave.

Over many centuries, the traditions of the East crept like a rising tide past Ionia and into the river of Greek culture. With Alexander's conquests, the bore of the river swept far out to sea before the waters mingled. Architectural style in the east became predominantly Greek, but the forms it expressed were Oriental.

The Road in the East

It has been suggested earlier that the Hippodamian road grid, which is the most obvious feature of the Ionian planning system, may have been imported from the East; and that in the East it arose not as a building pattern, but as a road pattern. This theory is strengthened if we consider the age old importance of the road in Western Asia.

The regimes of Sumer, Assyria, Egypt and Persia were military or theocratic, and held their subjects by means of good land communications. The earliest known wheel was excavated at Kish and belonged to a chariot dating from 3,200 B.C. In the Indus valley the wheel was known by 2,500 B.C. A picture of a domesticated camel was carved upon an Egyptian tomb about 3,000 B.C. Mules, asses and horses drew wagons under the first dynasty of Ur. Trade in lapis lazuli from Afghanistan reached Persia and Arabia in

3,000 B.C.¹ The oldest paved road, made to convey limestone to the pyramid of Cheops, was laid at about the same time. Few paved roads outside the cities have been found in Syria, but for the camel, which came to be the chief means of transport, paving was not necessary. For the quick movement of troops, graded tracks were essential, and the general use of the chariot shows that they were common.

From the earliest civilizations, then, the Orient inherited a firm tradition of land transport. Trading posts grew up about the trade routes, taking the road itself as the spine and axis of growth.

Processional Ways

Through the agency of religious and military processions, the approach road had become the architectural significance in Western Asia, but not in Greece. Haverfield stated that the processional way had established itself in Greece in the Fifth Century, B.C.² In the Greek religious procession the freeman took part as a pilgrim. The journeys to mountain tops and between cult-places took routes hallowed by tradition, and had no architectural setting. The procession from Miletus to the temple of Apollo Didymaeus was simply an eleven-mile walk over the hills, it left the city by the Sacred Way and was joined by those who came by sea. Sometimes singers and dancers met the pilgrims³. The pilgrims who undertook the voyage to Delos to worship Apollo or take part in the games that followed the festival took a recognized route from the Sacred Harbour to the temple precincts. This route was later emphasized by two stoas. That on the west, built by Philip I, was arranged to overshadow the older stoa on the east. Thus there was a simple architectural setting of two parallel but not equal buildings.

The procession best known to architects from the frieze of the Parthenon was the annual ascent to the temple

¹ J.W. Gregory: The Story of the Road, p.33

² Ancient Town Planning

³ Kathleen Freeman: Greek City States, p.145

to offer a saffron robe to the goddess. Sacrificial beasts, musicians, warriors, virgins and old men took part. Pausanias mentioned the special building¹ where the procession was marshalled, near the Dipylon gate, from which it started. Fragments of stoas have been found along the route to the Agora, but there was no connected scheme².

Very different from these simple, almost pastoral affairs, were the processions of the East. In essence they were spectacular, though the state of mind of the participant was studied too. The approaches to the Great temple at Karnak, lined with rams, sphinxes and colossal figures (Figure IIIa, b and c) are the acme of many smaller but similar processional ways, some with extension of colonnades outside the temple as a foretaste of the glories within. At Tell el Amarna, the avenue of sphinxes ran for 100 yards from the ceremonial gateway, and then was replaced by an avenue of trees³.

Nebuchadnezzar built a processional street at Babylon from a bridge over the Euphrates around the angle of the Kasr to the Ishtar gate, and thence to the central citadel. He paved it with limestone flags. Lining it were walls faced with brilliantly coloured tiles moulded to represent one hundred and twenty identical lions, sixty on each side of the road⁴.

To pass along these routes in procession must have been a sensational experience. From the bridge, by ramps and stairs, through the shadows of gigantic portals or colossal figures, between obelisks and colonnades, across *diminishing courtyards the way led in increasing mystery to the Presence itself*. Similar majestic settings occurred again under Imperial and Papal Rome, but of this architecture of approach modern civilization has nothing to offer.

Underlying the architectural style and the particular purpose of the route were three constant elements - rhythm, symmetry and visible objectives. In origin, the sphinxes,

¹ The Pompeion

² Wycherley: *How the Greeks Built Cities*, p.117

³ The Pits and Roots Have Been Found (Pendlebury: Tell el Amarna, p.72)

⁴ Bell: *Early Architecture in Western Asia*, p.187

trees, lions or repeated columns represented the Guardians of the Way. Visually, their equal spacing and repetition reflected the rhythm of the procession itself - of the measured tread, the drumbeat, the plodding hooves, the tremors of banners aloft. The moving procession and its fixed setting were in sympathy¹. The correspondence of the two sides of the route caused the eye to concentrate upon the objective. Seen in perspective, the sides acted in the heraldic sense as supporters to the oncoming portal, stairway or temple. Thus the columns of the Great Court at Karnak shut off the view of the temples of Seti II and Rameses III: these two temples were unsymmetrically placed about the route and would thus have distracted attention. We may also notice a negative quality - the absence of symmetry along the direction of the route. Such symmetry would have broken the continuity, and would have been as meaningless, in the progressive scheme, as a "symmetrical" melody or sentence. This palindromic symmetry is entirely absent in the East.

The length of the route was broken into reasonable parts by intermediate objectives in the shape of portals, pairs of obelisks, and sculptured figures. Between these, the route was straight; thus an objective was always in view.

Such then were the traditions of the open road. The processional ways were of course exceptional, but they are evidence of the high regard in which the road was held.

The Town Road in the East

In the towns and cities, the road was of first importance. Under the widespread shelter of the empires, commerce had become the normal way of life. Small villages grew along the roads. Hesychius of Alexandria, though a later writer², gives philological evidence that this was so.

¹ The Panathenaic frieze is seen from outside the Parthenon in such a way that the columns of the peristyle punctuate it. Perhaps the selection of this position was made deliberately to give a sense of rhythm.

² Fifth Century A.D. (Oxford Classical Dictionary).

In the Anatolian village system, a line of houses along a road constituted a village¹. In the cities, the tradition of roadside trading was strong. The shopping centre was in the city street.

The contrast between the Greek and the Asiatic shopping centre is evident in the later development of Doura Europos. This city, a Seleucid royal colony planted at the turn of the Fourth and Third centuries B.C., lay on the direct road between Antioch on the Crontes and Seleucia on the Tigris. When first laid out, it boasted a purely Hellenistic Agora, with a double row of lock-up shops on the north side, and a single row returning to the east and west. The thinner internal walls of these shops, as well as their regular plan, show that they were built at a single stroke: they were completed not later than the middle of the Third Century (Figure IIId). Towards the end of the Second Century permanent buildings began to replace the canvas stalls in the open market. These buildings housed the trader and his family as well as his shop. At the end of the Seleucid and beginning of the Parthian domination, when in other words local traditions superseded those of the Hellenes, the whole Agora was built up, until the open space was reduced to lanes lined with shops, many with living quarters attached (Figure IIIe).

Thus the Hellenistic Agora was replaced by the Eastern bazaar - an expression of concentrated urban economy, consisting of a nexus of streets. The whole process has been elucidated by the excavators². It has many parallels in later history - in the medieval over-building of Roman plans, in encroachment upon market places in the Eighteenth and Nineteenth Centuries³, and even in our own⁴.

¹ Sir Wm. Ramsay: *Asiatic Elements in Greek Civilization*, p. 88

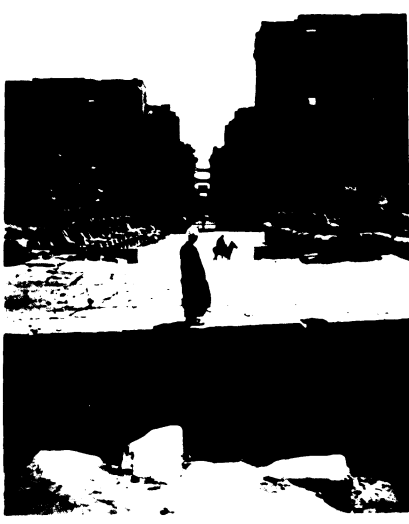
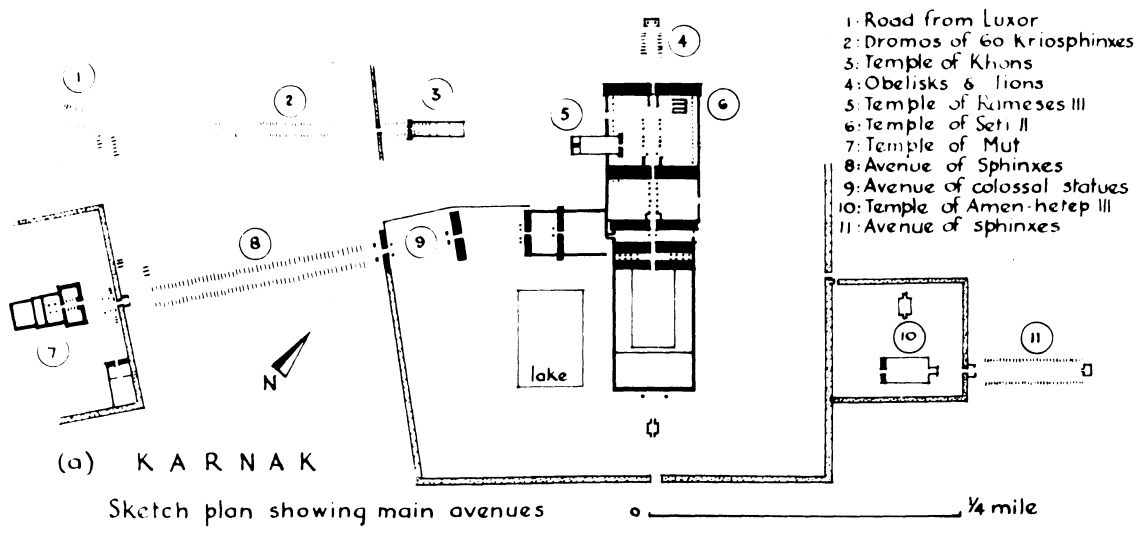
² Excavations at Doura Europos

³ As at Saffron Walden, Essex

⁴ As in the Piazza Reale, Turin.

FIGURE III

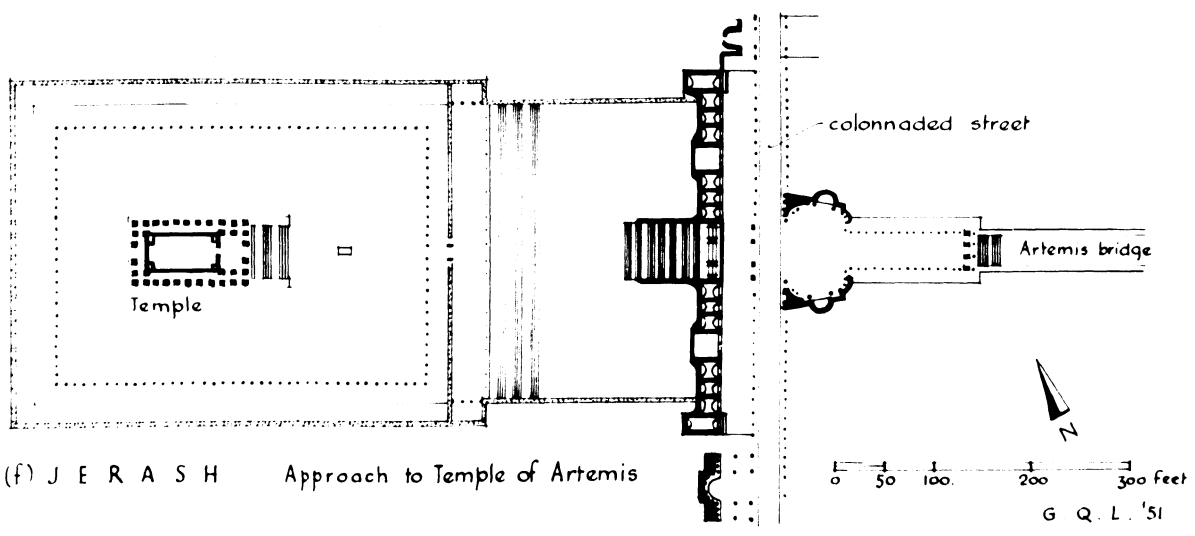
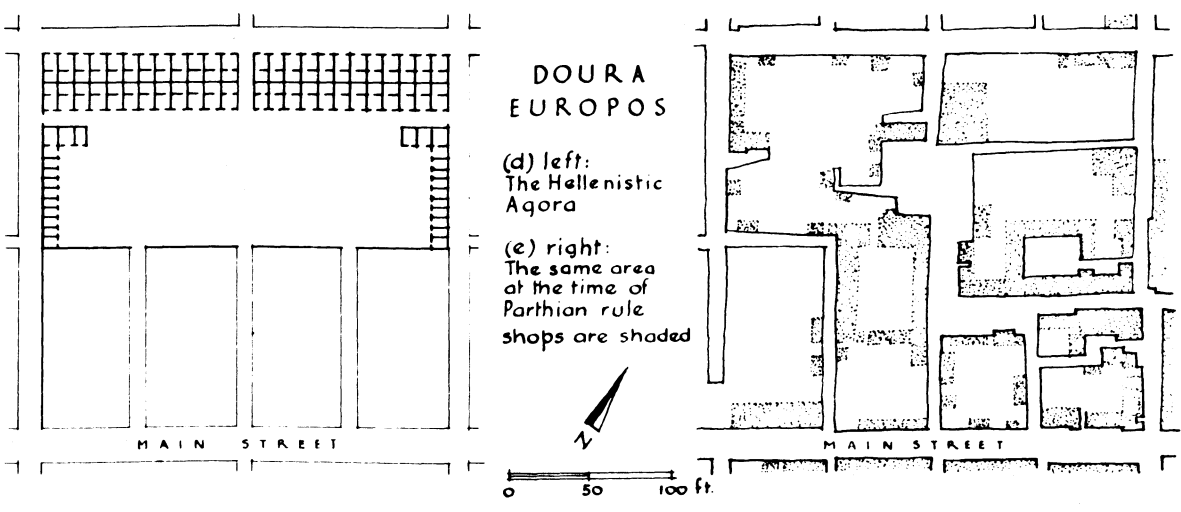
- a. The main avenues of Karnak, from Bell:
Architecture of Ancient Egypt, p.117
- b.) The present state of the Dromos
- c.)
- e.) Doura Europos: Area of the Agora. The plans show
e.) not only the dispersal of shops into streets, but
also gravitation of shops to the main road of the
city. From Excavations at Doura Eorupos by
Rostovtseff and others, Figures 10 and 18.
- f. Jerash. Approach to the Temple of Artemis. From
Albright: The Archaeology of Palestine, p.171.
The Temple is built upon ground considerably
above the river, the shops to the west of the
street being cut into the rock.



(b) Dromos (4 above) looking S.E.



(c) looking N.W. towards the Nile



In the reversion at Doura Europos, the excavators see the unconscious influence of a local tradition in town building, in which the road, not the open space, is the meeting place. In other words, the shopkeepers took their goods to the crowded road, where the public, as distinct from their fellow citizens, were to be found. In the caravan cities of Syria trade and commerce were pre-eminent. Strangers were continually passing through, and every stranger was a potential buyer.

Busy streets are unsuitable for living in, and in Delos and Ionia increasing mercantile prosperity led to simple modifications of the houses to shut off the noises of the thoroughfares. Ground floor windows to the street walls of Delos stood 8' 0" or so above the pavement. It was found desirable to have vestibules to houses¹. In Priene, entrances were placed preferably upon the side streets². Doors opened inwards (it has been mentioned above that windows were made to do so in Athens in the time of Aristotle). Concern for the preservation of the highway is shown in the Second Century B.C. inscription at Pergamon, empowering the *astynomoi* to schedule and subsequently to demolish buildings that were unsafe or impeded traffic³. The claims of the road in the city's life were being realised. In the East, where the road served as a market as well, they were fully established. The roadway was more important than its buildings, whose shape it moulded.

Some centuries after the Macedonian expansion we see some signs that the outside walls of the buildings were becoming the inside walls of the street in the shaping of the streets and approaches, and in the use upon building exteriors of motifs hitherto used inside - of niches, *exedrae*, recesses and statuary. At Jerash the approach to the Temple of Artemis from the East crossed the river by a

¹ Olynthus, Vol. VIII, p.153

² Olynthus, Vol. VIII, p.152

³ Lavedan: Histoire de l'Urbanisme, Chap.IV.

bridge and entered a street-like court lined with columns (Figure IIIf and IVa). Upon leaving this the procession paused in a wider and shorter court before crossing the colonnaded street. This wider court, shaped like an isosceles trapezium, had two exedrae turned away from each other, making them more visible from the colonnaded street. The wings of the court were gathered until they presented an opening equivalent to that enclosed by the main order of the Propylaeum across the street. The architecture of this court is entirely internal: it is a great roofless room. The awkward shape of its outer walls was a hazard that anyone who built against it had to accept. Rostovtseff calls it a "veritable trompe L'oeil - a marvellous achievement in illusionary architecture¹."

The superb architectural qualities of the propylaeum can be appreciated even from photographs of the ruins. Recessed from the general face of the street and lifted up a wide flight of steps, the huge portal, flanked by smaller doors and niches, has a striking grandeur. Through it passes the flight of steps continuing upwards to the Temple. Both this stair and that of the entry to the church of St. Theodore look like stairs inside a palace.

Upon entering the city of Jerash, caravans outspanned in the remarkable pear shaped court, bordered by two disconnected porticoes of Ionic columns and surrounded by shops. This pear shape posed great difficulties to those building outside it: it made in fact the buildings the residual or negative shape.

The well-known Temple of Jupiter at Baalbek (Helio-polis) presented to the road a wide colonnade, over the six middle columns of which was a pediment - a "simulated temple front²." Behind this was the singular hexagonal atrium, 192 ft. across. Each flanking wall was an exedra.

¹ Caravan Cities, p.79. He dates it at A.D.150, p.81

² Robinson: Baalbek-Palmyra, p.12

The main court had three colonnaded sides, the inner walls of which were alternating square and round exedrae. Here again, the atrium and forecourt were open-air rooms: the awkward exterior shape of the plan was not considered. Throughout, the axis of approach to the temple was emphasised by wider inter-columniation. These examples show that the road was being regarded as an internal shape.

Publicity

Among the tombs at Petra there is evidence that even among houses, the road had architectural significance. The facades of the tombs and dwelling houses cut in the rock walls of the valley of the Syk are of a standardized type - of flat astylar facades, fielded from the surrounding rock with a door, and well above, a number of horizontal bands sometimes surmounted with Assyrian crenellations¹. In many of them, although the slope of the rock at the entrances made the doors take different levels, the bands are at the same level, and in the houses they copy, they probably ran through continuously (Figure IVb). They presented in other words a uniform facade, whose continuity was emphasised by horizontal bands. From the blank walls it is apparent that these houses had courtyards. The continuity of their elevations may have arisen from identical plans - of housing carried out by municipal enterprise, or they may be the product of stringent by-laws. They constitute the first sign of a wish to present to the road a considered appearance².

The reign of Alexander coincided with the culmination in Greece of a movement away from organic solidarity and reciprocal service, and towards the Eastern way of life. Individualism had all but superseded the old corporate democracy: it had cosmopolitanism as its corollary.

¹ Murray: Petra

² They bear a family resemblance to the single storeyed houses of Doura Europos.

"Democracy ceased to mean a system of collective control of a common life. It came to mean rather the absence of such control, and the freedom of each individual to lead his own life¹." In consequence the urban art of Greece herself suffered decimation. We read of magnificent town houses built by merchants: of Phocion's house, whose walls were lined with bronze; of portraiture overshadowing everything else in painting; of the private life of a character replacing the social milieu as the subject of comedy.

From wishing to vie with his fellow citizens in the selfless service of the city, each successful merchant tried to make his own house a monument to his solvency. The task of the architect was radically altered. Secular architecture usurped the position of religious architecture. Consciousness of a cosmopolitan public, to be impressed and possibly beguiled by the aspect of buildings, made of the architect something of an illusionist, a perruquier whose work was to dress up buildings for public appearance. Architectural forms hitherto reserved for communal purposes were arrogated by the individual in his house or his tomb.

Perhaps the first signs in Europe of the new publicity are to be seen at Delos. When it became free in 314 B.C. it added the function of a great exchange port to its other activities. In the merchant quarter altars were built on the outside of the houses in the street to the right and left of the front doors². On the walls of the richer houses votive paintings were displayed. Porticoes, sometimes extending along the street wall, marked the entrances. External enrichment of windows with pilaster jambs made its first appearance³. Corporate building, not by the city-state, but as a speculation by private investors, is apparent in the row of merchants' houses on the quay.

¹ Cambridge Ancient History, Chap. XVI

² Laidlaw: History of Delos, p.249. An illustration of these altars is given in Rostovtseff: Social and Economic History of the Hellenistic World, Vol. II, p.792.

³ Fyfe: Hellenistic Architecture, p.83

Identically planned so far as the site would allow, they had shops lining the road with peristyled courts behind.

Emergence of Facade: Scenic Architecture

The Eastern influence of the road and the individualism pervading Greece itself created new problems for the architect. He had to give distinction to secular buildings, and if the buildings were upon a street, he had only one face of it to work upon. Suggestion and even illusion were involved. As we have seen, architecture in the East made a more sensuous appeal than in Greece, but some knowledge of the mechanics of vision was available to the Greek.

Over three centuries before Alexander's campaigns, Kimon of Kleonae had invented foreshortening¹. Agatharcus of Samos in the mid-fifth century introduced perspective into the painting of a stage background for Aeschylus, and thus the idea of a spectator, as an entity separate from but influencing the work of art, was fully recognized². Landscape painting, in which the picture was limited to the field of vision, followed.

The optical knowledge of the Greeks undoubtedly went into the production of facades for street buildings. One way was in the use of the engaged column with entablature -- a way of suggesting a colonnade, but taking up a tithe of the space; it was probably first used in the confines of the temple cella and was eminently suitable for giving distinction to buildings in cramped street conditions, and was equivalent to sculpture in relieve. Miniature orders were used upon doors, windows and niches.

The distinctive treatment of the street face meant that the wholeness of the building had to be set aside. The front of the market building at Miletus makes very much of a point of access in the Agora wall; it has a visual, but not a functional significance³. To the architect the building

¹ Dugas: Greek Pottery

² G.R. Levy: The Greek Discovery of Perspective

³ See Figure VIIIh.

came to present two distinct problems - the arranging of the building within its site and the dressing out of its street wall. As a result facade architecture, or scenic architecture emerged. Fyfe lists the circumstances that fostered scenic architecture as the theatre, the grandiose street, Eastern religion, funerary buildings, markets and libraries, and changes in the temple form¹. If these were its cultural origins, the street was its most likely breeding ground.

Bearing in mind the terms of the problem, it is difficult to detect in the solution any of the meretricious and immoral qualities that were decried by Ruskin and his followers. There was the interior of the building, seen only after it had been entered, and there was the exterior, a unit in the whole street wall. The existence of two distinct problems is seen clearly in the contemporary rock-cut architecture. Only by the hole of entrance are the tomb chambers of Petra connected with their elaborately architectural facades. To consider them as an entity, inside and out, is possible in the mind, but not in the eye; and to the spectator public in the street, only the eye is available.

Colonnaded Streets in Syria

Before discussing the significance of the colonnaded street, let us look briefly at some examples. Bosanquet² stated that it is at Antioch on the Orontes and Alexandria that the classical colonnaded street first appears. Both cities were colonies laid out as a result of Alexander's conquests. From literary evidence we learn that at Antioch, laid out by Seleucis in the Third Century B.C., there was a great street two miles long from east to west, and cross streets, whose covered walks gave many miles of sheltered ways to pedestrians. The central avenue was open to the sky: the side avenues were lined with shops and houses with flat roofs. Antiochus Epiphanes is said to have laid out the main street in 170 B.C.; and according to Josephus, to have

¹ Hellenistic Architecture, p.84

² Greek and Roman Towns.

paved it with marble. Within recent years, the remains of colonnades have been found well below the Roman level¹.

Alexandria, founded 332 B.C., had four great colonnaded streets meeting in a tetrapylon. Its famous Canopic Street, four miles long, had covered footways². Both Antioch and Alexandria had regular and rectangular plans. Apamea also had a broad straight colonnaded street³, as had Seleucia itself⁴. Damascus had two-storeyed shops and offices lining its Via Recta, 1,550 ft. long⁵. Archaeological evidence of the most convincing kind exists at the cities of Jerash and Palmyra. Rostovtseff gives his opinion that Jerash was turned from a local village into a Greek colony by Antiochus II or IV⁶, but that its general lines were laid out in the First Century A.D. In this plan (Figure IVa) the spine is the first thing that strikes us, the straight colonnaded street that runs from the Damascus gate on the north to the pear-shaped market place and so to the Philadelphia gate. Remains of a colonnade are apparent upon the southern-most of the two east-west subsidiary streets. The main street has been cleared for almost its entire length, and was apparently one long colonnade of over 500 columns, some seventy of which are still preserved. Albright dates the colonnades between 180 and 230 A.D.⁷.

From the Damascus gate the street ran about 780 ft. to the first crossroads, marked by a tetrapylon. Nearly in the middle of the length of 1,300 ft. to the next crossroads it crossed the temple approach already referred to. Before and after the propylaeum was a row of uniform shops - "Obviously town property⁸." Next to these were the Nymphaeum and the Temple of Dionysus. Another tetrapylon set in a circus marked the next road junction, and 650 ft. beyond the street entered the market place⁹. The colonnade consisted of

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- 1 Fyfe: Hellenistic Architecture, p.83
 - 2 Lethaby: Architecture, Chap.VII.
 - 3 Haverfield: Ancient Town Planning, Chap. IV
 - 4 Neuberger: Der Technik des Altertums, p.305
 - 5 Anderson and Spiers: Architecture of Greece and Rome
 - 6 Caravan Cities, p.63
 - 7 The Archaeology of Palestine, p.170
 - 8 Rostovtseff: Caravan Cities, p.81
 - 9 The distances given have been scaled from a small plan.

plain shafted Corinthian columns, with a continuous entablature stepped down where the levels called for it.

Robert Wood published his "Ruins of Palmyra", the first scientific record of the ruins, in 1753. Since that time the site has been steadily plundered, and until the France "Service des Antiquités" was established, little attempt to survey them was made. At the moment some excellent photographs have been published and a general plan of the city. Authoritative restorations of the streets are not yet available. The following description is taken from a number of works¹.

Palmyra was built and developed to its full and amazing prosperity astride the caravan road. This road - the spine of the city - was about four thousand feet long and was colonnaded from the propylaea where it entered the city to the termination at the entrance to the Temple of Bel (Figure IVc). Along this length were some 375 columns of rosy-white limestone with a continuous entablature. The colonnade was in four lines - the roadway 37 ft. wide and the side aisles or covered footways 16 ft. wide. The columns were 31 ft. high. The street was in four lengths, the second break being marked by a tetrapylon, the third by a triple arch. Near this arch was an exedra from which citizens could watch the sacred processions which passed along this length to the temple. At the west entrance gate, another colonnaded street ran south to a city gate.

A feature of the street columns (as of those in the Peribolos of the Temple of Bel) was the insertion, above half-way, of a drum carrying a rectangular projecting bracket. Upon each of these stood a statue of the merchant who had subscribed the column. Arches along the colonnade marked the entrance to important buildings and minor roads.

In ruin, the colonnades, improved probably by the disappearance of the statues, escaped plunder because their structural value was limited. They dominate the city.

¹ Rostovtseff: Caravan Cities. Robertson: Handbook Greek and Roman Architecture. Fyfe: Hellenistic Architecture. Neuberger: Die Technik des Altertums. Unwin: T.P. in Practice. J.H. Huxley: A Picture of Palmyra. "Baalbek Palmyra" by Hoyningen-Heune.

As a recent writer has said, "the imagination is violently struck by the contrast of the richness of the dead city with the surrounding waste of desert¹." In the living city their splendour can hardly have been less. The whole conception of the street is a tribute to the caravan trade by which Palmyra lived (Figure IVd). It was the route by which the riches of India and China reached Rome². At its zenith, the lives of all its citizens must have throbbed to the rhythm of the caravan. As the instrument of its prosperity, the arrival of a caravan must have galvanised the city like a ship entering a port. In the shade of the footways, the people gathered to watch it. Preceded by the clatter of the mounted Parthian archers forming the outriders, the swaying laden animals with their riders' shadows leaping from column to column, passed below the lines of raised statues. They brought goods from Egypt and Africa, India, Persia and China - gold and silverwork, spices, precious stones, animals, ivory, sugar cane, silks, scents, asbestos, glass, pearls, corals, carpets and slaves.

The tetrapylon and triple arch, with its two faces inclined to show a fact at right angles to each street, served the same visual purpose as did the pylons at Karnak. When the temple approach was rebuilt as part of the system a new door and propylaea were formed in the peristyle of the temple - not centrally upon the side, to create a final objective upon the line of approach.

In cross section, the street seems to have had its colonnades separate from the buildings (Figure IVe). No doubt the front of the buildings took a line a fixed distance from the outside of columns. The very high aisles, or footways, must have allowed plenty of sunshine and light into the faces of the buildings. Balconies were common.

Fyfe classes the colonnades both of Jerash and Palmyra as Hellenistic. Inscriptional and archaeological evidence of colonnaded streets built under the Romans in other towns

¹ Dr. Julian Huxley: A Picture of Palmyra

² An account of trade in Syria is given in Petra, by M.A. Murray, Chap. V.

of Syria and Asia Minor seems to show conformity to the same type. The Arcadius street at Ephesus, one-third of a mile long, was one of three parallel streets with canopic colonnades of definitely Roman date¹. The roadway was paved in marble² and was 36 ft. wide and the footways were 17 ft. wide, floored in simple mosaic³. At the west end was a gate to the port; at the east an ornamental triple gateway to the place before the theatre. Southwards ran another street to a segmental frontispiece of superimposed colonnades opening to the port. The street was illuminated at night. Amman, Bostra, Olba and Pompeiopolis boasted colonnaded streets⁴. Hadrian, about 132 A.D., laid out Antinoë on the Nile. It was built by the Greeks, and two (possibly three) of its main streets were lined with Doric colonnades⁵. At the two main crossings were sets of four columns 58½ ft. high surmounted with statues. Triumphal arches terminated the main street. The roadway was 52 ft. wide, footways 6½ ft.

Roughly contemporary was the city of Lambaesis, famed for the tetrapylon that covered an area 100 ft. x 77 ft. It presented to each of three streets one wide and two narrow arches, marked by free standing columns on advanced pedestals. The roadway was 40 ft. wide and the covered footways 14 ft. each.

Conclusions

Apart from the pre-Roman foundations of colonnades at Antioch, the classical colonnaded streets appear to have no direct antecedents. The most obvious explanation - that they arose from Greek architects working, at a time of outstanding prosperity, upon the indigenous verandahs of the East - is probably correct so far as it goes, but it does not account for the covered footpath receiving such singular attention: there is a difference in degree as well as in size between the simple shelter from sun and rain and the columns of Palmyra, only 3 ft. or so less in height

¹ Von Gerkan, p.91.

² Anderson and Spiers: Op cit

³ Bosanquet: Op cit

⁴ Robertson: Op cit

⁵ For a plan see Hughes and Lamborn: Towns and Town Planning, p.14

than those of the Parthenon.

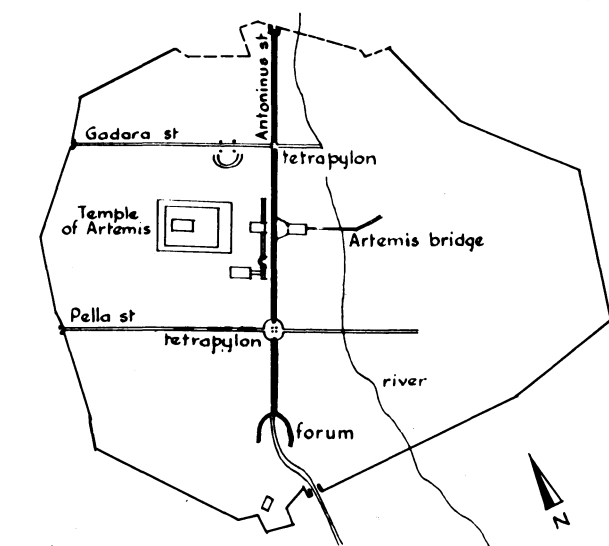
The colonnades were not just uniform facades to buildings voluntarily erected by the owners. In Roman Doura there is an example of the results of this way of building, where porticoes were erected to a large number of shops. They are disjointed, unequal in depth and spacing. Robertson thinks they were a "country copy" of the Palmyra type, and they achieved little in either impressiveness or continuity. Action upon a city-wide, possibly a country-wide scale was necessary to build those of Palmyra, Jerash, Antioch and Ephesus. The accurate column spacing throughout the city alone shows that they were built to an overall plan. In terms of cost, there was probably no other element in the city to approach them. Everything points to the supreme veneration of the traffic route, the caravan route, the road itself. The colonnaded street was an architectural tribute to the road, as were its mosaic and marble pavings and the handsome facades that lined it.

There is, in the architectonic qualities of rhythm, bilateral symmetry, and what I have called visible objectives - present in all these streets - a direct link with the earlier processional ways. This suggests that the forms were borrowed from Eastern religious architecture, and Rostovtseff suspects, upon the evidence of the exedra that looked upon the length of street leading to the Temple of Bel, that one part at least of the street at Palmyra was a sacred dromos¹. Certainly the temple approaches of Jerash and Baalbek have not the same continuity as the streets, but their episodic arrangement has **strong** echoes in the separate lengths of the streets. It is remarkable too that the cross-section of the streets was like a temple turned inside out to produce an hypaethral naos with inward-looking ambulatories. By Roman times, the merchant had advanced in stature until he stood the equal of the priest; the street had been glorified until it was the architectural peer of the temple (Figure IVe and f).

¹Caravan Cities, p.127

FIGURE IV

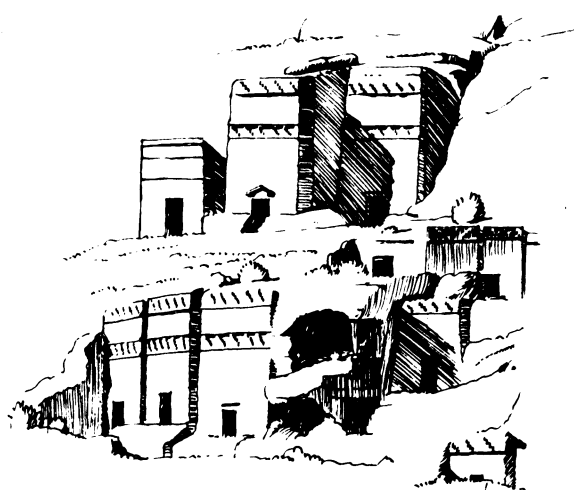
- a. Jerash: Plan. From Rostovtseff: Caravan Cities, p.54.
Not all the buildings excavated are shown.
- b. Petra: Rock-cut tomb facades, from Murray: Petra, plate 17. Petra was a caravan city and the house fronts, though dating from Nabataean times, are of Assyrian origin. (See also Petra, by Sir Alexander Kennedy, p.44 et seq.)
- c. Palmyra: Plan. From Hoyningen Heune: Baalbek-Palmyra.
- d.) Palmyra: Colonnaded street. The relationship of the
e.) colonnades to the adjacent buildings is conjectural.
- f. Temple of Athena Polias, Priene, from Benoit:
Architecture I. Comparison with (e) shows that the street finally approached the highest temples in size and also, in a transposed fashion, resembled their form.



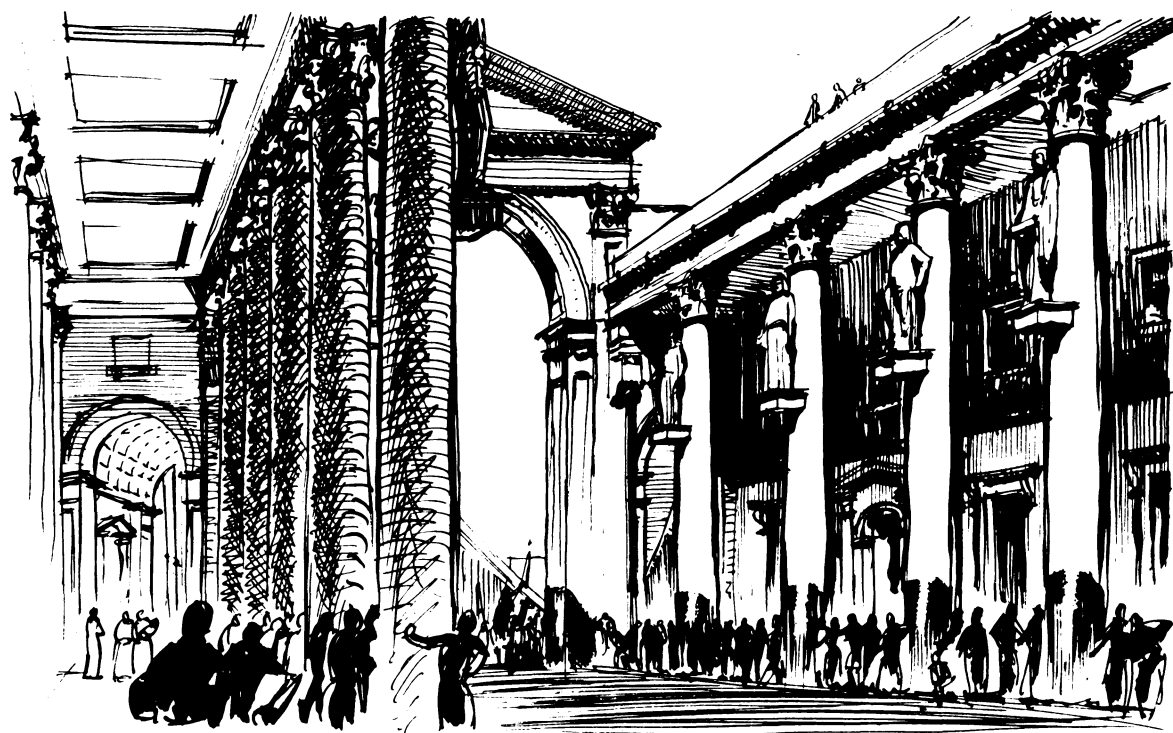
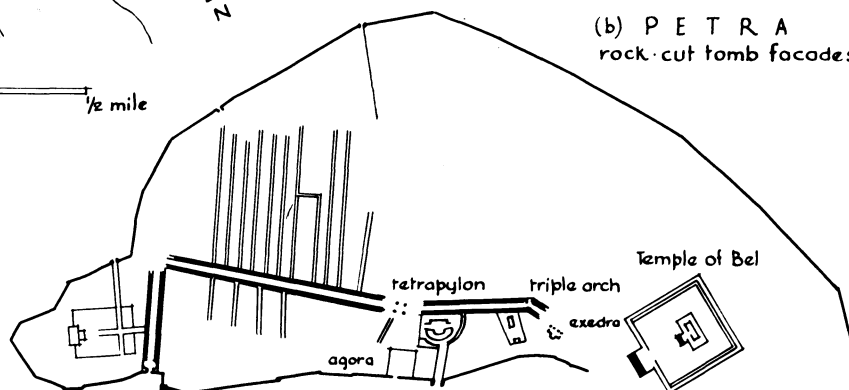
(a) JERASH

100 0 500 1,000 feet $\frac{1}{2}$ mile

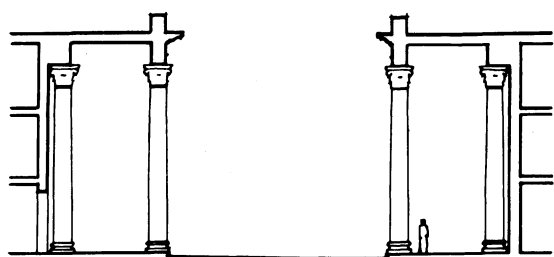
— colonnades

(b) PETRA
rock-cut tomb facades

(c) PALMYRA



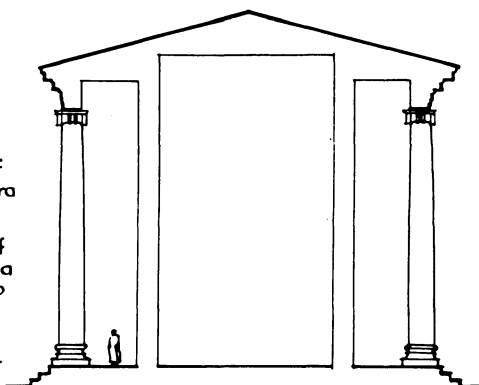
(d) PALMYRA Colonnaded street



(e) left:
Cross section of
street at Palmyra

(f) right:
Cross section of
Temple of Athena
Polias, Priene, to
same scale

0 5 10 20 feet



In the Hellenistic stoa there is an obvious secular prototype. Its use as a cover for shoppers was traditional, and at times it reached large proportions. In the Ionian agora, continuous architecture in the shape of colonnades was used to define and organise exterior space, so making of it an interior shape. It is difficult, however, to explain the colonnaded street as an attenuated agora, just as it is difficult to explain the Ionic agora as an enlarged domestic peristyle¹. It appears more likely that the Hellenistic architect accepted the oriental form and expressed it in his traditional way.

The full plans of Jerash and Palmyra have not yet been published, so that it is not possible to see how the spine of the city affected their growth. At Palmyra a number of closely spaced cross-streets ran northwards from the main street, and between two of these, taking up the whole depth, are houses of the courtyard type. Development by the agency of the road is not apparent.

The Greek street and the Syrian colonnaded street are the two extremes in street architecture. At one extreme the building dominates all: its size, its shape, its orientation decide where the road shall be. At the other extreme the way of the road decides the buildings; they take their shape from it: they line each side of the road to watch it pass, and they dress up for the occasion. In every subsequent period these two attitudes can be seen, but never since to such perfection.

¹ Dr. Rex Wartienssen pointed out the close correspondence between the colonnaded agora within the city and the peristyle within the house as an arrangement of building elements in space (The Hellenistic House).

that no modern town could afford - the damage if a block burnt out would have increased if the number of roads had been reduced.

The chequerboard town of the Romans, in its regulation of both roads and buildings, reflects the strong disciplinary bias in the Roman character. Compared with the Hellenistic cities of Ionia, it lacked balance, sensibility and taste: it displayed orderliness rather than order. But its small size redeemed it from many of those aesthetic faults that we debit to the same plan today.

There is very little evidence to show how the early inhabitants of Italy evolved it. Childe¹ sees in the Danubian cultures of Aichbühl and Michelsburg, where huts were roughly aligned, remote predecessors of the Bronze Age people who built the terramare. During the Bronze Age the town near Marzabotto was built. It was one of the earliest Etruscan towns, and it showed similar grouping to the terramare. The Etruscans themselves were of Anatolian stock², and they may have brought the chequerboard plan from the East. Stanislawski, in pursuit of his general thesis, supports this view³.

There is an undeniable relationship between the plan of the typical colonia and the plan of the castra stativa, or fixed permanent camp. Both had a reticulated plan about two main crossed roads. Many coloniae actually grew from military camps⁴, but if a reading of Polybius⁵ is correct, the town used the system first.

The plans embodied two features of great importance to street architecture: the central crossroads and the terminal building. Emphasis upon two main crossed streets between gates, which is a feature of Silchester and Aosta, suggests that communication was uppermost in the mind of the surveyor, as if passage through the town were an important consideration.

¹ Dawn of European Civilization, pp.255 and 269. Danube in Prehistory, p.180.

² Rostovtseff: History of the Ancient World II, p.8

³ Origin and Spread of the Grid Pattern Town

⁴ For example, Ostia, Spalatro, Lambaesis

⁵ VI, 27-22

It also shows that planning about two axes was fully established. Many of the coloniae were virtually fortified crossroads, and in this way the crossroads may have given its form to the town and been embodied in the planning system. In the East a tetrapylon or a quadrifrontal arch gave a central focus, but the crossroad town was always in essence a roadside town, an incident upon the journey. From the entrance gate the exit gate was visible, and the main streets expressed no destination.

In many towns the forum was placed in an equivalent position to the praetorium of the camp, across the decumanus (Figure Va). In the camp, this position was useful for quick muster and sortie, but in the towns there was no such practical reason for planning with axes and symmetry. The four areas that the roads made were not of equal weight, because public buildings were placed in any quarter regardless of balance. There was no practical significance in the medial position of the road; from a traffic point of view it could have been a block or two to east or west.

There is no evidence for the growth and maturity of a separate town planning art. Such tradition as there existed in town and street lay-out grew outwards from the house and temple: in other words, the colonia plan resulted from the architectural tradition of axis and symmetry applied to blocks of buildings. The street, as we shall see, had no marked development as an urban motif in Italy. It was not in the planned towns that the street building developed, but in unplanned towns such as Ostia, Pompeii, Rome itself, and the canabae or Camp-followers' settlements that grew along roads outside the city.

Influence of the Road

When the emperor Caligula had boats decked with earth and moored together so that he could ride his horse across the bay of Baiae, his preposterous act must have struck a chord in many a Roman heart, as evidence of the same urge that moved engineers throughout the Empire to build roads over the most difficult country, roads that bridged ravines

and swollen rivers, that crossed mountain and marsh. The Roman road was a superb achievement: it was the greatest single agency in forming and holding the Empire, and as we should expect, it influenced the pattern of town building.

We must remember that communication and not transport was its first purpose. Magnificent as were the feats of transport - the commerce in statues and marble from Greece and metals from Spain and north-western Europe, the shipping and hauling to Rome of 210-ton porphyry columns from the Imperial quarries near the Red Sea¹, the feats of communication surpassed them. The average speed of couriers from provincial governors to Rome was 50 miles a day². A messenger taking the news of Nero's death to Spain covered 332 miles along a Spanish road in 36 hours³. Tiberius once travelled through Rhaetia and Germany to Lyons to see his dying brother, covering 200 miles in one day⁴. High speeds, such as these random instances, were possible because the posting system, with a change of mounts every few miles, was given the highest priority. Travellers too had every encouragement. Inns were protected by the state. Between families the custom of exchanging hospitality at great distances (the *jus hospitii*) was an honoured institution.

Obviously, transport upon a great scale was needed to keep the larger cities alive; but customs dues prevented commerce in any but luxury articles between the various parts of the Empire. Generally goods produced close at hand were preferred to those brought from a distance⁵. Speed and not volume of traffic dictated the roads⁶.

¹ See article by D. Meredith in *Illustrated London News*, December 16, 1950

² Stevenson: *Legacy of Rome*, p.151

³ Stevenson: *Op cit*, p.152

⁴ J.W. Gregory: *Story of the Road*, p.64

⁵ Stevenson: *Op cit*, p.166

⁶ Pausanias noted, as especially wide, a road in Attica over which two chariots could ride abreast.

In the towns, too, transport was not the first consideration. Town traffic was not in the main wheeled traffic. In our petrol driven age we are apt to forget how small is the power of a horse to pull a cart up a hill. The slopes of Rome were inaccessible to carts, and in the age of Cicero it was men with the aid of mules and donkeys that did the work¹. Indeed in a chequerboard town with rectangular corners to the buildings, four-wheeled carts would have very limited use, for the swivel front was not invented until 16 centuries later². The damage to paving by heavy loads caused Theodosius to limit loading in Byzantium in the fifth century, and it is interesting to learn from his code that the angaria, probably the heaviest horse-drawn cart, was allowed a load of only 1,000 lbs. - say nine bags of cement. The two-wheeled carpenta, which with help could turn a corner in a chequerboard town, was limited to 650 lbs. - say six bags of cement³.

It seems to be accepted by a number of writers that the prohibition of wheeled traffic during the day was general, and not confined to Rome⁴. Lavedan states that it was in operation during the first days of the Republic⁵. We notice it again in the Lex Julia Municipalis, 46 B.C.⁶, and in the Tabula Hera-cleensis, which exempted traffic necessary for public works, state and religious travel, wagons that had entered at night and discharged their load, and the transport of matrons on public holidays⁷.

Riding and driving within the city walls were considered undemocratic, and it has been noticed that in Pompeii only one doorway for carriages inside the city has been discovered⁸.

¹ Warde Fowler: Social Life at Rome in the Age of Cicero, p. 55

² J.A. Godwin: Communication has been Established, p.9

³ Ibid, p.204

⁴ E.g. Neuberger, Haverfield, Marshall

⁵ Histoire de L'Urbanisme I, Chap. V

⁶ Warde Fowler: Op cit, p.244

⁷ Godwin: Op cit, p.214

⁸ Neuberger: Die Technik des Altertums p.311

The Emperor Claudius prohibited travellers to pass through Italian towns except on foot¹. Many streets in Pompeii and at least one in Herculaneum² were blocked to traffic altogether. For those who could afford it, litters were available.

All this points to the pedestrian's right of way in the towns. Juvenal complains in his Third Satire of the rich being carried over the heads of the throng in Rome, while he is squeezed, blocked, bumped with a sedan pole, trodden on, and a pine pole tears his clothes as it is borne along. It is the pedestrian's point of view - he does not enquire whether the city's transport system is working smoothly. He wrote after the Neronian improvements; previously many streets in Rome were too narrow even for litters.

The need for widening the streets of the Republic became urgent in the early days of the Empire. Up to that time roads seldom exceeded 23 feet in width - Pompeii's widest street measured 32 feet from house to house. Under the Empire street widening became a popular public gift³, and when Tacitus in his Annals XV praised narrow streets for their shade, he was probably making a virtue of necessity.

When the new coloniae were laid out, the architects chose a pattern that gave communication a dominant right. They used the straight Roman road. As in our own times, the roads made the plan. At Timgad the roads were actually overdone, the remaining insulae being so small that some important buildings projected into the street, thus causing the constriction that the plan was meant to anticipate.

Crossroads

The country road brought with it into the town two of its characteristics. The original meaning of "vicus" - a row of houses along an open road - was modified to mean a town road with houses on each side, in fact a street formed

¹ Neuberger: *Die Technik des Altertums*, p.312

² Maiuri: *Herculaneum*, p.50

³ An Augustal of Cales, for instance, gave a broad road through the town to the citizens of Tibur. (Dill: *Roman Society from Nero to Marcus Aurelius*, p.226)

by the fronts of flanking blocks¹. The road and houses were referred to as one, a sure sign that they had, for the town dweller, become an entity. The country crossroads, or compita, regarded by all early civilizations as a place fraught with tension and danger², were in Italy held sacred and honoured with an altar. In the town they became the meeting place of the dwellers in the neighbouring vici, with sacella or altars erected to the lares compitales³. From these grew the Collegia compitalica and the January festival of the compitalia⁴. In new planned towns these quadrvia became especially public places, a circumstance that may have led to their adornment with tetrapylons (Figure Vb). In Jerash and Antinoë the centre of the crossroads was left clear, and as a concession to traffic the bases of the columns were placed at an angle across the corners.

The trivia or three-way junction left a dead area of road which increased in size with the acuteness of the angle. By a little widening it became a small open space eminently suitable for a shrine, statue or fountain. There are examples in Ostia and Pompeii - two in the via dei Sepolchri, two in the Via Consolare (Figure Vc). In such a way the Forum Triangolare and even the Forum Romanum itself may have arisen. The frequency with which they occur just inside city gates is remarkable⁵ and suggests one way in which the Piazza del Popolo may have originated.

Architectural Character of the Street

For the pedestrian, the street of the Roman Empire took over a good deal of the character that had, in Greece, been of the Agora. In the Augustan era the citizen passed his lazy outdoor life in the streets as much as in the open spaces

¹ Angiportus meant a lane at the backs of houses, and 'platea' a wider street in a town.

² For instance, the dreadful coincidence that led to Oedipus' tragedy occurred at a place where three roads met. Hecate was worshipped at crossroads, where statues with three faces and bodies, or sometimes four, were set up.

³ Most of the street shrines in Pompeii were dedicated to the lares compitales (Mau: Pompeii, p.233).

⁴ Warde Fowler: Roman Festivals of the Period of the Republic, p.279

⁵ Ostia - Porta Laurentina, Porta Romana;
Pompeii - Porta Vesuvio

of the city. Partly this was owing to the placing of important secular buildings along the streets, and partly to shops spread along the roadsides. Cosmopolitanism always brings crowds to the streets; the Strand, the Champs Elysées, the Koruts in Budapest are full of interest for those who, like Antony, "wander through the streets and note the qualities of people". It was for such idlers as these that the Pompeians wrote on the street walls, making the city, as Maiuri says "one vast archive"¹. Notices of the municipal elections, performances at the amphitheatre, houses and land to let, were brushed in red or black upon the white stucco. With the point of a stylus, poets wrote extempore verses, lovers their invitations and spectators praised their champion of the arena. Paintings of various divinities adorn the outsides of houses. One inscription reads "Otiosio locus hic non est: discede, morator" - No place for loafers here; move along! It is significant that both Vitruvius and Oribasius take the street and not the house as the criterion for the orientation of the town.

In two other ways the characteristics of the road gave a more precise form to the street. In order that the roadways should keep what little width they possessed, a line was laid down beyond which the buildings should not project. This is now referred to as a building line, although it is still in essence a road line. In Pompeii there are many examples of widenings having taken place by this means (Figure Vc). The practical intention was to preserve the road from encroachment: its aesthetic effect was to align the buildings. In this alignment, each building lost some of its individuality, resulting in a continuous wall along each side of the street: the road was given upward, three dimensional expression.

To these two continuous walls was added a third artificial surface: the paved road. The consonance of masonry walls and floor (particularly where a road with polygonal paving passed between buildings faced with opus incertum) created an interior with great architectural possibilities. (See Fig.VIIIa)

¹ Pompeii: p.15

For reasons which will presently become apparent, these possibilities were not developed in Italy. The street was certainly seen as an interior shape. As in Hellenistic streets, it was common to use the exedra, borrowed from the peristyle or atrium of the house, as an external adornment: it was a very common motive for tombs lining a street. The so-called "incrustation" style of interior decoration was often used on the street walls. But such organic appearance of the street as a whole as we find in Pompeii seems to have arisen more from custom enforced by by-laws than from any preconceived plan.

To achieve continuous architectural treatment of buildings along a street, either the whole must be rebuilt at one stroke, autocratically, or more humbly as a piece of new development on virgin ground. In the *coloniae* the conditions were right, but the chequerboard plan, as we have seen, was the wrong pattern for street architecture. For the emperors the fora of Rome held more interest than the streets. In other towns Roman conservatism bridled at the demolition of old and honoured buildings to make new streets. After the fire of 63 A.D. Nero cut a number of wide straight streets through the ruins of Rome. They must have been large in scale, but unfortunately his successors swept away all traces of his improvements.

Acting against the full development of the street as a piece of architecture was the preference of the Romans for enclosed places. The Greek *temenos* - a piece of ground cut off from the rest of the world - was imported as a temple setting. The house peristyle was adjoined to the Etruscan atrium - the family stronghold. The Forum enshrined the same idea of inclusion. Baths, gymnasia and schools were built facing onto peristyles, or like the theatres had a peristyle attached to them. Even the *horrea* or storehouses were built about an open space. The three public baths of Pompeii, built at intervals of centuries, all had a line of shops forming upon three sides of the palaestra a buffer against the streets. Narrow passages between the shops gave entrance to the baths (Figure Vd).

Each peristyle fulfilled the wish to escape the noisy streets, to retire to a quiet place: to form a precinct. Sometimes these cells dominated the plan of the town. In Rome the Vicus Argentarius, entering the Forum Romanum from the north, was lined by a single row of little shops - all that separated the road from the gigantic constructions behind.

As a consequence the street in Italy was neglected. There was, however, one unifying element that had a casual effect in Italy, but was deliberately cultivated in the East and Africa. In continuance of the Hellenistic tradition, the emperors built in Syria colonnaded streets of great magnificence. The splendid colonnades of Timgad, which may have been repeated elsewhere in North Africa¹, seem to have been an importation from Egypt or Syria.

Very few colonnaded streets, however, have survived from Roman Italy. That of Ostia is probably the most complete. From the Forum to the Tiber the Cardo was symmetrically arcaded in brick, domestic in scale (Figure VIIg). In the same town, along the south side of the Decumanus Maximus, was a covered arcade three yards wide and 117 yards long. The Roman additions to Miletus included a long Ionic colonnade with shops on one side of the way between the port and the Agora: its apparent purpose was to mask the sides of the baths and gymnasium. In arrangement it was neither axial nor symmetrical². Apart from these there are no remains of continuously covered footways in Roman Europe.

Disjointed covers to footways were common enough. They seem to have arisen in three ways: firstly, to protect citizens from the weather: secondly, as a means of supporting balconies; and thirdly, to protect goods in shops from damage by the weather. Shelters built for pedestrians were most often upon private land. They extended only along the frontage of each building, recessed under an upper floor.

¹ Dill: Op cit, p.201 points out that there were in the fifth century no fewer than 297 episcopal sees in North Africa. Remains of more than 20 amphitheatres have been traced.

² Wycherley: The Agora of Miletus.

When undertaken by municipal authorities, as in the Cardo at Ostia, they came out to the roadway¹. Cantilevered upper floors and balconies were built in Herculaneum² and Pompeii³, and the disrepute in which balconies were held throughout antiquity may have led to the custom of supporting them from the curb. The footpath surface varies from house to house in Pompeii: boundary stones set in the paving define the frontage⁴. If, as this suggests, it was the duty of the householder to maintain the footpath, a right of support for balconies may have been a compensation. Sockets along the curb in Pompeii took standards to support awnings outside shops. According to Bosanquet⁵ the ancients had parasols but no waterproofs nor umbrellas, so that the awnings were to protect merchandise from the sun. In many instances roofs were bracketed out from the wall face. This gave cover to shoppers where shops existed, but outside private houses it solved an onerous problem for the architect; how to get rid of rainwater from an outward sloping roof. These cantilevered hoods led the rainwater down to discharge over the road gutter.

There is a difference between the purpose of the footway covers in Italy and those in Syria. Meteorologists tell us that the climate of Rome, Syria and North Africa has changed little in historical times⁶. A comparison of present-day sunshine and rainfall shows a substantial difference between Rome and the cities of the East, as follows⁷:-

	Rome	Jerusalem	Baghdad
Average total yearly rainfall, inches	32.7	25.5	7
Rainy days in a year	102	63	27
Average maximum temperatures, degrees	90	98	117

¹ Nero defrayed the cost of porticoes outside private and lodging houses (Dictionnaire des Antiquités under 'Domus'). Julius Caesar did the same - Adams: Outline of Town and City Planning, p.61

² Samnite house: Casa del Tramezzo di Legno.

³ For example, Casa del Balcone Pensile (Mau: Pompeii, p.273)

⁴ Mau: Op cit, p.228

⁵ Greek and Roman Towns (Town Planning Review, Vol.v)

⁶ Brooks: Climate Through the Ages, p.224

⁷ Brooks: Climate. (For comparison, the figures for Kimberley are 16.2 in., 73 days and 101°)

In Italy and Syria the cover had to shelter from both sun and rain, but as these figures show, in the East the sun was the major problem, in Rome it was rain. Speaking of cities whose people, having no colonnades, were kept apart by the weather, Libanius, a fourth century writer, said "How different is Antioch! Where Zeus sends no fierce hail nor prolonged snow nor heavy rain to interrupt our continuous intercourse¹". The covered arcade on the Decumanus at Ostia was on the south or shady side of the street: it was not built as a sun shelter. Now shelters from rain are preferably low to prevent it driving in. Sun covers are preferably high to allow the air to flow freely. In Syria high verandahs served both practical and monumental needs; in Italy they were used only in the fora.

Terminal Buildings

In the colonnaded streets that they built in the East, the Romans continued the Hellenistic use of bilateral symmetry. At Palmyra and Jerash arches, gates and tetrapylons formed the distant objectives of the route, which went through or between them and continued onwards. In Roman Ephesus and Antinoë (Figure Ve) the route was closed, at least to the eye, by a solid building; in both instances the theatre was placed at the end of the main colonnaded street, backed against a hill. These are the first closed street vistas on a monumental scale: with the triumphal arches they constitute the grounds upon which many authorities ascribe to Rome the credit for introducing the street terminal. The idea was quite evidently borrowed from temple approaches. A brief consideration of its origins will show that movement towards the terminal building was an essential part of it.

Just 100 years ago, Herbert Spencer published an essay entitled "The Sources of Architectural Types²." Therein he developed a theory relating buildings to their settings. His main contention - that "all conceptions must be made up of

¹ Adams: *Op cit*, p. 68

² In *The Leader* (reprinted in *Essays, Scientific, Political and Speculative*, 1883, Vol. I)

images or parts of images, received through the senses", led him to ascribe the origin of bilateral symmetry to natural objects - animals, insects, the human body. The earliest artificial forms exhibit the kind of symmetry that we find in these animals, i.e. the front is symmetrical in itself, the two flanks are alike, but there is no symmetry between the front and the back. This characterises many forms of life, the symmetry being about the axis of movement, as it is in all the vertebrates. It was copied in forms connected with motion - ships, sleds, chariots¹. It is also found in the earliest temples and tombs - things themselves not mobile nor automotive, but connected with movement indirectly.

If we accept the mechanist principle that there is a previous experience or image for every new form that man "creates", then these natural objects are certainly the prototypes of symmetrical buildings. But we cannot adopt the same explanation for interior symmetry, because it is very difficult to imagine any natural object or experience that could have suggested a symmetrical interior. (Early man knew better than we do that no animal has an interior symmetrically arranged). The most promising theory is that interior symmetry arose from the internal expression of construction, for it is simply an introversion of the exterior appearance.

Temples and tombs in Egypt and the East usually had some object of veneration set at the end opposite the door. This gave a front and a back to the building - a quality much more noticeable in Etruria than in Greece². It gave to the Roman temple its characteristic portico and steps. The habit of placing temples in a rectangular space, giving emphasis to the front, led to neglect of the sides and back; the sides at first had attached columns, later pilasters and finally were left in plain walling.

¹ The same sort of symmetry in chairs and beds is obviously developed from their close association with the human body.

² "The ideals of axial planning and mechanical symmetry... are implicit in the plan of the Etruscan temple, accessible only from the front, and sacrificing everything to the facade." (Robertson: Handbook of Greek and Roman Architecture, p.194)

Outside the temple, the interior symmetry was projected along the line of approach, which was marked by wider intercolumniation in portico, peribolos and propylaeum¹. The sides of the approach were similar, and the doorway of the temple was the focus. When the propylaeum of the Temple of Bel at Palmyra was rebuilt, a new door was cut in the side of the temple opposite to it. This extraordinary step shows that the builders thought more of axial approach to the doorway than they did of the traditional entrance of the old temple.

The whole system suggests that symmetry - this attribute of the moving animal - had been transferred to the stationary temple, the actual movement being supplied by the devotee approaching along the axis. But if symmetry originally appeared in the outside appearance of single objects, its development as a system of arranging a number of buildings was via the interior. Axial planning, that is to say, is a manner of disposing interiors; a manner of securing ordered approach from one to another. There is no virtue in disposing buildings about an axis unless this approach exists². In laying out the Fora or the Baths of Diocletian and Caracalla, the Roman architect can have had little thought of producing a symmetrical exterior.

Bilateral symmetry, then, implied movement; the axis was the line of approach. Both Rome and the East subscribed to these principles. Even in the house, the Etruscan parts (the fauces, atrium, alae, tablinum) were arranged axially about the door, while the Greek parts (peristyle, triclinium, oecus) were not. The door in fact contributed towards the placing of buildings in the street. From it the building took its axis and its consequent shape - narrow on the street front, and of greater depth. This is sufficiently familiar as to seem axiomatic. Vitruvius, however, thought it worth recording his advice upon placing temples upon the public street³.

¹ See Baalbek above

² An example of planning without approach is the Museum area of South Kensington in London

³ Book IV, Chap.V. All Quotations are from Granger's Translation.

"If the edifices of the gods are about the public thoroughfares, they are to be so arranged that the passers-by can look aside and make their reverence in full view."

That is to say, the altar and door were to face the street. If they did not, the unfortunate effect of the Temple of Apollo at Pompeii would result; the door would be upon a side street, and effective approach would be lost (Figure Vd).

To return, then, to closed street vistas, the symmetrical arcaded streets of Ephesus and Antinoë, with all the paraphernalia of ritual approach, gave the greatest emphasis in the town to the theatres. It was a sign that the architecture had become vulgarised. The temple approach at Jerash was divorced from the street system, and so kept its especial character, a character that is lost if a symmetrical street leading to a terminal building is used in the every-day life of a city, with movement in both directions.

Apart from these examples, there are few instances of closed street vistas. At Ostia the arcaded *Cardo Maximus* led to the back of the temple, off centre. The *Decumanus Inferior* at Herculaneum led to the vestibule of an insula. At Palmyra, the small temple on the axis of the main street at the western end was quite insignificant. On the whole there are slender grounds for giving the credit for development of the closed street vista to Rome. Although she gave to the world the grammar of axial design, her preoccupation with communication on the one hand, and on the other with monumental enclosures, prevented its use in streets.

The Door and the Gate

The practice of carrying a corpse from a house feet foremost originates from the Romans, who did it so that the spirit would forget its way back, and so would not trouble the household¹. A man who returned after a supposed death in a foreign country customarily entered the house by way of the roof, so that any related spirits should not have access to the house via the door. For the house door was a dangerous point, a place of crisis in goings and returnings. Especial spirits

¹ For references to religion see Warde Fowler: *Religious Experience of the Roman People*, p.76 et seq., and *Roman Festivals of the Period of the Republic*, p.286 et seq.

hovered about it, as they did about the gates of the city. There were commonly in Italy three door-spirits: - Forculus, of the door itself; Limentinus, of the threshold; and Cardea, of the hinges. But the original door-spirit was Janus, who combined in his person many of the qualities that the doorway symbolises. He gave his name to the entrance (janua). He was a sungod, connected with the dawn - (there is here a possible link with neolithic orientated doorways). He was the oldest god of all, the beginner of all things. In legend are ascribed to him the beginnings of art and science. He was worshipped at the beginning of the year, the first month after the winter solstice taking his name; at the beginning of the month; at the beginning of the day. He was the first deity to be invoked in prayer.

These superstitions and religious associations of the doorway were reflected in its architectural treatment. It may even be that they caused it. We cannot explain the gigantic size of Roman doors, their porticoes, frontals and enrichment in terms of scale - our conception of scale being derived, comparatively recently, from Roman examples amongst others.

Janus was also connected with the gate of the city, where it was necessary to ensure his good offices at the start of a journey abroad and to defend a weak point in the walls from attack. It is likely that his cult came from the East; both the Old and New Testaments abound in imagery taken from the gate and the door. Janus was pictured upon coins as two-headed - one to watch the coming, the future, and the other the going, the past. At Falerii he was given four heads in a simulacrum set up in the Forum Transitorium. In the Forum Boarium at Rome, the famous quadrifrontal arch embodied the same idea. Thus his image was the formal antecedent of the crossed sign-post and the four-way traffic signal.

It is usual to make an architectural distinction between the arched gateway and the triumphal arch, but their common origins must not be forgotten. The earliest arched gateways of the Etruscans at Perugia, Falerii and Volterra were

essentially holes in the city walls¹. With the expansion of the city the gates, hallowed by many religious observances, were often left standing, as they were at Ostia. They became isolated, no longer related to the defence system, much as those of the Mur d'Octroi at Paris. It is a tribute to Roman conservatism that this prototype was followed long after the triumphal arch had been emancipated as a free-standing building. The fourth century arch of Constantine - one of the last remaining - has, upon the sides, only a medallion and a narrow frieze below the cornice - a reversion from the general type, which had columns attached to front and sides equally. Warde Fowler states categorically: "Triumphal arches of later times developed from an origin which belongs to the region of magic²".

Quadrifrontal arches were common in Syria. At Bosra the main crossroads was covered by a vaulted arch. One at Lambaesis was erected in the second century A.D.³. It is not clear whether these arches were linked to the corner buildings, but the later quadrifrontal arches in Italy and Africa were definitely free-standing. At Tripoli and Leptis Magna two remain of the same period. The arch of Caracalla at Tebessa 214 A.D. consists of a simple crossed archway each opening being flanked by two free-standing columns. These arches had the character of separate shrines.

In the placing of monumental arches, the Romans show that they regarded them as punctuation marks in the road system. They placed them at entrances to Fora - the most common site; at trivia (as at the entrance from the via Sacra to the Forum Romanum); at changes of direction (as at Palmyra); at crossroads. To the devout Roman, passing under their shadow must have meant a religious office⁴. Aesthetically they meant much the same thing - a pause,

¹ For illustrations see Rivoira: Roman Architecture, p.56 et seq

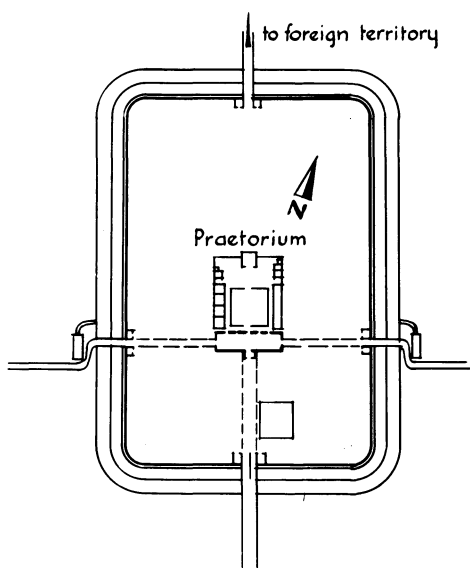
² Religious Experience of the Roman People, p.217

³ Bosanquet: Greek and Roman Towns. Town Planning Review, Vol. V.

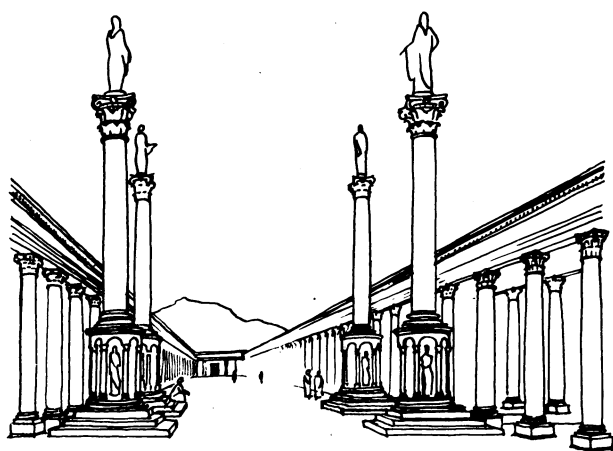
⁴ The origin of a triumphing army passing under an arch was in an act of separation from a profane world. (Warde Fowler).

FIGURE V

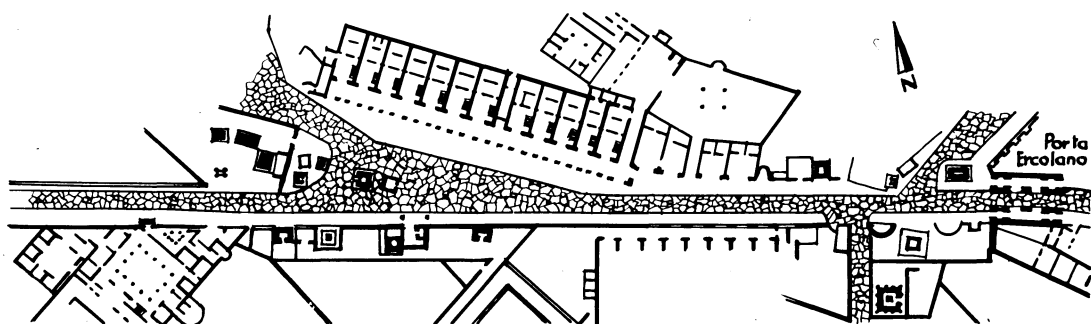
- (a) Plan of a Roman camp, with praetorium axially placed.
From Neuberger: Technical Arts and Sciences, p.301.
- (b) Colonnaded street at Ephesus. From Hegemann:
Facades of Buildings, p.7.
- (c) Part of the Via dei Sepolchri, Pompeii, The gate into
the city is on the right, a typical trivium on the
left. From Maiuri: Pompeii.
- (d) The Forum area Pompeii: The Forum itself was entirely
cut off from traffic. It is interesting to see the
devices used to square the faces of buildings with the
building line (e.g. the Eumachia and Temple of Apollo),
and also how buildings were surrounded by shops.
From Mat: Pompeii, Plan II.
- (e) Plan of Antinoë, showing colonnaded street leading to
the theatre. From Hughes and Lamborn; Towns and
Town Planning, p.14.
- (f) Roman Bridge at Alcantara. The arch was erected to
the honour of Trajan. From Bevan: History of Spanish
Architecture, Plate II.



(a) S A A L B U R G Plan of camp
Scale 0 100 300 500 feet



(b) E P H E S U S Tetrapylon

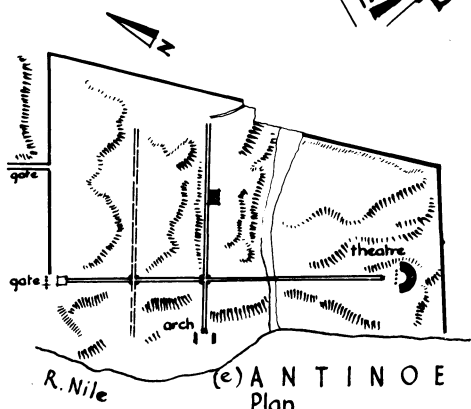
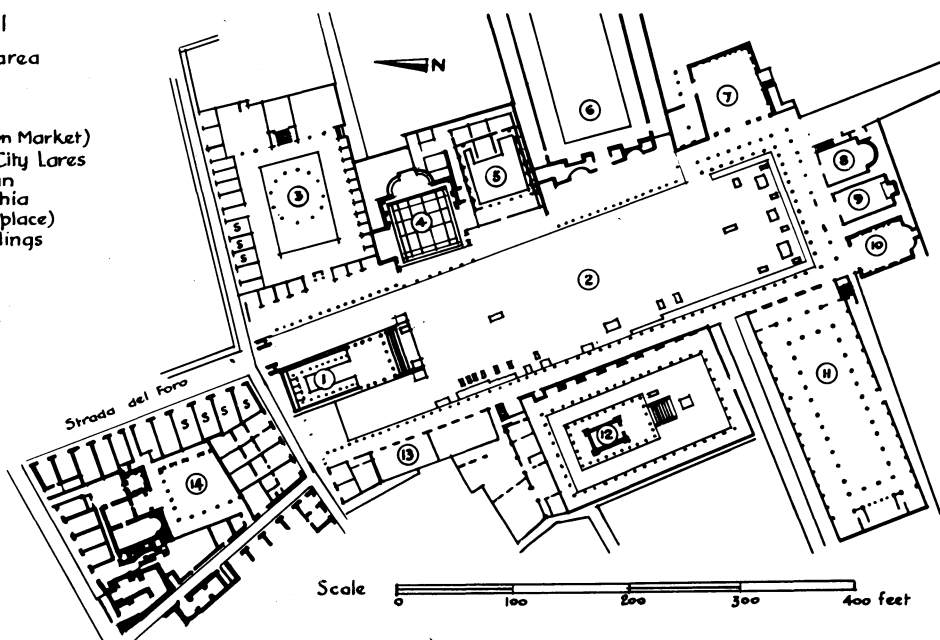


(c) P O M P E I I Portion of Via dei Sepolchri

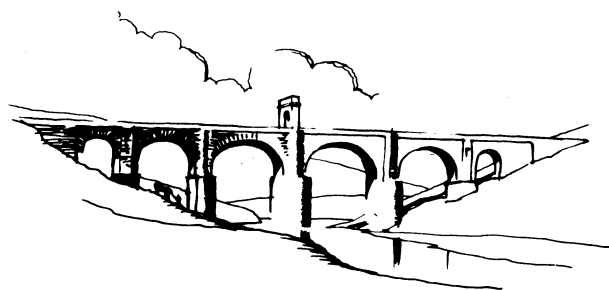
0 100 200 300 feet

(d) P O M P E I I
Plan of Forum area

- 1: Temple of Jupiter
- 2: Forum
- 3: Macellum (Provision Market)
- 4: Sanctuary of the City Lares
- 5: Temple of Vespasian
- 6: Building of Eumachia
- 7: Comitium (Voting place)
- 8-10: Municipal Buildings
- 11: Basilica
- 12: Temple of Apollo
- 13: Market Buildings
- 14: Palaestra of Baths
- 15: Shops



(e) A N T I O N O E
Plan



(f) A L C A N T A R A Roman bridge

a node in the journey¹. In the open country this is even more noticeable, in their association with bridges. That of St. Chamas had a simple arch at each end; that of Alcantara in Portugal was placed with superb drama over the middle pier (Figure Vf).

The arch, echoing the gate and the walls, gave a sense of enclosure to the street. But the road had to pass through it. It is another sign that in their towns the Romans' interest was in communication, a fact that prevented them from developing the terminal building in their streets. The chequerboard plan, the isolated forum and temple acted against the cul-de-sac street which so far as traffic circulation is concerned, is the essence of the closed vista. It was the medieval city, with its buildings stopping roads, that provided the chance for the closed vista to develop.

¹

The relief on the tomb of the Haterii illustrated the Colosseum, the temple and three triumphal arches - sufficient to identify the route taken by the funeral procession (Wickhoff: Roman Art, p.49)

THE ROMAN STREET BUILDING

From the circumstances of its growth, the street building had certain peculiarities of shape, plan and appearance. These are most marked in the house. Although the invaluable work of archaeologists has given a complete picture of the urban house at Pompeii, Herculaneum and Ostia, it is Roman law that gives the strongest hints about its early development.

Praedial Servitudes

About five centuries before Christ, the celebrated twelve tables, which were the germ of Roman law, were distilled from ancient custom¹. Among their provisions were the protection of rights of way and water - necessities of life that urban conditions threatened². Further legal processes to cover individual building rights took the form of praedial servitudes. The urban servitudes originated in Greece, and we may regard them as the answer to problems that beset all early town-dwellers. In essence, they released from the common law of property an owner who could not, without such servitude, make reasonable use of his land; in this sense they were negative. They bound the owner of one plot or building to abstain from certain actions which would prejudice the use of another. They were a burden upon the land rather than the owner, and once established acted in perpetuity unless terminated by a process of the law.

The urban praedial servitudes were³:-

Tigni Immittendi - The right to insert a beam in your neighbour's wall, for the purpose of supporting a floor, for obtaining additional stability, or for covering a walk alongside a wall.

Oneris ferendi - The right to have a wall supported by your neighbour's wall. It imposed upon him the duty of keeping his wall in repair.

¹ Oxford Classical Dictionary

² Buckland: Manual of Roman Private Law, p.155

³ The provisions are taken from Hunter: Roman Law, p.247, et seq; Buckland: Manual of Roman Private Law, pp. 155, 156 and Textbook of Roman Law, p.259.

Ius projiciendi - The right to project, over your neighbour's land, cantilevered balconies and eaves.

Cloacae mittendae - The right to pass a sewer through another's ground.

Ius protegendi - The right to have the raindrip from your roof drop upon your neighbour's land.

Stillicidii vel fluminis recipiendi vel non recipiendi - The right to receive rainwater. This forbids your neighbour from building so high as to interfere with your due reception of it. Or the servitude may be the right not to receive it¹

Ne luminibus officiatur - The right that light is not obstructed. It applied to trees as well as buildings.

Altius non tollendi - The right to prevent your neighbour from building higher.

These servitudes were of the greatest importance in the larger cities, and must have been in general use in Rome.

Vitruvius, in listing the desirable accomplishments of an architect, says

"He must be familiar with the rights or easements which necessarily belong to buildings with party walls, as regards the range of eaves droppings, drains and lighting²."

They are woven into the legal fabric of every land in Western civilization³.

In the first two - tigni immittendi and oneris ferendi - there is the basis of party wall legislation. They encourage the building of party walls. In early towns the citizens could afford neither the labour to build two walls beside each other, nor could they spare the valuable space within the city walls to do so⁴. Upon a site of 30 ft. frontage, additional 18-inch walls inside each boundary would take up 10 per cent of the site. Vitruvius (II, VIII) gives some idea how the legislation worked.

"When arbitrators are taken for party walls, they do not value them at the price at which they were made, but when from accounts they find tenders for them they deduct as price for the passing of each year the 80th part, and so - in that from the remaining sum repayment is made for these walls - they pronounce the opinion that the walls cannot last more than 80 years."

1 This sometimes reads Stillicidii avertendi (Moyle: Imperatoris Iustiniani institutiones, p.216 Footnote 1)

2 Book I, Chap. I

3 Their present application in South Africa is summarised in Hall and Kellaway: Servitudes

4 The twelve tables ordered a space of 2½ ft. clear around each house in an attempt to localise fire, but party walls took the place of the firebreak (Marshall: Companion to Latin Studies, p.223)

It seems from this that when an adjoining owner built, he paid his share of the cost of the party wall he used. Vitruvius continues:-

"Public statutes do not allow of a thickness of more than a foot and a half to be used for (stone) party walls. But other walls (of unburnt brick) are also put up of the same thickness lest the space be too much narrowed."

Concentration remained a strong force throughout the Republic. Haverfield¹ quotes enactments prohibiting the pulling down of an existing building unless as good a one were erected in its place, and after the Neronian fire, prohibiting an owner from withholding a site from anyone who wished to build upon it.

The need for concentration is also reflected in *ius pro-jiciendi* and *cloacae mittendae*. In *ius protegendi* and *stilli-cidii* there is again evidence of cheek-by-jowl building, where roofs abutted walls, and the only way to get rid of rainwater was to discharge on to your neighbour's roof or land².

But more interesting than this is the silent commentary these praedial servitudes give upon the earliest wall, gutter and roof construction. Up to late Republican days unburnt or sundried bricks were the usual walling materials. Although their strength was ample for a one or two storey structure (the Romans, as we have seen, thought them good for eighty years), they were very vulnerable to dampness. Vitruvius stipulates that when they are used they must be coped with burnt brick under the tiles and a deep cornice³. This gives point to *jus protegendi*. Even when they were protected by a stiff stucco rendering on each side, the adobe was given to subsidence. Wattle and daub were sometimes used, and Vitruvius recommends that such walls should have foundations "untouched" by the stones of the pavement."

Such walling materials were sound, then, if given a solid, dry foundation; if they were adequately coped, and if the roofs and gutters were arranged to take rainwater quickly

¹ Ancient Town Planning, Chap. X and Transactions of the R.I.B.A Town Planning Conference, p.124

² I can find no evidence that eaves gutters were in general use even in Imperial times.

³ "Thus when tiles are broken, burnt brick will act as a shield and the cornice will throw the drippings clear." (II, VIII)

away¹. By exercising the rights of *stillicidii avertendi* (where such a servitude existed) and shooting his water onto his neighbour's land, the householder himself could keep his walls dry; but it only increased his neighbour's difficulties. The Roman tile, like that of the Greeks, was water-shedding but not waterproof² (Figure VI b and c). If, then, a building was higher than its neighbours, the neighbour suffered from percolation by water dripping from a height onto his roof and from overflowing valley and verge gutters. Knowledge of the construction of Roman gutters is slight; lead might have been used for box gutters as well as for downpipes. Valley tiles were common in Pompeii (see Figure VIa). But there are no signs that the Roman cared for valley and box gutters more than we do ourselves. Vitruvius, speaking of *displuviate* roofs, says "there is this disadvantage in the upkeep: When the rain-water flows down, the pipes round the walls receive it but do not quickly take the water flowing from the channels; as they receive it, they are clogged with the surplus water. Consequently the joiner's work and the walls are damaged³". We may well imagine from our knowledge of similar faults with lead parapet gutters and brick walls, what trouble this must have caused with adobe walls.

In many a town, the early houseowner had to conserve as much rainwater as he could for drinking and household purposes⁴. With a *displuviate* atrium, the only water he could save was that which fell through the *compluvium*; the rest was shed away. This difficulty probably gave rise to *stillicidii vel fluminis recipiendi*, which conferred the right to receive water from his neighbour's roofs where they were suitably shaped.

¹ This is graphically expressed in an old Devonshire saying: "Giv'un a gude hat and pair of butes an er'll last for ever." (Clough Williams Ellis: *Cottage Building in Cob, Pisé, Chalk and Clay*)

² Thatch and shingles covered the roofs of Rome until the 3rd century, B.C. (Neuberger: *Op cit*, p.277) (Olynthus: The roofs were laid to a pitch of 18 in. and depended on a rapid run-off to avoid leakage) (Robinson: *Olynthus*, Vol. VIII, p.236)

³ VI, iii

⁴ Pompeii, however, had a good water supply.

The invention of the new shape of roof seems to have been made in the early years of the second century B.C.¹. There are very few examples of displuviate atria in Pompeii². Herculaneum has more³, but so far as rainwater was concerned, each house was self-contained. By the use of the compluviate roof, and surrounding each light well and peristyle with a flat funnel, all the difficulties that arose from hipped roofs disappeared (Figure VI g and h). Party walls were protected by a roof ridge or the top of a lean-to roof, and their efficacy as firestops was at a maximum. Box and verge gutters could be avoided. The worst hazard that was left in roof construction was the sloping valley - much less treacherous than a flat box gutter.

Thus emerged the type of house that, up to the Empire, was the main urban form. It was built in a three-sided box, it looked inwards and upwards, was lit from the centre. Its street face was blank except for the door (Figure VI d, e and f). If we contrast this form with that of the free-standing house, we can relate all these features to its position in the midst of its neighbours; its form arose from its surroundings. In short, it had a contiguate form⁴.

There is considerable evidence that the Roman house, centred upon the atrium, was of country origin⁵. We have then the phenomenon of a free-standing house suffering inversion when it was built in the town. To accept the country origin of the urban house enables us to account for its internal symmetry, about which there are the difficulties mentioned above. If we envisage a symmetrical insular house maintaining its symmetry during a change to contiguate form, it enables us to extend Spencer's theory to internal symmetry in this particular instance.

¹ The Oxford Classical Dictionary (under "houses") dates the first impluvium from this time.

² House of M. Lucretius (Maiuri: Pompeii, p.55)

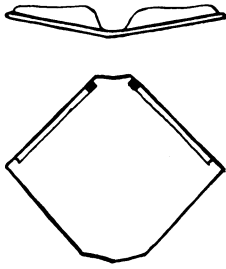
³ One was the Casa dello Scheletro - a small house provided with light wells, another was the Casa dei Cervi, large enough to be unaffected by its neighbours (Maiuri: Herculaneum, pp. 35 and 63)

⁴ There is no word in common use to describe this characteristic. To denote the form of the free-standing building, "insular" is effective enough, and unequivocal.

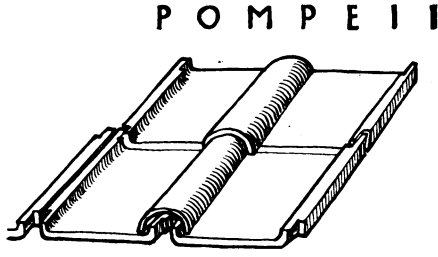
⁵ Robertson: Greek and Roman Architecture, p. 305

FIGURE VI

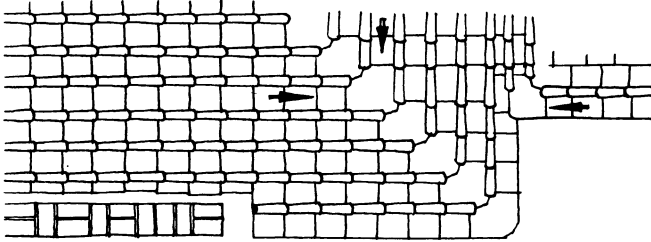
- (a) Roman valley tile, from Neuberger: Technical Arts and Sciences, p.332.
- (b) Roman tiles, from Brickwork in Italy (American Face Brick Association), p.3. Tiles without substantial lap, which must have relied upon a waterproof bedding.
- (c) Portion of a reconstructed roof at Pompeii, from Neuberger, Technical Arts and Sciences, p.332.
- (d) A modest house in two storeys. The form is Oriental and shows light courts used in place of the usual atrium to light the house. From Mau: Pompeii, Its Life and Art, p.341.
- (e) Another house of small dimensions lit by a light well although it is upon a corner site. From Mau: Pompeii, Its Life and Art, p.343.
- (f) The fully developed house of the Roman period. It preserves in stone the characteristics of the earlier sun-dried brick house. From Mau: Pompeii, Its Life and Art, p.322.
- (g) Roofing plans. For the sake of clearness, the party
- (h)
- (i) walls are shown exposed; they were actually covered by the roofs.
- (j) Plan of a house upon a typical street site. Compared with (f) it shows an anamorphosis of the domus plan to suit a shorter purse. From Neuberger: Technical Arts and Sciences, p.326



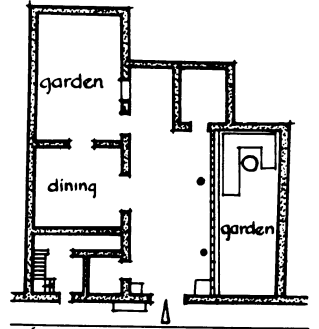
(a) Plan & elevation of valley tile



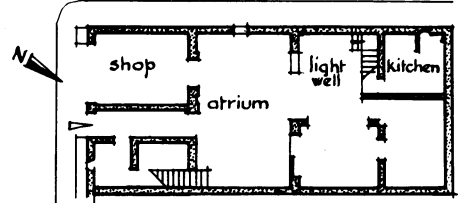
(b) Tiling



(c) Reconstructed roof of the Casa di Sirico

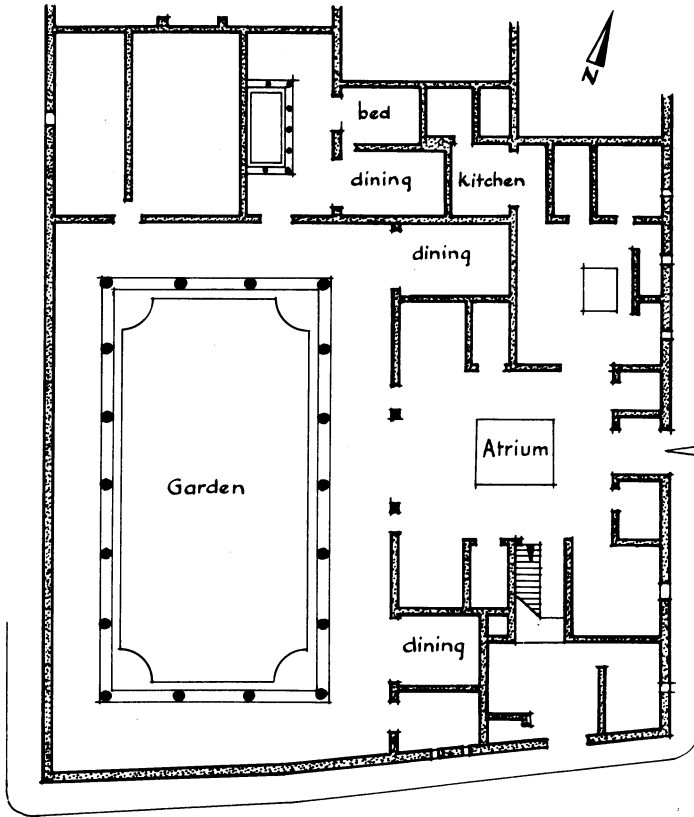


(d) House of Acceplus & Euhodia

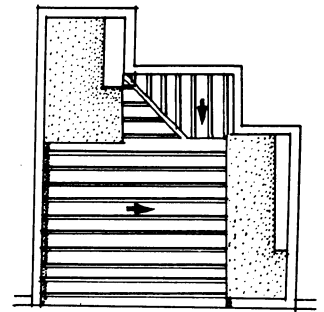


(e) House in Nola Street

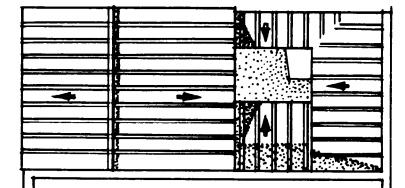
ROOFING TILES



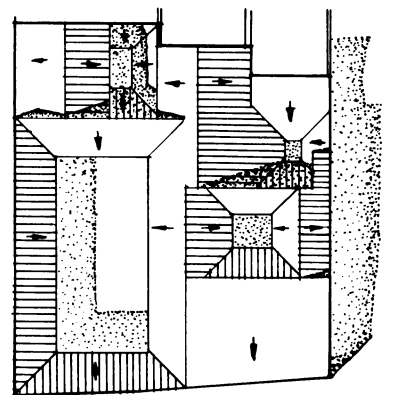
(f) House of the Vettii



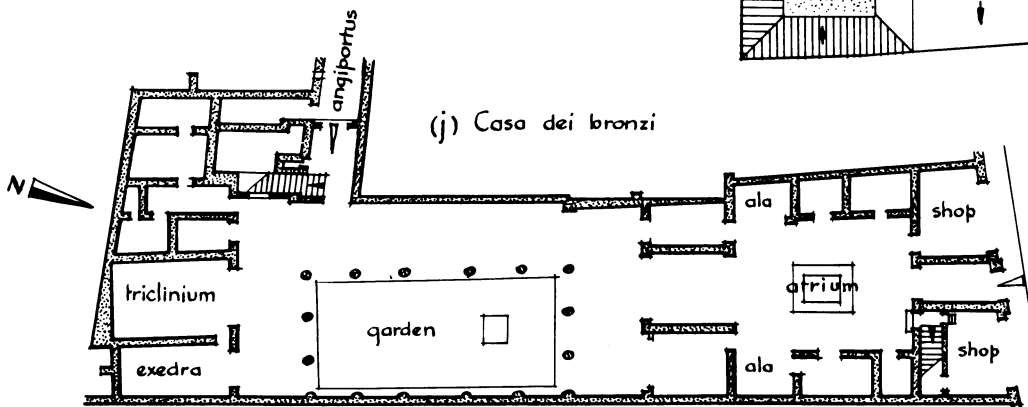
(g) Roof diagram of (d)



(h) Roof diagram of (e)



(i) Roof diagram



(j) Casa dei bronzi

Scale of house plans
10 5 0 10 20 30 40 50 60 70 80 90 100 feet.

During Roman times the first evidence of attention to daylighting appears. Although the Romans did not make great demands in this respect - many rooms in the house were lit only by the doorway - it became impossible as the towns were built up, to secure light and sun. At the end of the Republic the problem was acute. Vitruvius wrote: (VI, vi)

"Care is required that all buildings should be well lighted. This is more easy in farm buildings because there are no party walls to interfere; whereas in cities, the heights of party walls or the narrow streets are in the way and cause lack of light. Therefore, trial should be made as follows:- In the quarter from which light is required, a line should be drawn from the top of the party wall which seems to obstruct, to the point where light should be admitted. If the amount of open sky seems sufficient when we look up from that line, the light will not be obstructed....., the whole must be so controlled that from whatever quarter the sky can be seen, window openings must be left there."

This, like so many of the words of that sagacious Roman, has a very familiar ring; it contains the essence of modern methods of predetermining daylight. Vitruvius wrote at a time when insulae were being built to unprecedented heights, and the problems he had to face were equal to any today. During the Republic there were few windows. Glass was used by rich owners¹, but most buildings had simple shutters, which could only be opened in warm, still, dry weather. When they were closed, the oil lamps had to be lit. Researches into the operation of Roman lamps show that they were an unmitigated nuisance. They smoked and smouldered incessantly. Juvenal said that fumes from lamps brought in by boys blackened busts of Horace and Virgil in the schoolroom². It was in fact the poor artificial light that caused the general habit of early rising and retiring³.

¹ At Pompeii panes 1' x 2' have been preserved. The apodyterium of the Small Baths had bronze frames to take sheets 40" x 28", 1/4" thick (Neuberger). Maiuri mentions a glazed-in loggia in Region IX Insula 12 (Pompeii, p.74). Mau says that narrow panes have occasionally been found set in masonry. (Pompeii, Its Life and Art, p.279). Mica and selenite, but not glass, have been found at Ostia (Calza: Ostia, p.18). Evidence of its use in Northern climates is more abundant (Rushforth: Legacy of Rome).

² Neuberger: Op cit, p.242

³ Warde Fowler: Op cit, p.267

In order to secure better day-lighting, devices such as clear-storey windows were used¹. Of the three public baths at Pompeii the first, built in the second century B.C., was dark and lit by lunettes; the third, which was still building at the time of the eruption, had its main apartments lit by large windows onto the palaestra. They were probably to be glazed, as those of the baths mentioned by Seneca, which had "large windows protected by glass"².

The servitudes of *ne luminibus officiatur* and *altius non tollendi* must, after the evolution of the Roman town house, have fallen into disuse, or been compounded. *Ne prospectui offendantur* was also a luxury that it was impossible to indulge in towns. The Roman law protecting its citizens from darkness has been preserved in England throughout its history, though at one stage at least a mutual cancellation of all rights of light was made³. A similar stage must have been reached in Rome about the time of the first century A.D., when everything had to give way to increasing populations in cities.

Insulae

In Pompeii, upper storeys are primitive and rudimentary. Maiuri is of the opinion that "if the eruption of Vesuvius had taken place a few decades later, Pompeii.....would have offered us the uniform aspect of a typical Imperial city, with houses several storeys high upon a more or less extensive ground plan"⁴. Pre-Roman Pompeii was mainly of one storey. Later it was common to have double storeyed rooms about the atrium, those over the shops being let with the shops, either as additional showrooms or flats⁵.

¹ As in the Tablinum of the Casa dell 'Atrio a Mosaico at Herculaneum. (Maiuri: Herculaneum, p.28). It is conceivable that this explains Vitruvius enigmatic recommendation for displuviate roofs: that they do not interfere with the lights of the triclinium, but create valley gutters (VI, iii)

² Mau: Pompeii: Op cit, p.208

³ Waldram: Methods of Measuring and Predetermining day-light.

⁴ Pompeii, p.14

⁵ Mau: Pompeii: pp. 273, 274

In the block of two-storey shops and flats in the Strada dei Sepolchri (Figure Vc) there is the start of commercial development by larger blocks. Further evidence of expansion is to be seen at Herculaneum, where there are two-storeyed flats in the Casa con due Atrii¹, the double-storeyed atrium of the Samnite house² and an actual insula in the East of the city³. Peristyles were walled in and the domus adapted for letting to a number of families⁴. Cenacula, or upper floor flats, gave to their tenants some of the privacy of the house, and perhaps recommended the idea of multi-storeyed dwellings (Figure VIIId).

The Greek word synoecia shows that tenements were not a Roman invention. From early times tenants were housed in large blocks⁵; in the third century B.C., they were ordered to have water on the premises to fight fires. The buildings were of wood. The ambitus already mentioned of 2½ ft. about each block was an attempt to isolate them, and Nero forbade wood for their construction, stipulating that each block should be surrounded by roads and faced with stone⁶.

At the end of the Republic the insula started to oust the domus as the normal Roman dwelling. Shortly the domus disappeared entirely, to reappear in an Indian summer during the closing years of the Empire. In a census of 357 A.D. one quarter of Rome consisted of 1,790 of the domus type and 46,602 insulae⁷.

Of the transitional period, Vitruvius gives a clear picture⁸; he lived when burnt bricks were making their appearance in Rome.

¹ Maiuri: Herculaneum, p.37

² Maiuri: Ibid, p.42

³ Maiuri: Ibid, p.54

⁴ Maiuri: Ibid, p.16

⁵ Livy (218 B.C.) records an ox having climbed to the third storey of a house (Marshall: Companion to Latin Studies, p.221)

⁶ Dictionnaire des Antiquités: Domus

⁷ Ibid: Insula. The figures are puzzling. They certainly do not refer to buildings, but it is not clear whether they indicate persons or families.

⁸ II, viii

"With the greatness of the city and the unlimited crowding of the citizens, it is necessary to provide very numerous dwellings. Therefore, since a level site could not receive such a multitude to dwell in the city, circumstances themselves have compelled the resort to the raising of buildings. And so by means of stone pillars, walls of burnt brick, party walls of rubble (masonry), towers have been raised, and these being joined together by frequent board floors, produce upper stories with fine views of the city to the utmost advantage. Therefore walls are raised to a great height through various stories and the Roman people has excellent dwellings without hindrance."

The excellence of the buildings was questioned by Juvenal, Martial, Sulla, Catullus and Strabo. From them we have a picture of a city shored up with flimsy props; tiles crash down from the lofty roofs; the buildings themselves creak and are on the point of collapse. From the windows of highly priced garrets, the street is seen dimly as through a mist. One wretch had to climb 200 steps to reach his bedroom. These were the dwellings erected for the unemployable masses of Rome living in the slum districts of the Suburra and Argiletum, whose only pleasure was the circus, who were fed by the state¹, and who knew nothing of home life². Great fortunes fell into the laps of landowners who, sanctioned by the State, ignored all by-laws in building these shacks³. Their methods were worthy of the times. Crassus bought slaves who were architects and builders, to the number of 500. He then bought up houses that were actually on fire, and concluded deals with the terrified owners of the neighbouring properties, and proceeded to rebuild. In this way he came to own a substantial part of the capital⁴.

Yet it was not only the poor who lived thus. The remains of insulae at Ostia, which reflect those of Rome, show a very different sort of building, answering more nearly to Vitruvius' description. The following is a summary of their

¹ Last: *Legacy of Rome*, p.233

² Dill ascribes the tremendous development of the Colleges to a wish for a social life (*Roman Society from Nero to Marcus Aurelius*, p.267)

³ Augustus fixed the maximum height at 68 ft. Trajan reduced it to 58 ft (*Robertson: Op cit*, p.307)

⁴ WardeFowler: *Op cit*, p.3

main characteristics¹. They were solidly built in burnt brick with stone staircases having a high fire resistance. Vaulted ceilings, mosaic floors, and the generous size of the rooms show that it was the upper classes who lived in them. They were four storeys high, each floor repeating that beneath it and consisting of a number of apartments often with separate stairs. When the building was on a street, shops and vestibules took up the ground floor. In the planning, the corridor appeared, giving access to the doors of the apartments or externally, colonnaded, for circulation within each flat (Figure VII a and b). The rooms lost their old distinction: it is no longer possible to tell from the remains what each room was². When built on street sites, light wells and courtyards occur frequently, and gardens were placed behind, reached by *angiporti*. Where a large enough area was available, as in the *Casa Giardini* at Ostia or the *Insula Orientalis* at Herculaneum³, the building was an isolated rectangular block (Figure VII e and f). Windows in the external walls lit the rooms, and a new street sight was exposed to view. Faced with brickwork and with their many windows dominating the facade, they must have been an object of wonder to the visitor (Figure VII c and d). The facades were relieved by enriched doorways and simple string courses following relieving arches over windows. Continuous balconies were substantially made in wood, corbelled in stone or vaulted in brick.

This sort of building shows a revolution in the urban home. Each of the features described was an innovation. Little of the traditional house, with each room distinguished by its height, was left. The *domus* concentrated upon the atrium, shutting off the world; the *insula* looked outwards over the city roofs, or later upon other blocks. This was a welcome

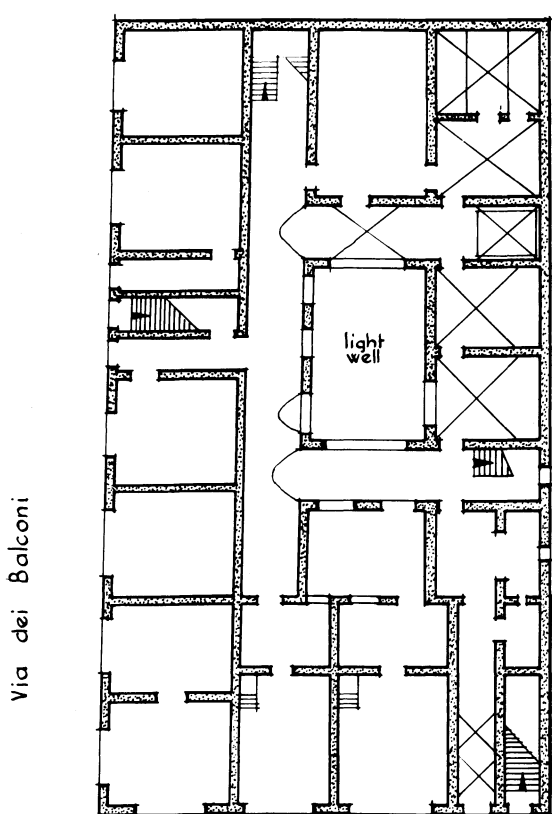
¹ Comprehensive accounts are given in Robertson: *Greek and Roman Architecture*, pp. 307-309, Calza: *Ostia*, pp. 17-20, and Anderson, Spiers and Ashby: *Architecture of Ancient Rome*, p. 159.

² But see remarks against Figure VIIe

³ This *insula* was under excavation in 1945; its plan is not available.

FIGURE VII

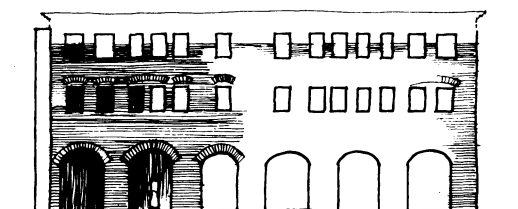
- (a) Plans of Casa di Diana, Ostia. From Calza, Ostia, and
- (b) Rostovtseff: History of the Ancient World, Vol. II, p.246. The room at the north-east corner (ground floor) has been identified as a dining room.
- (c) Facade of an insula in Rome, from Rushforth: Legacy of Rome, p.409.
- (d) Restoration of facade of Casa di Diana, from Anderson, Spiers and Ashby: Architecture of Ancient Rome, PlateXC. The restoration is conjectural above the second floor.
- (e) Plan of two large insulae at Ostia from Calza, Ostia.
- (f) Although the use of the various rooms cannot be identified, there is a noticeable similarity in the arrangement of rooms 3 with the cubicula of the domus (see Figure VI f and j), room 2 being equivalent to the atrium, but facing out to the street. The fauces⁽¹⁾ retain their old character. The plan represents the arrangement of the domus, but extroverted to suit the form of the insula.
- (g) One of the few arcaded Roman streets in Europe from Calza, Ostia. The massive piers of the arcades along the footway remain to a height of 5 ft. 7 in.



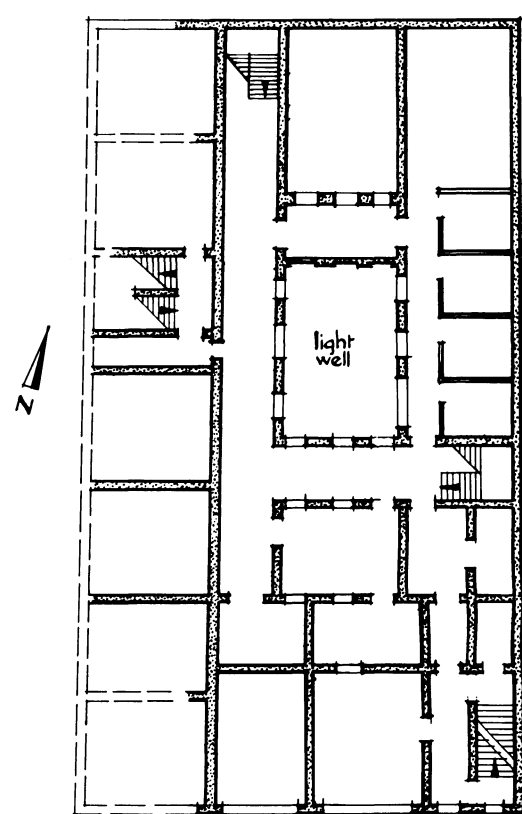
Via di Diana

(a) Plan of ground floor

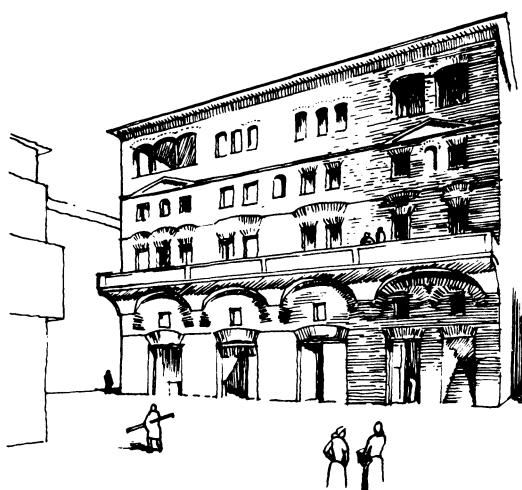
O S T I A
Casa di Diana



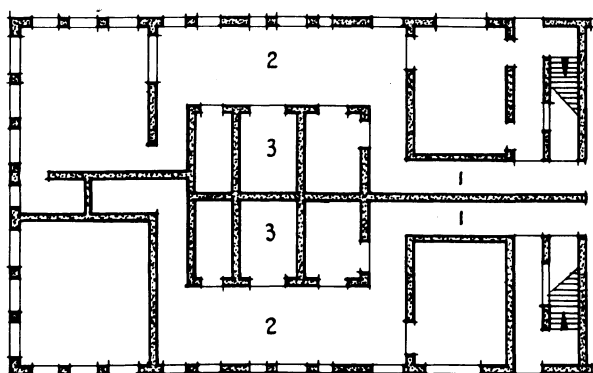
(c) ROME : Facade of house of SS John & Paul



(b) Plan of first floor

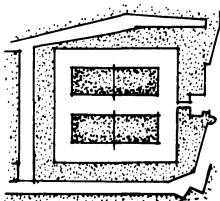


(d) South face, Casa di Diana

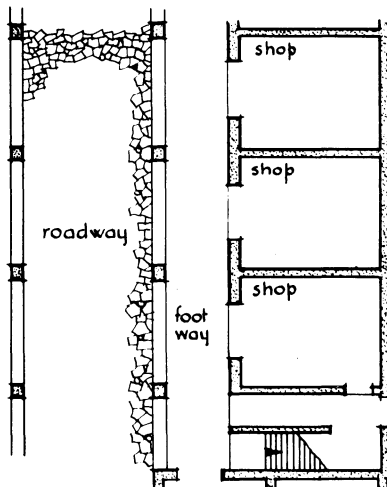


(e) half plan of one block

O S T I A
Case Giardino



(f) on right : block plan



O S T I A
(g) Arcade and shops on Cardo Maximus



change, for the realistic wall paintings of the domus, giving an expression of space, light and air, show that the occluded life of the atrium had begun to pall. For the first time the street was used as a reservoir of light; a new urban form, with a new urban plan immanent, had been made. The contiguate form of the house was merged in the insular form of the block, which fitted ill in the pattern of narrow streets. Each new insula sounded the death knell of the houses round it, which thus were exposed to view from above. As sites became vacant they were built up, and ingenuity was shown in arranging light wells, but the sites most valued were those that allowed a precinctual garden to be included. The Casa Giardino, built upon a cleared area between streets, shows how the city could have been redeveloped. It was reshaped in its Eastern part during the time of Hadrian, by making large square blocks, but no replanned insula quarter remains. The effect of this rebuilding can be studied to better advantage at the present day, when the problems of fitting large insular blocks into a street system still await solution.

The Facade

Before the Empire, there were few houses that had especial architectural treatment to the street wall. The only point of interest was the doorway, which was accorded a simple frontal, and occasionally flanking pilasters. The wall was built in tufa or limestone ashlar, opus quadratum, signinum or incertum. Such windows as pierced the walls have the appearance of after thoughts, their placing being quite unstudied (Figure VIII b, c and e). The domestic streets of a provincial town in the second or first centuries, B.C., must have had great charm, with their continuous two-storeyed fronts, doorways simply adorned and the rows of open shops that formed the ground floor of nearly every building. They cannot have differed very much from the Hellenistic streets of Ionia. In the Augustan age, with the increased use of stucco and exposed brickwork, portals became more impressive, but there are few signs that the

housefront was considered important, and none that the interior was ever modified to accord with a designed facade. Stuccoed fronts were treated as rusticated stonework or applied marble in the "incrustation" style.

Illusionist Facades

In Rome and the larger cities, it often became necessary to place important buildings upon street sites (Vitruvius, as we have noticed, gave advice upon siting a temple in such a position). How the Roman architect gave to such a building some of the distinction it would have had as a free-standing building is evident in at least one facade - the library at Ephesus, built about 115 A.D. The site was hemmed in so that only one face was important¹. This front wall was pierced by three doorways, over each of which was a window (Figure VIIIf). Inside, the building was simply one high room, giving nothing as a starting point for the design but the plain wall. It was ornamented with columns in two storeys, the lower paired with entablature between the doors, the upper with pediments over the doors; a playful but rhythmical arrangement. This addition of detached columns, which the Romans gave to the scaenae frons of theatres and to the faces of triumphal arches, is a type of ornamentation in which the members are large enough to be capable of contributing to the structure. That they did not do so is perhaps the main reason for so many critics dismissing the system as dishonest and debased. The accusation has a great deal of force when levelled at a number of Baroque buildings; but these originals had one thing in common; they were, in essence, plain walls or parts of walls.

The purpose of the Roman scaenae frons was to complete the enclosure of the cavea, and to serve as a background. Although a plain wall with the traditional three doorways would have been sufficient, it would have been an intolerably

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Robertson: Op cit, p.291

dull background to the conventional and often monotonous Roman play. It is not surprising to read that even in the early wooden theatres, the scaenae frons was ornamented. In a temporary theatre of 58 B.C. Scaurus enlivened the background with 300 columns arranged in three storeys and 3,000 bronze statues¹. The action of the play traditionally took place in a street, with three houses represented by the doors², but it is obviously wrong to take the Imperial scaenae frons as in any way giving the appearance of a street³; it was simply a piece of applied decoration. How ornamental it finally became may be seen in the restorations of Aspendus⁴ and Ostia⁵.

This system of niches, columns, entablature and pediments interspersed with statuary and the recurring aedicule that characterizes them all was a translation into three dimensions of the illusionist style of mural painting. The wall decoration to be seen in the second and third periods of Pompeii, and also in Rome⁶ created an appearance of architectural reality by giving to invented forms the colour, light and shade, projection and recession of an actual piece of architecture. They were fantastic but convincing.

"We do not think of asking if the castles could be built, for they are there before our eyes⁷."

From Vitruvius who saw them fresh from the painter's brush, we learn their power for deception:

"The judgment is often deceived by it (i.e. by observation) just as when in the paintings of dining rooms, there seem to be projecting columns, corbelled mutules, outstanding shapes of statues, although the picture is undoubtedly vertical and regular⁸."

In this matter the painters showed the way to the architects⁹.

¹ Gray: Companion to Latin Studies, p.521

² Beare: The Roman Stage, pp. 170, 172

³ Vitruvius V.vi says that columns, pediments, statues and other royal surroundings are suitable to tragedy: for comedy, private buildings with windows and balconies.

⁴ Robertson: Op cit, p.278

⁵ Neuberger: Op cit, p.360

⁶ House of Livia, Thermae of Titus

⁷ Wickhoff: Roman Art, p. 135

⁸ Book VI, Chap. II

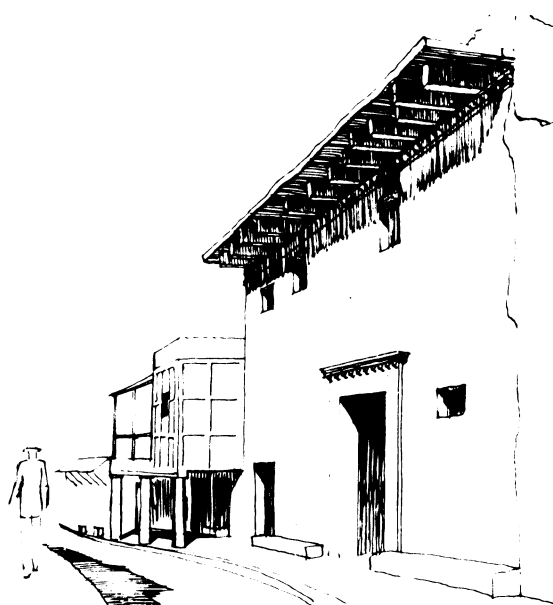
⁹ Not for the first nor the last time. Hellenistic carved ornament copied painted forms, and fifteenth century backgrounds influenced later architecture (See Chap. VIII)

FIGURE VIII

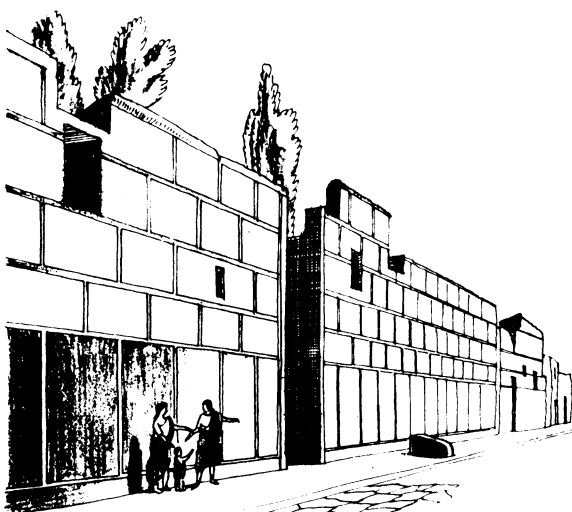
- (a) Street in Herculaneum from Maiuri: Herculaneum.
- (b) The same street as (a). The placing of windows is un-studied for exterior effect. From Maiuri: Herculaneum.
- (c) Housefronts in the Strade di Mercurio. From Gell: Pompeii, Vol. II, Plate LXI (1832). "There are certain mouldings which seem to indicate that the houses were not higher than at present."
- (d) Cenacula, or first floor flats, were usually entered by a stair from the shop, and had loggias open to the street. From Maiuri: Pompeii.
- (e) Another house front showing how the windows were ignored so far as the exterior was concerned. From Maiuri: Pompeii.
- (f) The Library, Ephesus. From Robertson: Greek and Roman Architecture, p.290. "The restoration is quite certain", p.289.
- (g) The Nyphaeum, Miletus - a free-standing building of the time of Trajan. From Kunst Geschichte in Bildern (Schaefer, Frank and Winter), where the restoration by Hülsen (printed in colour in Wiegand: Milet) is reproduced.
- (h) Miletus: The Market Gate. An elaboration of the entrance in the Agora wall. From Hegemann: Facades of Buildings, p.8



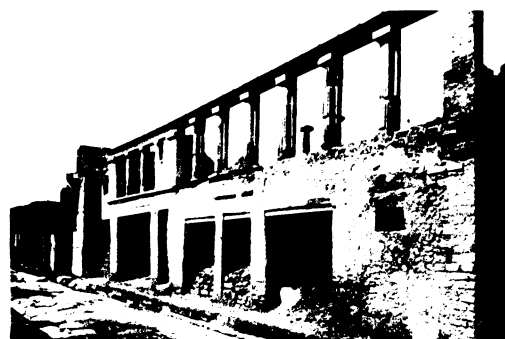
(a) HERCULANEUM
View in Cardo IV



(b) HERCULANEUM
Houses in Cardo IV



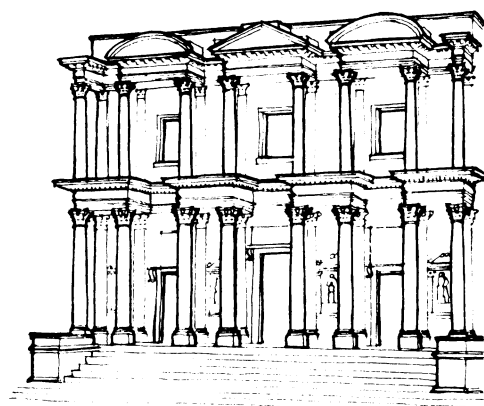
(c) POMPEII
House fronts



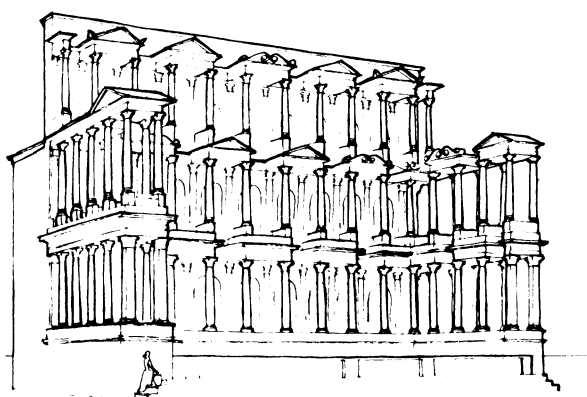
(d) POMPEII
Cenacula



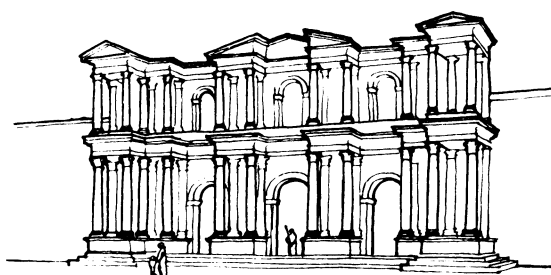
(e) POMPEII
House of Caius Secundus



(f) EPHESUS
The Library



(g) The Nymphaeum



(h) The Market Gate

Sculpture also played a part in the formation of the style. One wall of the Stabian Baths at Pompeii shows the same motifs as the wall paintings, but plastered in relief - an actual intermediate between forms painted upon a wall and similar forms built against it.

The general tendency is shown in the triumphal arches - in the progressive detachment of the column and its piece of entablature, until in the reign of Hadrian, it was usual for the column to stand free. In the development of illusionist bas reliefs there is a noticeable parallel, in the deeper undercutting, giving to a moving spectator variations in light and shade¹.

As the movement reached its climax, pilasters and columns shook themselves free of their background; the forms of span and support shed their weight and leapt upwards in tiers, like troupes of acrobats. The architects wrought miracles of fantasy. The Khazné and other rock-cut tombs of Petra were extravagant enough, but at Miletus a closer adherence to classical forms made the fantasy even more piquant. In both the Market Gate (Figure VIII h) and the Nymphaeum (Figure VIII g) projecting wings were added to the colonnades. The Nymphaeum outstrips all Eastern brilliance. Built with the simple object of adorning a fountain and its tanks, it consists of a light wall dressed out with three tiers of columns, with deep two-tiered wings thrown out in front. Statues and niches catch the light that dances between the columns. It is a piece of uncurbed exuberance; of gaiety so irresponsible that to criticise it in terms of structure and expression accomplishes nothing. The columns support only themselves: there is nothing to express but their own existence.

These examples possess nothing to demand outward expression; nothing, that is to say, of the least interest to the

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A development fully described by Wickhoff (Roman Art)

spectator. Illusionist architecture, in this application, was simply mural decoration "in the round." In practice, it was carried out by a separate set of craftsmen to the designs of their master, often many years after the brick structure was finished¹. These craftsmen had their separate college and separate traditions from the rest of the building trades. By decorating their walls with architectural forms, they intended no more delusion than we, in plastering a wall, wish to beguile the spectator into believing that it is of solid plaster. Upon moralist grounds, which are those from which facade architecture has most persistently been attacked, there is, in the disunion of interior and exterior form, at the worst a sin of omission rather than commission. Where the building consists of a wall, or has only one visible face, as it has in a street, the moralist argument becomes increasingly difficult to support. To take another case, let us consider the building whose front is not in line with the street, such as the building of Eumachia in the Forum at Pompeii (Figure Vd). No-one would cavil at the step of building a second wall along the street front. What then is to be the moralist treatment of this wall? Is it to be left in its constructional material, or is the impossible task of expressing the interior of the building to be attempted? The facade wall separates the interior of the house from the interior of the street: if the street side of the wall is wholly dictated by the interior of the house, the street wall is denying its purpose, just as it would if the rooms were entirely dictated by the street.

Conclusion

In the first chapter it was suggested that the reticulated plan could have arisen through the agency of either the road or the building. The evidence for the Roman chequer-board is strongly in favour of the road. In the city, as outside it, the road was dominant: not necessarily straight, but always continuous. Unlike Syria, Rome had neither the

¹ Giovannini: *Legacy of Rome*, p. 434

climate nor the transport to make the town road the main architectural element in the city. It was in the precincts, the fora and temple enclosures, that the grammar of civic art was evolved - a grammar that was to be such a priceless bequest to succeeding ages.

In the street buildings, the contiguate form of the domus expressed the rights of the citizen within the city. The legal code embodying these rights will probably outlast all architectural influence, as it did in Roman times. For the domus, because of the lighting system that limited it to two storeys, could not survive in a constantly growing city. Increasing numbers to be housed and high land values demanded a new architectural form. Then as now new constructional means were at hand, and the Romans took the same upward path that we are now so busy exploring. Towns had to be reorganized to be made suitable for high buildings upon larger areas. Only one part of one disinterred city - Ostia - shows the form fully developed. Pompeii and Herculaneum, the most informative remains, were arrested at the transitional period, a period roughly equivalent to our own in South Africa, when large new buildings were the order of the day, built, as sites fell vacant, among one and two storey dwellings. In these conditions one looks in vain for organic street architecture.

VI

THE STREETS OF THE MEDIEVAL TOWN

"In the word 'Fear'", it has been said¹, "may be found the key to the medieval city plan." The city wall, raised at such labour and maintained at such cost, was the greatest monument to the burgher's wish for safety. But within it a passion more creative than fear was to be found: the love of liberty that brought the landless men crowding into the city, to make it grow and prosper. For such men town life was freedom. Their love for their new home expanded to embrace the whole town, worthy of the best they could lavish upon it of money, of art and personal service.

If these early European townsmen were rebels from their country life, they left behind as a hostage an innate affection for its sights, sounds and scents. In the mature medieval town, all beauty and gaiety were imagined in a setting of greenery. Flowers, birds and animals were the very language of decoration, as they were of poetry. Upon Sundays and holidays the country reclaimed the citizens. "In the moneth of May, namely on May-day in the morning, every man, except impediment, would walke into the sweete meadows and greene woods, there to rejoyce their spirites with the beauty and savour of sweete flowers, and with the harmony of birds praysing God in their kind²."

During the week they tended their gardens within the town. In the Twelfth, Thirteenth and Fourteenth Centuries these gardens were inseparable from the town house, and they gave to the medieval town its greatest distinction from the Roman town of Italy and the Mediterranean seaboard. The contribution they made to the larders varied, and as the towns filled up it diminished. From Harrison's description

¹ E.A.A. Rowse: Plans of the Cities of Europe

² John Stow: Although a late writer, the above was written in 1603, he formed his opinions upon a careful study of documents (G.G. Coulton: Social Life in Britain, p. 293)

of England in 1587¹, it appears that by then they had taken on the mixed character of fruit, vegetable and flower that they still enjoy. In the earlier years substantial pieces of land and common fields inside the town were given over to market gardening². The burgher kept one hand on the hoe. In some towns he held plots within and without the walls³. The charter of Grenade in Southern France, for instance, created 3,000 houses and gardens, and 2,000 vineyards⁴.

In the main, the surrounding lands and peasantry provisioned the town, but for some six centuries the whole of Europe had lived only by agriculture, and the town garden meant for its owner something more than a source of food; it was a sheet-anchor amid the strange hazards of city life. This is the only possible explanation of its persistence during the centuries of increasing population, when every piece of unbuilt land meant additional length to the town wall. There must have been a natural temptation for the communes to encourage building over gardens rather than to extend the walls. Even so in Rothenburg - probably the best preserved medieval city - it is surprising to see that the easterly and southerly extensions were walled while substantial areas of unbuilt ground remained in the older parts (Figure IXa)

Each of the hundreds of new towns founded in England, Wales, Southern France and Germany during the eleventh to fourteenth centuries was a pattern of garden plots and roads. The sizes of plot varied from 160 ft. x 40 ft. as at Beaumaris, to 78 ft. x 24 ft. at Monségur, where the roads were 24 ft. wide⁵. Various stipulations were made for the houses - that they were to take up the whole frontage; that one-third

¹ Quoted in Wilson: Life in Shakespeare's England, p.271

² Mumford: Culture of Cities, p.24

³ As in the New Towns of North Wales (Lewis: Medieval Boroughs of Snowdonia, p.60)

⁴ Heritage: Bastides of Guienne

⁵ Carnarvon and Criccieth were 80 ft. x 60 ft. Lewis: Op cit, p.63. Tout gives 72 ft. ft. x 24 ft., 60 ft. x 24 ft. and 60 ft. x 36 ft., as the usual size of the Gascon bastide plots. (Medieval Town Planning). Monpazier had curtilages of 63 ft. x 23 ft. (Heritage: Op cit, Chap. II) The Scottish code fixed plots at one-quarter acre with widths of 20 ft. x 30 ft. (Mears: Planning of Medieval Cities)

was to be built the first year, and two-thirds the second; and the depth of the house was sometimes fixed¹. The typical ilôt or block in Guienne had a lane through it serving the gardens. The piece of land surrounded by houses was the normal block in the town. It was perhaps a legacy of the Saxon "ham" that sometimes took this form.

Roads

For a civilization that owed its existence to transport, that of the Middle Ages had very bad roads. By the ninth century the Roman network of roads had fallen into disuse, at least in England, owing to the neglect of the bridges by the Saxons, who had no durable cement. Packhorse ways - narrow strips of cobbles - carried trade on the Continent. There were no properly paved roads. For the townspeople it was more important that goods reached them regularly than quickly - timber for ship-building, carried by ox-waggon, sometimes took years to reach the coast of England². This principle of easy rather than fast transport accounts for the weak attempts at road building, as it does for the popularity of river transport.

In the towns, the good condition of the road was usually a matter for the householder who lived upon it. He had to clear and repair the road for half its width opposite his frontage. If he was a merchant he probably paid his pavage cheerfully enough; there are even records of bequests and gifts for road repairs, to remind us that once again the road was the visible instrument of the town's prosperity.

The existence of paviers in the thirteenth century, (their wages were fixed by a London ordinance of 1301)³ is no proof that the town roads were well paved. Stone was often used⁴, but the value of a good foundation was not understood. More often than not, and always when the householder did the work himself, paving meant simply filling potholes. In

¹ Tout: Op cit

² Boumphrey: British Roads, p.75

³ Salusbury: Street Life in Medieval England, p.31

⁴ Holborn in London was paved with cobbles in 1417 (Boumphrey: Op cit, p.81)

addition to this, the authorities scarified the surface and punned gravel or soil to a fair level. In Canterbury in 1481 officials ordered faggots of broom to be laid in the wheel-tracks.

The roads were so narrow that it was out of the question to take them up for a thorough relaying: the result was that the level of the road rose each time it was repaired¹. When it approached to the level of the ground floor of the houses, stormwater entered the house with a vile burden of filth from the roadway. Floors were usually of beaten earth, so that the first floor must, in old towns, have become preferable for living in. Roads generally had stone pitched kennels in the middle or at the sides. Raised footways for pedestrians appeared sporadically² and streets completely paved in stone existed in Italy in the fifteenth century.

Measures similar to those of Rome speak of increasing congestion in streets. Throughout the period, enactments were made against wheels with iron rims or fellies, to guard the road surface from damage. Market regulations fixed times and places of sale in each town³. Stallholders had to leave a space of three feet for pedestrians between their stalls and the house walls, and shop stalls were forbidden to project more than two and a half feet. The shop counter was a shutter let down for the display of goods; the customer usually stood in the street to make his purchase⁴, thus adding to the congestion. In the late Middle Ages, carts were altogether banned from some Bristol streets⁵. There was an obvious remedy for all the congestion these measures

¹ A corporation minute of 1546 instructed men not to pave "so highe as the grounsells of men's houses" (Salisbury: Op cit, p. 36.

² Paris, 1184; Florence, 1235; Lübeck, 1310 (Mumford: Op cit, p. 57.

³ A plan of Oxford Market, based upon a document of 1319, is reproduced in Liddell: School History of Oxford. It shows how heavier goods were kept to the periphery, and were to enter by a specified gate.

⁴ This sort of shop is illustrated in Viollet-le-Duc: Dictionnaire Raisoné d'Architecture, under "boutique."

⁵ Salisbury: Op cit, p. 58

imply - the holding of the market outside the walls. It was unthinkable because it would have removed the whole market institution from strict control.

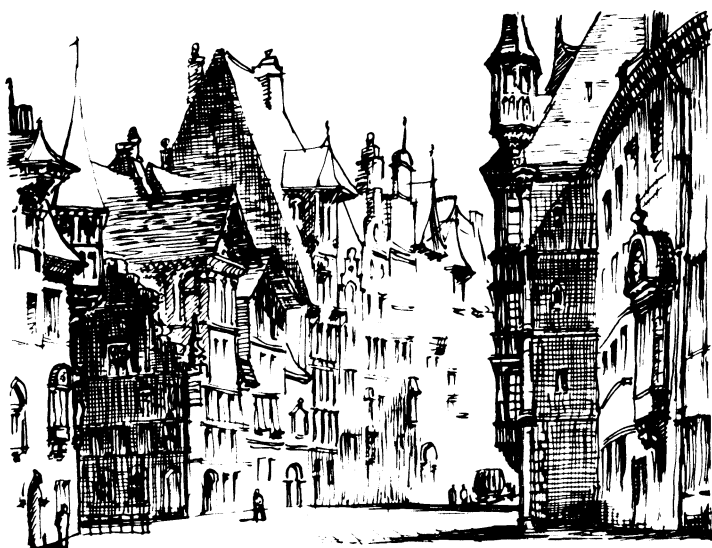
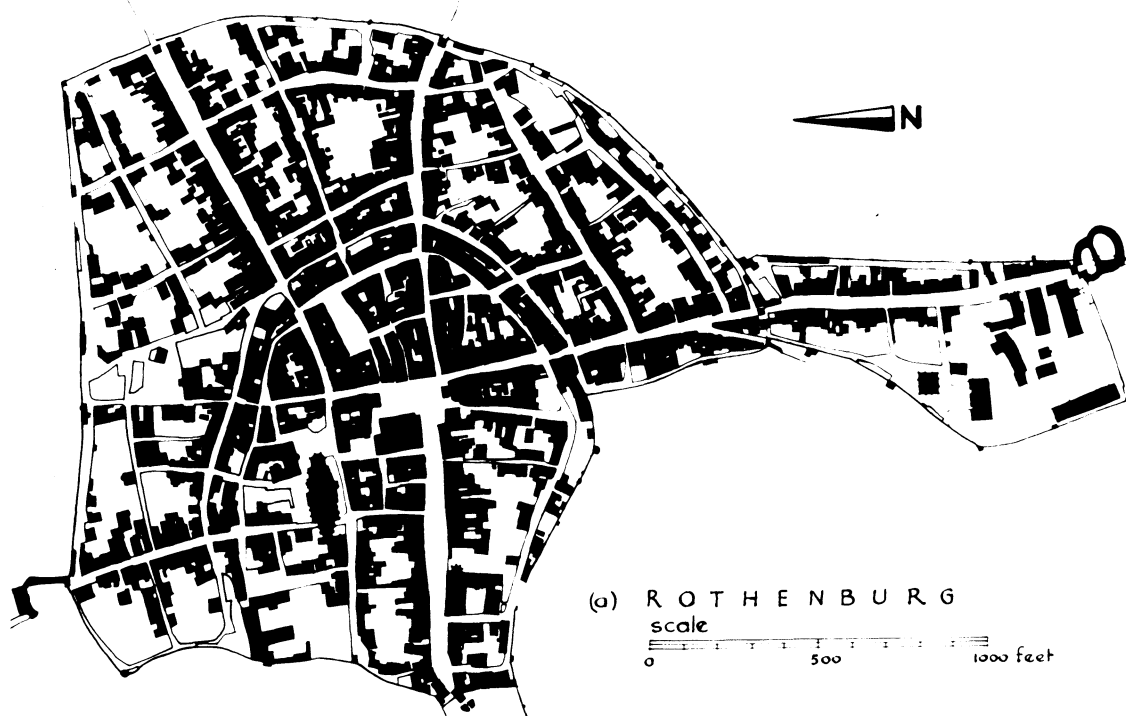
Here and there there are records of road widenings, and enlargement of squares. But encroachments were much more common. To gain ground, burghers, town councils and even the king himself tried to obtrude buildings on to the road, or to take support by means of columns standing upon it. The traffic ways were threatened; how much, we may guess from a legal measure empowering the burgraves of Strasbourg, Regensburg, Worms and Cologne to ride through the streets with a lance or staff of office held crossways, and to order the removal of everything they struck¹. Some encroachments were allowed after deliberation, some refused; the decision was according to the worthiness of the owner. Many more, such as those that replaced a temporary building with brick or stone, went unchallenged. The councils often took the chance to fill depleted coffers by selling off portions of common land.

It is undeniable that encroachment played a strong, if not decisive part in the formation of the medieval street line. Each owner wished to push his building as far forward as he could, short of having it damaged by traffic. Over the course of centuries, traffic ways were moved considerably. Roman towns such as Trier were left with only a travesty of their original road system. But encroachment cannot have been the only force at work. One feature of the medieval street speaks of definite control, and that is the smoothness of the building lines; of the High Streets of Oxford and Chipping Campden, the Carolinen Strasse, Augsburg, and scores of other examples. This, their most distinguishing feature, is the most difficult to explain. After a devastating fire, the authorities were given an opportunity to regulate building lines broken by encroachment, but precisely how they were made into the curves we now see

¹ Huebner: History of Germanic Private Law, p.267

FIGURE IX

- (a) Plan of Rothenburg o.d. Tauber, showing early formation of fluent road shapes. From Unwin: Town Planning in Practice, Fold Map III.
- (b) Plan of Brigg, Lincolnshire. A market town formed about the junction of two roads and a bridge. The barnacle pattern of buildings behind the streets (and the existence of four smithies and nine public houses in the area shown) testify to its dependence upon the roads through it. Reproduced by permission of Her Majesty's Stationery Office from the 1907 Ordnance Survey.
- (c) Carolinen Strasse, Nuremburg, from Stevenson: House Architecture (1880). The placing of the two turrets in the very eyes of the scene, where they command views of the greatest spaces, shows how street buildings can express their environment.
- (d) Aerial view of High Street, Chipping Campden, Gloucestershire. A striking example of fluent road shapes.



(c) NUREMBERG

Carolinen Strasse

CHIPPING CAMPDEN
(d) Air view of High Street

without surveyed plans (of which none survive) can only be guessed at.

It is not too fanciful to say that the actual wheelruts may have been the controlling line. For in the end, the walls of the streets look as if traffic had moulded them, as the waters of a river fashion its banks. They have a seemingly natural fluency; widening towards the city gates, and widening again outside them; bellying on curves, constricted when passing an obstacle such as the market hall; curving to approach a bridge, or where contours had first determined the road. It is the continuity, the smoothness of the medieval street line that gives it form, and the form is that of a traffic channel (Figure IX b, c and d).

Villages that sprang up about a road have the same fluency and express dependence upon traffic in the pattern of their buildings. In these villages, such as Chipping Campden, leisurely houses line the road with their long side exposed. But behind them, like barnacles, rows of buildings hang to the road, served by the yard gate of the houses. In the towns a similar pattern developed, with mouseholes leading through to alleys and lanes.

Urban Life and Street Character

Our sensitivity to public health makes us look askance at street life in the Middle Ages, and our towns are free of many distasteful ingredients that made up the street scene; the filthy kennels, piles of butchers' offal, feathers and manure; the scavenging dogs and pigs, the questionable water supplies, the dorters and privies, the beggars, lepers and cripples that walked the unpaved and potholed streets. But we must admire the tenacity with which the medieval administrator fought these things, and remember that it finally triumphed. If its street life did not approach our sanitary standards, the medieval city had brilliant colour in its shop signs and its dress; it worked to the music of continual bells, and it enjoyed within sight of the market place the repeated wonder of

blossom and ripening fruit. For the loss of these delights we must take what comfort we can from our tarmacadam and nicely laid sewers.

Concentration was the force that created the unhealthy conditions of the medieval city. During the twelfth century towns were small in size and number. One authority has estimated that only one person in ten was a town dweller¹. During the thirteenth and fourteenth centuries, trade and manufacture demanded more pairs of hands than they could find. Ghent, for instance, enlarged her boundaries in 1163, 1213, 1254, 1269 and 1299². All houses became contiguous, and gardens were swallowed up. Buildings rose higher and were given basements³. Plots were narrowed. A considerable area was gained by the system of jettying, by which floors were pushed out over the street.

As a result of this concentration, the street house assumed a peculiar appearance. This, imposed upon the road, made the architectural character of the street. To generalize, if it is possible to do so upon so vast a subject, the roads leading from the gates to the market were usually continuous channels, though of varying width. The roads that led into them very often had tee-junctions or broken crossroads. Straight roads were rare. By virtue of the curves and bends, the broken junctions and the city wall, the scene on the traffic way was usually bounded by buildings (see plan Figure IXa). This fact, with the enclosed form of the medieval square, gives to the observer that comforting feeling called the "sense of enclosure." In the streets this must have been deepened to the point of oppression by the jetties impending overhead (Figure Xa).

It has been suggested by some writers that the wish to create enclosed spaces was so strong in the Middle Ages

¹ Pirenne: *Economic and Social History of Medieval Europe*, p.59.

² Pirenne: *Op cit*, p.172

³ Even London Bridge, completed in 1209, had houses of several storeys with basements in the piers (Jusserand: *English Wayfaring Life*, p.50)

that it became the touchstone of town design; that crossroads were broken and streets curved deliberately in order to achieve it. This contention is reinforced by the practical arguments of defence and climate. Crooked streets are easier to defend, and are more sheltered from wind and rain than straight streets.

Yet in the planned towns both these principles of defence and climate seem to have been ignored. In the South of France the bastides were laid out with one avowed object - to form strong, defensible points in a restless countryside. Here, if the military theorists favoured such a pattern, we should expect to find a labyrinth of streets. But in every bastide, even in the Monségur type (in which the axis was bent) the roads run in long, straight lines giving a clear bow-shot of anything up to 300 yards from the wall. They also give a free run to the wind - the only enclosed place was the market.

We should, perhaps, expect no aesthetics from military men; but the terms of reference of Edward I's planners, who were recruited from the length and breadth of the land, can be construed to mean the design of cities pleasant as well as practicable¹. They produced a reticulated pattern of straight roads.

How much can we infer from planned towns of the needs of contemporary town life? To put the question in another way, did the town plans enshrine the ideals of the time, or were they workaday solutions to everyday problems? If the planned towns were ideal towns, then enclosure was not valued aesthetically; if they were utility towns, why do they seem to ignore the wind?

One answer is given in a poem by John Lydgate, who wrote Troy Book between 1412 and 1420². In his description the New Troy was founded on a site where the air was wholesome. It was square, surrounded with high marble battlements. Every palace, mansion and house within it was built

¹ He invited 24 cities "faire élire quatre prodes hommes, des plus sachantz et plus suffisantz, qui mieux sachent deviser, ordoner, et arayer une novele vile au plus grand interest de nous et des marchands." Heritage: Op cit.

² The pertinent lines are quoted in Harvey: Gothic England, appendix I, pp. 163 et seq.

of marble; all the houses, poor and rich, were of equal height, and decorated with carving and traceried windows. The streets were large and wide and were so arranged that wholesome air could play along them, and Zephyr could rejoice the citizens "with sugred flavour, so lusty and so sweete."

Each street had cloisters along each side to keep off the rain and temper the wind and storms. Every house was roofed with lead: pipes took the water down to discharge underground. The streets were paved with red and white stones laid chequer-wise. Through the town ran a clear, fast river, so devised that it cleaned the streets and kennels, and took away all filth, sewage, "wikked eyr" and infection. In this ideal medieval town, the nose had as much consideration as the eye. Summer winds were welcomed to take away the stench of the streets, which were accordingly made straight and wide.

Like those of our present age, town planners probably sought to correct the worst features of existing city life. If in the process, others were overlooked, the result had at least the merit of simplicity. Their plans, like those of today, started from a clear road system, which, though it improved the town in summer, gave its people no shelter in winter.

There has been considerable discussion about the informality of the medieval town. The arguments have centred upon its picturesque qualities, whether they were accidental or deliberate. In one sense we must concede that they were deliberate; we have no right to deny to a past age the credit for any artistic success achieved. We cannot, in other words, presume that in trying for one effect they attained another, unsought and unsuspected. But in another sense it is just as false to say that picturesqueness was deliberate. Picturesqueness was a conception of the early eighteenth century. It is a matter of pictorial arrangement, of visual balance and contrast and emphasis. It is a view of the medieval world through the eyes of seventeenth century painters - a view that men of the fourteenth century

could hardly foresee.

Analyses such as that of Buttstedt by Unwin¹, while entirely convincing us that the finished town is wholly picturesque, leave doubts about the way it was built. If we accept the "deliberate" theory, we have to imagine the designers standing about the town assessing the views from stations that are chosen arbitrarily, deciding, let us say, that from point A the church tower shall rise over the Rathaus roof, that from point B the turret on the guildhall shall lie between the curve of the street wall and the trees opposite, that the rose window shall be seen from alley C. Now if planning by this means is possible, it calls for extraordinary geometrical ability, to translate a number of two dimensional views into a three-dimensional city. Perhaps the Gothic builders possessed this ability. But in addition it demands extraordinary legal powers. To mould a growing town or to remodel any living town in this way, the designer must be able to close and open streets at will, to order height and expenditure, to override servitudes and easements to dictate demolitions. No record of such powers has come to light.

One is forced to ask, therefore, whether credit for the picturesqueness of the medieval town is due to the genius, not of those who built, but of those who painted it. Until further evidence comes to light we must accept the principle advised by the late Professor Reilly² that "the picturesque is properly inherent in the site, and cannot be artificially brought about." We must remember to apply this not only to towns of today, but to the picturesque towns of yesterday.

Unity

The medieval street had two unities that ours do not possess - of material and building types. Transport costs prohibited foreign materials for all but the most important buildings, or for buildings where ostentatious expenditure was required, such as those of rich Dutch merchants who used stone

¹ Town Planning in Practice, p. 215 et seq.

² Quoted in Triggs: Town Planning, Chap. V.

brought from abroad. Until concentrated building made the fire risk too great, timber was the universal material in Europe. Although stone and brick supplanted it, they did so slowly; in London native oak was used right up to the Great Fire. Originally in Holland house fronts were of vertical boarding over the framing¹. The predominating front in England was the close timber frame with panels filled with wattle and daub. Local variations of material such as brick-nogged filling, or complete plaster fronts, must have given to the street a unity of colour and style that we can appreciate today in the stone villages of the Cotswolds, the brick streets and waterways of Holland, or the plastered fronts of East Anglia.

The streets consisted of only one form of building - the house. Churches, market halls and guildhalls were insular, but the remainder - shops, inns, houses, were contiguate. Houses sheltered the whole life of the occupant. His shop and workshop, even his factory² were on the ground floor: in fact houses only for living in were rare³. Extensive and shameless copying went on from building to building⁴: even the shops must have conformed to type in their different streets, because the Guild organizations fostered congregation of trades. Butchers' rows, Vintners' lanes, and scores of others perpetuate this practice if only in name. An Italian traveller to London in the time of Henry VII counted fifty-two goldsmith's shops in a street leading to St. Paul's Cathedral⁵.

In height, neighbouring buildings probably did not vary by more than a floor. There is an interesting fragment quoted by Davidge⁶, that makes it appear that height was governed by sentiment rather than by by-laws: "One Sir John Champneis, alderman and mayor, built in his house a high tower of brick,

¹ Ter Kuile: *Duizend Jaar Bouwen in Nederland*, p.361

² An exception should be made for the larger Flemish factories, e.g. those of washers, beaters, carders and fullers that employed hundreds in the thirteenth and fourteenth centuries.

³ Ter Kuile, *op cit*, p.361

⁴ Atkinson: *Local Style in English Architecture*, pp.5 & 7

⁵ Trevelyan: *English Social History*, p.83

⁶ *Development of London and the London Building Acts*.

the first that was ever heard of in any man's house to overlook his neighbours, and this delight of his eye was punished with blindness before his death."

Roofs gave unity to the streets. In England, continuous roofs of the sort still to be seen in Staple Inn, Holborn, London, formed the upper limit of the street wall (Figure Xb). In Holland, repeated gables of equal height, lent rhythm to the skyline. Speculative building led to repetition; for example, Goldsmith's Row in London consisted in 1500 of "Ten fair dwelling houses and fourteen shops all in one frame uniformly builded four stories high¹."

For the processions, so dear to the citizens, the uniform continuous architecture of the streets provided an ideal background. The colour and consequence of these displays must have remained as an aura of splendour in the streets they passed, and stimulated men to build housefronts worthy of them. The streets were permanently decorated by the shop signs - a necessity for the illiterate - which were held out to face the pedestrian, and were consequently in the most prominent position. Their use continued until well into the eighteenth century. By then they had begun to pall, for The Spectator in 1710 wrote: "Our streets are filled with blue boars, black swans and red lions, not to mention flying pigs and boars in armour, with many other creatures more extraordinary than any in the deserts of Afric²." Street numbering was not used until the postal system was introduced in the same century.

Medieval street arcades were quite utilitarian. Commonly in Italy, Southern France and Austria the face of the upper floor was at the curb line, supported at ground floor level with an arcaded wall. They represent further evidence of concentration. Many bastides had arcaded market places.

From a fifteenth century Book of Hours we can see the unity that comes from identical houses. A drawing³ (Fig.Xc)

¹ Hitch: The Terrace House in England.

² Davidge: Ibid

³ Similar arrangements may be seen in the Vicars Close, Wells and the Fokkerel, Lübeck.

apparently made on the spot, shows houses that are almost identical on each side of the street. They have tiled roofs and valley gutters with spouts projecting boldly from the building face. The whole street was obviously built as one, possibly as a municipal or royal enterprise along a road outside a town.

A number of points in the drawing are significant. Firstly, both sides of the street are similar. As a financial venture, this must have been a more complicated undertaking than re-developing a complete block. Secondly, although a simple cottage roof to each run of houses would have saved money, gable fronts were used. This was a deliberate architectural choice, to give rhythm to the street. Thirdly, the squared stone paving completed its unity. The street had again emerged as a whole architectural form.

The Medieval Street Building

Like urban habits, the town house of Medieval Europe had a country origin. It was simply the country cottage, built of timber with a thatched roof. It was insular in form and stood alone, as we may infer from the servitude of "invetison" that occurs in early legal records of the South of France at the time when Visigothic customs disappeared¹. This servitude consisted of an obligation to leave a space of five feet between houses, which ran alongside the road to protect the garden and to keep it as large as possible. There is no sign, except in the monastic enclosures, that any of the courtyard tradition of the Roman house and camp survived in Northern Europe.

Inevitably as the towns grew houses took up the whole width of the plot, and an early town custom in the North of France dictated that if an owner built to the edge of his plot, he could not prevent the wall from becoming a party wall if his neighbour built - the neighbour was to pay half the cost of the wall and the land it stood upon².

¹ Brissaud: History of French Private Law, p.332

² Brissaud: Op cit, p.333

This stage must have been reached long before Fitzaylwin's Assize of 1189, which gave detailed instructions upon the building of stone party walls and gave to a building owner the right to block his neighbour's light¹.

Fitzaylwin's Assize was directed against the most recurrent and most feared hazard of urban life. On a windy day, these early houses, whether contiguous or not, could be devastated by fire in a matter of minutes. In 1161, London, Canterbury, Winchester and Exeter were all burnt out². A fire at Venice in 1112 ravaged sixteen islands, destroying twenty-two churches³. Fires could be started by the ignition of wooden chimneys, by sparks or lightning on thatch and by popping wood fires. (Coal was not generally used until the sixteenth century.) Straw mattresses drawn too near the fire and overturned candles were common causes. Fire-fighting consisted only of throwing buckets of water at the flames, and tearing off neighbours' roofs with long handled hooks.

Privileges were offered in 1189 to those who built in London with stone and tile⁴. In 1212 roofs of reeds, rushes, straw and stubble were forbidden; building owners had to choose between tiles, shingles and boards. Existing thatch was to be whitewashed as a protection. Citizens who had thatched roofs had to indemnify the city against damage⁵ and severe penalties were imposed for proved carelessness⁶. As late as 1467 Worcester ordered five firehooks to be set about the city and forbade chimneys of timber and thatched roofs. That fire resisting construction was a natural

¹ Party walls were to be 3 ft. thick and 16 ft. high and a neighbour was entitled to build higher upon half the thickness (Quennell: *History of Everyday Things in England*, p.22)

² Salzman: *English Life in the Middle Ages*, p.86

³ Cummings: *History of Architecture in Italy*, Vol.II, p. 242

⁴ Salusbury: *Op cit*, p.158

⁵ G.G.Coulton: *Social Life in Britain*, p.318

⁶ Lewis: *Op cit*, p.7: "If a house in a town take fire through carelessness, let the owner pay for the two nearest houses that shall take fire, and thenceforward let them pay from next to next as they are bound to do."

corollary of contiguous building was soon realized. Fireproof party walls were demanded in Lübeck in 1276¹ and elsewhere the onus for fire resistance was thrown upon the building guilds².

House Form

The domestic needs of the medieval citizen were few; a shop and workshop combined, a room for cooking and eating, and above a single bedroom, which all shared - the master and his family, apprentices and servants. At the back were the stables, or a place in which cattle and pigs could pass the night when the common herder returned them at the end of the day.

Two simple forms of urban house emerged. Firstly, the cottage type running parallel to the road and secondly, the deep type, sandwiched between party walls at right angles to the road. The cottage type was undoubtedly preferred because it could provide better daylight, and time and again we see examples of rich merchants building in this way - a return to an honoured traditional form that is echoed by the rich of other ages. From contemporary prints, it appears that the cottage type was commoner along gate roads outside towns where land was cheaper. England, which was mainly agricultural well into the fourteenth century and which had less urgent defensive needs, holds more of this type than the Continent. Its characteristics can be seen in the sixteenth and seventeenth century street cottages in the Cotswolds. Although these are not medieval in date, they are so in their rural origins³. Built of stone, they were 16 ft. to 18 ft. deep, the stair being in the middle of the house. Fireplaces were put so that the flue emerged on the ridge or at the points of the gabled party walls, thus avoiding difficult flashings in valleys. There were no substantial cross walls, so that the thrust from the heavy slate roof bulged the outer walls. Eaves gutters are unknown. In the older houses, a wide door or arched entrance led to a

¹ Mumford: Op cit, p.39

² Renard: Guilds in the Middle Ages, p.52

³ See Davie and Dawber: Old Cottages in the Cotswolds.

passage wide enough to take a barrow through to the garden. The street wall and back wall were liberally lit with windows that diminished on the first and again on the second floor. Each cottage merges into the row; it is difficult, because of their continuous roofs, to tell one from the next.

An earlier example of this form is the Jew's House at Lincoln, which had a chimney stack on the street front. Staple Inn, Holborn, exemplifies the continuous street wall and roof that are inherent in the type (Figure Xb).

The second or deep type, which occurs in every town of Europe, has a width between party walls of anything between 18 ft. and 40 ft. It is usually more than two storeys in height, and is two rooms deep with a stair against one party wall. In the earlier examples, fireplaces are set against the medial wall so that the stack comes through the roof ridge, not through the valley. It is roofed either parallel or at right angles, to the road. In plan, either a passage at one side runs through to a corkscrew stair, or in the wider houses, a central door leads into the front room, which is thus a thoroughfare. This division of types is not representative, as there is a vast number of houses that, being square on plan, have the characteristics of both. There are also narrow houses continually roofed, and shallow houses with gabled fronts. The distinction has been drawn to show how different degrees of concentration affected the forms of the house.

Towards the end of the medieval period, the increased use of lead valley gutters multiplied the gable fronted house. Houses with lead roofs were built in England during the thirteenth century¹. In 1241 an order was given for all leaden gutters in the Tower of London to be carried down to the ground². Whole roofs were not covered with lead in ecclesiastical work until the late fourteenth century.

It is likely that leaden gutters were used in the thirteenth

¹ Nathaniel Lloyd: History of the English House, p.31

² Ibid

century as a luxury. As noted above¹, Lydgate in the early fifteenth century still thought it the ideal for roofing. Metal was the only material available that could make valley gutters watertight: with its general use, the whole frontage could be taken up with a gable-fronted house.

Generally, we associate the gable-fronted house with the northern coast of Europe - Flanders and the Netherlands, and the roof with its ridge parallel to the road with Germany, France and England. But geographical distinctions are unreliable. John Speed's serial maps of English towns often indicate the two alternating along the streets as if he regarded the pattern as a sort of hieroglyphic script conveying the street. A drawing of part of a model of Munich made in 1571 by Jacob Sandtner² shows a length of street with five gabled fronts, nine houses with half gables of varying pitch, and seventeen with roofs sloping to the street. Jacques Lelieur's drawing of the streets of Rouen in 1525 shows 68 gable fronts, nine cottage roofs³. Only in the Lowlands had the gable front a clear majority.

The gable-fronted roof had these advantages:- its thrust was held by its neighbours if they were the same height; it could keep rain water and melting snow from falling onto pedestrians; the roof space could be easily lit by a window in the gable; and goods could be hoisted into it. As to cost, the same amount of roof surface was presented in both types, smaller scantlings being needed for the gable type, which also used less brickwork. Against this the builder had to set the cost of the valley gutter.

Houses with gables to the road had been built in the Netherlands before lead gutters were used, but they had taken advantage of the early servitude of "dropright". The custom

¹ Supra p. 103

² Reproduced in Hegemann and Peets: Civic Art, p.174

³ As reproduced in T.A. Cook: Story of Rouen. Viollet-le-Duc (Dictionnaire Raisonné-Maison, Vol. VI, p.262) writing of the XIV and XVth centuries, said: "Generalement ce sont les pignons qui se présentent sur la rue."

is interesting because it shows a way of concentrated building without party walls. Dropright allowed an owner to avert his rain water onto his neighbour's land. His neighbour had to leave a space half a foot wide to receive it¹, but was indemnified from damage to his wall. A greater space had to be left if the roof were thatched². Many bastides were, according to Viollet-le-Duc, built in this way³. In Holland the legal usage was not earlier than the fourteenth century and was probably a direct application of the Roman stillicidii aver-tendi.

There was fully developed party wall legislation in the towns of Holland at this time but the way of building with dropright seems to have been widely used⁴. It was wasteful of brickwork, as two waterproof walls had to be built 6 in. or so apart, with no later hope of repointing. A noisome slot separated the two neighbours. In the early seventeenth century it had become compulsory to build over the whole width of the erf, including the space previously reserved for dropright; in Rotterdam by an act of 1654 the builder wishing to do so had to put a "Keulsche goot" (Cologne gutter) on his wall⁵. This term as now used means a leaden or zinc gutter taking up the width of the top of the wall. As late as 1719 Rotterdam passed laws relative to dropright, but by 1768, when Caspar Philips Jacobsz drew the streets and waterways of Amsterdam, it had disappeared in favour of the party wall and valley gutter⁶.

Windows

The medieval craftsman was, under the guild rule, obliged to work on the ground floor towards the street, where all could see him⁷. He worked from sunrise to sunset.

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- ¹ Simon van der Leeuwen: Commentaries, p.289
 - ² Fockema Andreae: Oud-Nederlandsch Burgerlijk Recht, p.257
 - ³ Dictionnaire Raisonné de L'Architecture (Maison): A plan of the Houses of Montpazier is given.
 - ⁴ The heavy line between houses in late sixteenth century views, e.g. those of Croningen and Deventer probably represents this space (illustrated in Ter Kuile: Duizend Jaar Bouwen in Nederland). A house still remaining is shown in Plan 477 in Vermeulen: Geschiedenis der Nederlandsche Bouwkunst, II.
 - ⁵ Fockema Andreae; Op cit, p.260
 - ⁶ Het Grachtenboek van C.P. Jacobsz.
 - ⁷ Pirenne: Op cit, p.186

FIGURE X

- (a) The Shambles, York. A jettied street typical of narrow streets in the majority of unplanned towns.
- (b) Elizabethan houses, Staple Inn, Holborn, London, erected between 1570 and 1588. The shop fronts are modern.
- (c) Fifteenth century street scene, from a miniature by Jean Fouquet. From Salzman: English Life in the Middle Ages, p.65.
- (d) Early fifteenth century timber house front at Rheims (Place des Marchés) from Viollet-le-Duc; Dictionnaire Raisonné de l'Architecture (Maison) Jettied upon struts, the whole front is a bay window above ground level.
- (e) Het Lammetjie or Schotsche Huis, Veere, Holland, from Ter Kuile; Duizend Jaar Bouwen in Nederland, Fig. 195. Dating from 1561, the front shows the usual ground floor height.
- (f) House (Gasthuisstraat) at Zalt Bommel, early Sixteenth Century. From Vermeulen; Handboek tot de Geschiedenis pl. 439.
- (g) Cross section of Ford's Hospital, Coventry, from Dollman and Jobbins: Ancient Domestic Architecture, Vol. I. With jetting the first floor area was increased by 22 per cent.



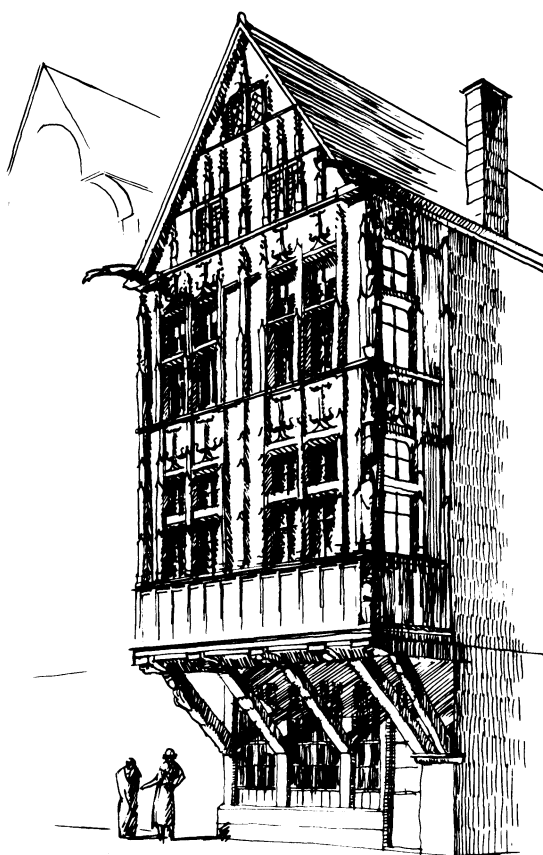
(a) YORK Shambles



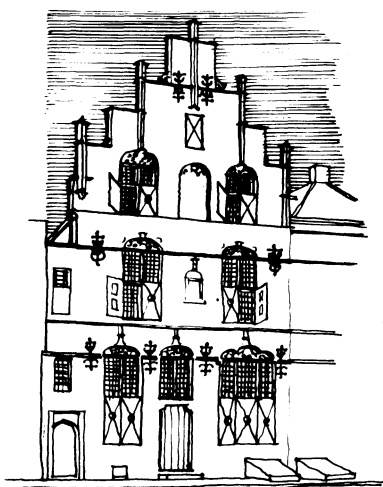
(b) LONDON Elizabethan houses in Holborn



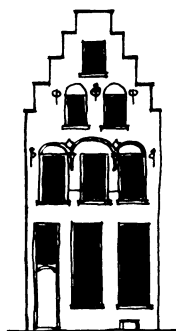
(c) Fifteenth century street scene



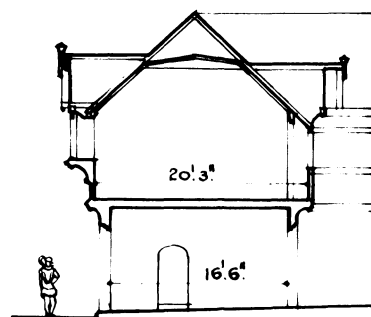
(d) RHEIMS Timber house front



(e) VEERE
Het Lammetjie



(f) ZALT BOMMEL
Diagram of house



(g) COVENTRY
Ford's Hospital

Night work was most unusual; the expense and poor quality of candles made it unprofitable¹. During the day he spent long hours at unglazed windows. Scriveners, or clerks working out accounts by abacus, must have been muffled to their ears in winter. Even when Arabic numerals were introduced in the sixteenth century, the processes of arithmetic were still long and arduous. It has been computed that what is now a few minutes' work, in the twelfth century took days of elaborate calculation². By the sixteenth century, spectacles had come into common use; a sign that bad lighting was causing eye strain.

The difficulties of lighting the deep ground floor rooms toward the narrow street were met by building the ceiling high and opening up the street wall (Figure XIa). Glass was introduced slowly. Instances of its use occur in the thirteenth century³. In 1328 a glazier's company was formed in London⁴. At first glass was used above the shutters, so that on cold days the room was still lit. It was white glass, translucent but not transparent - as a sixteenth century writer⁵ epitomised it: "Glasen wyndowis let in the lyght and kepe out the winde." In the last half of the Sixteenth Century it was in ready supply⁶. Examples show how fearlessly (from the architectural point of view) it was employed. From stallboard to the first floor, every square inch that could be spared by the structure was given to glass. The most whole-hearted examples belong to the early seventeenth century. In Dutch houses the ground floor was often 12 feet high, and almost entirely glass. At the back a mezzanine served by a separate

¹ Tallow often cost four times as much as lean meat (Coulton: Op cit, p.385)

² Dantzig: Number, the Language of Science, pp.27 & 5

³ Mumford: Op cit, p.57. Lloyd: Op cit, p.30.
Wood: Thirteenth Century Domestic Architecture in England, p.131

⁴ McGrath and Frost: Glass in Architecture, p.17

⁵ Horman (1519) Lloyd: Op cit, p.70

⁶ "Glass is come to be plentiful and within a little so good cheap." William Harrison (1587). Wilson: Life in Shakespeare's England, p.267

stair was inserted. The room heights diminished on the upper floors¹. (Figure X e and f).

The second function of the window - for observing the street - was restricted when leaded lights took the place of shutters, making it more difficult to lean out. Bays and oriels were developed in timber, and during the fourteenth century translated into stone. Because they could relieve the monotony of a view restricted to the opposite building, they enjoyed great popularity in street houses. Beautifully detailed oriels were a favourite feature of the fourteenth and fifteenth centuries, and those placed at corners enjoyed a view of three or four streets (Figure XIb)

Construction

Aside from the fire risk, timber was the building material par excellence for the town house. It was, to a large extent, prefabricated to save time and expense on the site. The owner usually acquired the timber and delivered it to the "framing place", which was often a paddock behind the carpenter's house. There it was worked, the outside walls were set up and journeymen were sent to the site to erect it². It was possible in timber fronts to allow a very high percentage of glass without losing strength; this accounts for many Dutch houses that have timber framing at ground level supporting a brick wall above.

Timber allowed the burgher to enjoy a greater floor area the higher he built. Jettying, or oversailing the wall below with brackets and cantilevers, was generally used throughout Europe. The increase in floor area given by a small projection is surprising. In the small two-storey Ford's Hospital, at Coventry in England, a gain of 22 per cent in floor area is made with a projection of 18 in. (See section Figure Xg). Jetties also weathered the front and protected pedestrians³,

¹ Jones: Old House in Holland, p.42

² Atkinson: Local Style in English Architecture, pp. 8, 14, 15.

³ At Montpellier, Boulogne, Paris and other University towns, professors had the right of walking on the wall side of pavement (Renard: Guilds in the Middle Ages, p.58)

though they were a hazard to horsemen at night¹ (Figure Xd). Stone and brick fronts relied upon the timber floor for their stability. In Holland the cramps used to tie back the street wall became a decorative feature of the house front, and the number of fronts still standing, compared with that of other countries, bears testimony to their effectiveness. Jettying in brick remained as a vestige of the timber forms, projections of one brick at each floor being common at Delft and Dordrecht².

In plan, the simple form described above remained until additions had to be made at the back. Little light wells were then formed behind one back room, giving a fresh lease of depth to the plan. This is particularly noticeable in France (Figure XI e and f). The typical plan of the older towns was protracted to a surprising degree (Figure XI h and j).

House Fronts

Most of the examples from which the urban domestic architecture of the Middle Ages is known were built after 1400. Very few timber houses of the fourteenth century remain³, but the gable-fronted house had become so firmly established that it changed little in the succeeding years. Ter Kuile points out that the vernacular type of Dordrecht and Delft remained stationary until the eighteenth century⁴. In fact, the subsequent history of the Netherlands house consists of the changes in its windows and decoration.

These narrow gabled fronts formed a patterned skyline to the street wall, giving it a strong unity and rhythm. At the same time the point of the gable marked the individuality of each house. Symmetry in the front came down from the roof, not up from the door. In almost all the narrow houses, the symmetry petered out at ground level. It was thus a purely visual symmetry, for which there was no other origin but

¹ A height of 9 ft. had to be left under them in London
Davidge: Development of London

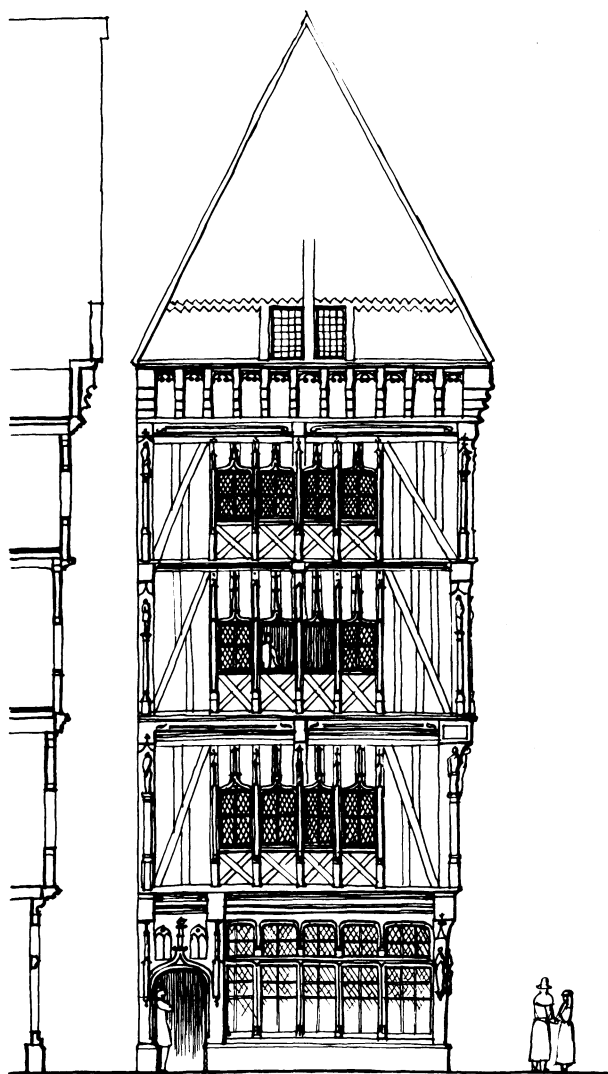
² Ter Kuile: Duizend Jaar Bouwen, p.364

³ No Thirteenth Century town house remains in England
(Wood: Thirteenth Century Domestic Architecture in
England, p.117)

⁴ Ter Kuile: Op cit, p.365

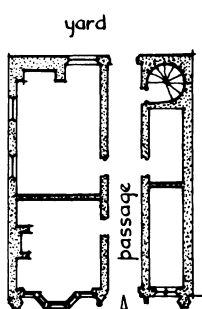
FIGURE XI

- (a) Front and section of a timber house in the early fifteenth century, Rue de la Tuile, Rouen, from Viollet-le-Duc: Dictionnaire Raisonné de l'Architecture (Maison). Most of the houses of this period had windows right across the street front. This, being a corner house, had light available from the side.
- (b) Corner oriel of the Bishop's house, Würzburg, from Stevenson: House Architecture, Vol. I, p.269
- (c) Plan of George Inn, Glastonbury, Somerset, from Pugin: Examples, Vol.2. Built in the mid-fifteenth century.
- (d) Plan of Tribune House, Glastonbury, Somerset, from Pugin: Examples, Vol. 2. Built in 1517 (see Harvey: Gothic England, p.39). This plan has certain features (screens, hall, stair and solar) in common with the contemporary English manor house. Both this house and (c) were of stone.
- (e) Ground and first floor plans of twelfth century stone house
- (f) at Cluny from Viollet-le-Duc (op cit).
- (g) Plan of simple Burgundian stone house of early twelfth century, from Viollet-le-Duc (op cit).
- (h) Ground and upper floor plans of typical merchant's house
- (j) of Hamburg. From Hamburg und Seine Bauten, p.548. The protracted shape echoes those of Amsterdam of the early seventeenth century, where sites of 20 ft. by 190 ft. were reserved for high buildings (Vermeulen: Handboek tot de Geschiedenis, p.189)

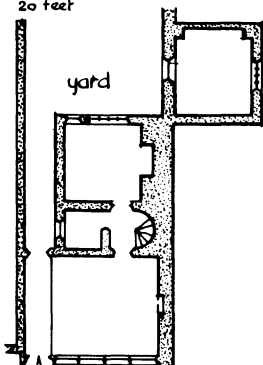


(a) ROUEN Front of corner house

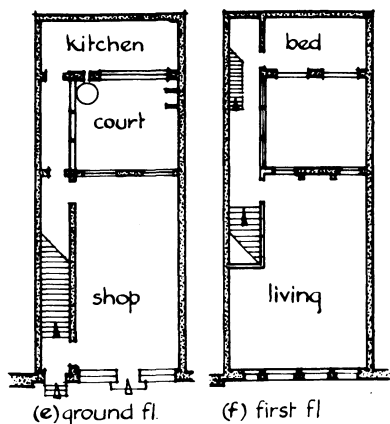
scale
0 1 2 3 4 5 10 20 feet



(c) George Inn



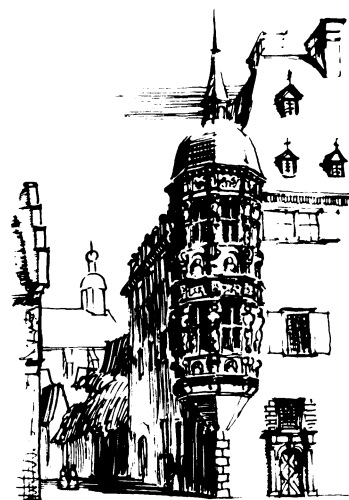
(d) Tribune House



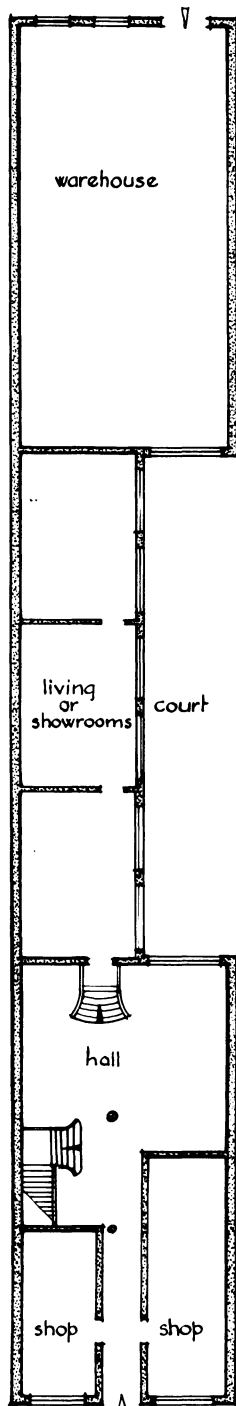
(e) ground fl. (f) first fl.

CLUNY 12th centy. house (g) Burgundian house

Scale of house-plans
10 5 0 10 20 30 40 50 feet

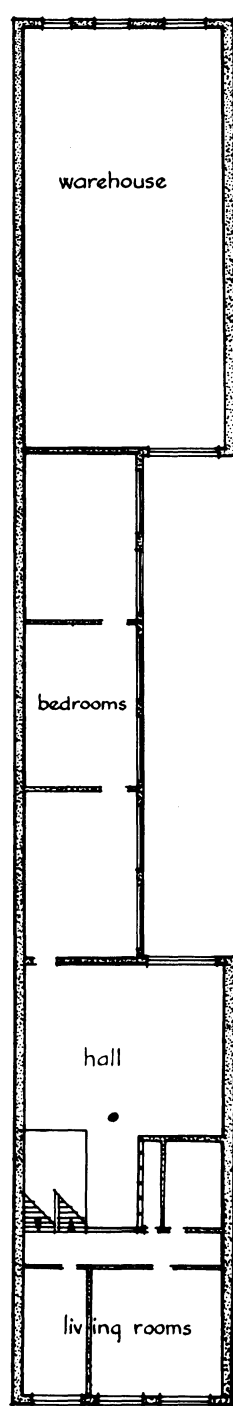


(b) WURTZBURG corner oriel



(h) ground floor

HAMBURG



(j) first floor

Merchant's house

the church front. Practically no emphasis was placed upon the door. The old Roman associations of the door and the gate and the architectural treatment they engendered had not survived the attack of the Church upon pagan practices. To our eyes, trained in the classical tradition, Gothic church and cathedral doorways seem inadequate, even mean. House doors were never higher than a man's hat, and were usually accorded a simple moulding or label.

In England the gable was used, but it was a projection from a mothering roof parallel to the road. Small gables, either as dormers or as emphasis to those parts that were jettied to bays and solars, are common throughout the country.

The elaborately carved fronts that are often held to exemplify medieval architecture were not general. The Tudor George Inn at Glastonbury, the glazed brick house at Utrecht, the carved timber houses at Gallardon, were exceptional and that is why we have knowledge of them. The richest work was reserved for the guild halls, like those that are the glory of Bruges and Ghent.

Conclusions

It was inevitable that between the road and garden the Medieval street buildings should have developed a more or less prismatic form. The house, a frustum of this prism, was turned towards each reservoir of light. If glass had not been available, it is likely that, to protect windows from the weather, the house lit only by an internal light well would have been generally used. But glass enabled the house to be extraverted and this gave the medieval street its important public character. Life in the street was continuously observed, and those who walked in it had to do so with some sort of decorum. If the northern medieval builders had used the courtyard house, with blank walls to the road, then the state of its streets from the architectural and sanitary points of view would hardly bear contemplation.

The shape of the medieval street struck a mean between the needs of transport and the forces of encroachment.

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The shape of the medieval street struck a mean between the needs of transport and the forces of encroachment.

Whether or not the aesthetic idea of enclosure was applied in the continual remodelling of street shapes, the planned towns do not bear its imprint; the straight wide street was then as always the administrator's dream.

Street form resulted from growth seemingly unhampered by by-laws. Custom, more various than the by-laws it fathered, controlled building with a looser rein. A hundred agencies swayed the growth of each street; individual encroachments, a revered building here or there, the cost of paving, the varying prosperity of the town; its disastrous fires, collapsed buildings, market laws and shops. But strongest of all in the final event were the habitual traffic lines. Even the pattern of buildings express their dependence upon transport.

What emerged were streets that for drama, enticement and natural rhythm, are matchless. No other age can show these qualities in street architecture. To succeeding observers they have been a constant stimulus, and to the early Renaissance architects a mine of ideas for formal effects.

A contiguate house form, sufficiently stabilized in the public taste to be repeated, emerged in the fifteenth century, and the earliest record of an organic straight street dates from that time. The emergence of the architectural street is usually located in Northern Italy, where the first movement of the Renaissance was strengthening to a flood. If the idea was new, however, the constituents were entirely medieval. The repetition of similar houses could be seen in a hundred towns of Europe, and was used as the accepted planning system for hospitals, alms-houses, monasteries and colleges. The repeated gable is a key sign of Gothic architecture. Even the constructional method shows a parallel to church building, approaching Lethaby's description: "Continuous throughout and energetic in every part¹." For the two roofs resting on each party wall cancelled their lateral thrusts, leaving only a dead load upon the wall.

¹ Architecture, p.205

This architectural street could not have reappeared had the street not been perceived as an internal shape. Unless we credit the medieval builders with evolving their own symmetry (an assumption that it has never been necessary to make in regard to other arts) the symmetrical Gothic cathedral interior was the only possible prototype.

One element was necessary to the new vision - a paved roadway. The features of the early medieval house front were external features; bays and oriels, and the battlements, turrets and crossloops that persisted long after their military purpose had gone. These were excluding features, and a townsman walking a road that was little better than worn earth between such forbidding buildings cannot have felt the security necessary for enjoying his surroundings. But if he trod good level paving he had physical security. He needed no longer to watch his step, and could use his eyes for better things. The paved way was a floor, an artificial plane connecting the street walls. It made the street an internal shape, completed by the pennon of sky that ceiled it.

Once the internal shape of the street was acknowledged, it inevitably became the main element, to which the fronts and detail, as well as the alignment of the buildings, were subordinated - a development that the Renaissance architects fully worked out.

In attempting to develop an enclosed form for the straight street, its designers faced a difficult task. Irregular enclosed spaces give a subconscious, if not a conscious feeling of security, strong in a space among buildings as in haphazard spaces in trees or rocks. But a regular channel such as a forest ride or a dry river bed do not give this feeling, because according to how he faces, the subject is vulnerable to attack from the flanks or the rear. Consequently, if the street is straight and not terminated within a reasonable distance, no physical sense of enclosure is present. For this reason the treatment of the straight architectural street was primarily aesthetic. It contrived to give in an unpromising

regular channel visual reassurance of security by analogy with the interior of a large building. Whereas the sense of enclosure in the irregular street was actual and primitive, that of the architectural street was suggestive and mature.

Casual development, encroachment and roadside building continued right up to the present century, but the medieval street epitomises the qualities we always associate with autochthonous towns. Here, we feel, lived men who could accomplish order without symmetry, who expressed function without geometry. Until the Renaissance there was no hegemony of style in domestic architecture; good design consisted in providing a well-lit interior, with little concern for the appearance of the windows in the front. Outlook from the inside dictated the position of windows to command light and view. They were consequently placed looking onto spaces or along streets where possible. From the spaces and streets, therefore, the windows terminated the view. This secured a rightness both in outlook and appearance, and the aspect of the building was, in short, related to the prospect from it.

Control by by-law has now spread throughout the world. What aesthetic success it will achieve is yet to be seen. The conditions in which the medieval street grew will probably never recur, and the forms, more biological than architectural, that it produced cannot be copied. Camillo Sitte, who analysed the medieval town more closely than any other, reiterated warnings against copying these forms¹. Attempts were made by his admirers to do so, and empty anachronisms were the result. The value of medieval streets to us lies in our aesthetic experience of them, in the way we are exalted and suppressed, expanded and belittled, enticed and welcomed as we walk through their various and everchanging shapes. For the interior of the street can be free, as no building can, of the structural regularities imposed by roofing. Any plan conceivable to man can be roofed with sky.

¹ In Städtebau, Chaps. I, V and VIII

VII

RENAISSANCE AND BAROQUE STREETS OF ITALY

There is a tradition of treating Italian Renaissance architecture as something created from a new outlook in all things; a phenomenon that suddenly transformed the needs of mankind and showed man and nature in a new light, as if the sun itself, on that day in 1377 when Brunelleschi was born, rose a different colour. However true this may be of religious architecture, secular architecture kept its old course. The medieval background of town and house, against which all the secular work of Brunelleschi, Alberti and Bramante must be seen, stood unchanged. He who looks for a radical difference in the street or the urban house before 1500 does so in vain.

In Italy this background emerged from the Middle Ages as a close irregular network of narrow streets, few of them straight, between open spaces. The city was reasonably fire-resisting. Brick or stone walls, sheer, high and continuous, lined the streets. At the ground floor they were blank or pierced with embrasures. Label moulds marked the level of each floor, and the walls were capped by simple eaves, machicolations or corbel-tables¹. Little light came from the street, so that where there was room the houses were built about courtyards. In contrast to this, the streets of many towns in Northern Italy were lined with arcades; set back behind the building face they gave access to shops.

These were the surroundings in which the Renaissance architects worked and built. They had to make the best of awkward sites, for the free-standing building was a rarity. During the fifteenth and sixteenth centuries churches and palaces were squeezed out of the piazza to jostle workshops, prisons and houses along the street, and to give to it an added consequence. Even minor streets echoed the rumble of gilded

1

Examples of the medieval facade are:- Pal. del Comune and the Trovatelli, Pisa. P. Grotanelli and P. Tolomei Siena. P. Friani, San Gimignano; Pal. Guinigi, Lucca. The Pal. Buonsignore, Siena is shown in Figure XIId.

carriages and saw church dignitaries passing on their daily occasions. Festal displays were more vigorous than ever, and secular trionfi outnumbered religious processions¹. For the architects, settings and decorations for pageants became prized commissions. As a result the common street attained a new importance: it was granted full civic status.

The straight streets of the sixteenth century came into being at a time when wheeled traffic was daily multiplying. But the architects who planned them showed that they hoped for something more than a useful traffic way. In fact, in the hilly towns and cities of Italy a straight road was not always suitable for horses. Just as construction lost its grip upon architecture, so in the building of towns practical matters - climate, traffic, building construction (which have hitherto accounted for the major distinctions in the architecture of the street) gave way to aesthetic matters.

Optical Values

There was no precedent in ancient Roman buildings for the early Renaissance street facade. For the basis of their design, the architects took the medieval street wall as it stood. In the way they used classical forms upon it, they showed that a new idea was abroad; the humanist idea of the individual observer, towards whom every created object must be turned. In other fields of art, this idea had, early in the Renaissance, been attendant upon the birth of new forms. The garden terrace is an example. At Poggio a Caiano, Fiesole and Quarracchi appeared the first attempts at the system epitomised by Bramante in the gardens of the Belvedere². It was a system of moulding a hillside to give to the observer a number of views of the countryside. Later, during the Baroque period, optical angles were to become the touchstone of piazza design³. In street buildings architecture began

¹ Burckhardt: *Civilization of the Renaissance*, p.255

² Charageat: *L'Art des Jardins*, p.42

³ See *Analysis of Piazza di S. Pietro* in Hegemann and Peets: *Op cit*, p.40

early to reflect a concern for the observer's view, hampered by the confines of the roadway.

In a narrow street a man looking at a facade is at a disadvantage. He cannot see the upper parts well because of their foreshortening. A symmetrical facade he sees only in enfilade, and he can comprehend it only by inference: if he stands opposite the middle, its ends are outside his view. Any projection hides what lies beyond and is itself greatly exaggerated, because its side or soffite is more prominent than its front.

By retaining the flat medieval facade with small projections, the Renaissance architect overcame some of these difficulties. He ordered the upper view of the building by keeping, in a new guise, the Gothic bands at each floor level. In facades that were too wide to be seen in one coup d'oeil, he placed the door off-centre, and by giving no special mark to the ends of the building, disarmed it of any intention of symmetry. He enriched those parts of the building within reach of the eye more than those beyond it. But to the one projection always visible to the observer - the cornice - he gave everything he could muster for dramatic effect, so that the facade, receding upwards, was halted against the sky by a shaded torrent of form¹ (Figure XIIc)

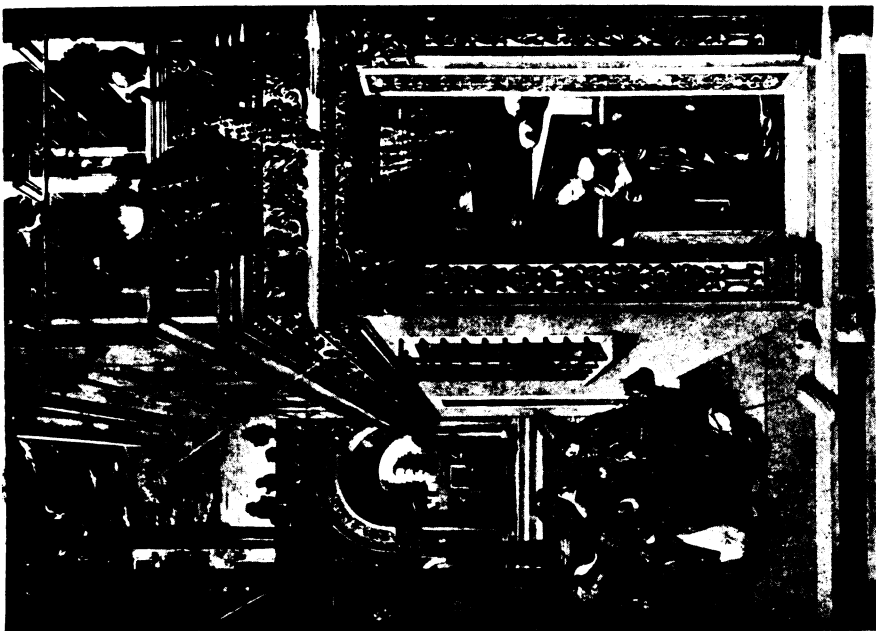
The Renaissance architects realised that if architectural adornment is to be legible from one side, it must be presented as bas-relief. The more subtle the modelling, the more legible it will be. Thus in the Palazzo Rucellai, Alberti kept the cornices at ground and first floor to small projection, and used pilasters - not columns, thus setting a precedent for many others. Sculpture in low relief, stucco or sgraffito was a feature of many of the richer palaces, such as the Palazzo Spada in Rome, and smaller houses².

¹ A variant upon the classical cornicione is the coved cornice of the Pal. Raimondi-Soldi at Cremona (1496). It is quite plain and painted with a number of cartouches, eminently visible from below. See Haupt: Renaissance Palaces, Vol. III.

² For example, the house in Via di S. Lucia (Le Tarouilly, Pl. 99)

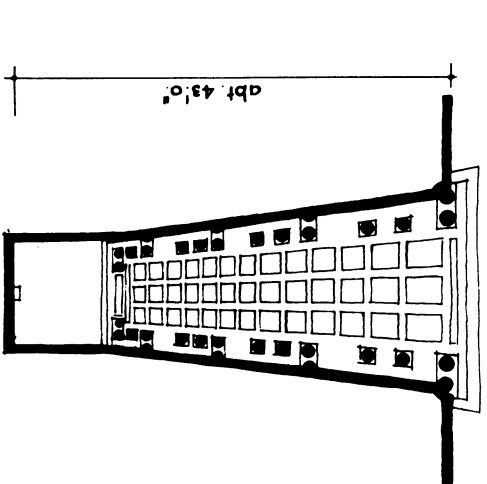
FIGURE XII

- (a) An early example of geometrical perspective in painting. The cornice and paving lines lead to the archway and tomb, forecasting the trough shape of the street and its terminal vista.
- (b) Borromini's trompe l'oeil in the courtyard of the Palazzo Spada in Rome, from le Tarouilly: *Edifices de Rome Moderne* Pl. 243. It was arranged to give the illusion of great depth in a limited space.
- (c) The street conditions in which the Renaissance facade was evolved. From Schütz: *Die Renaissance in Italien*. The sketch shows the continuous wall of the street, Medieval in origin, and the typically large and decorated cornice.
- (d) Palazzo Buonsignore, Siena, from Cummings: *History of Architecture in Italy*, Vol. II, Figure 409. A twelfth or thirteenth century facade with all the latent elements of the Renaissance front: sheer wall face with open ends, strong horizontal lines, rhythmical window spacing and the corbel table that became the classical cornice.



(a) Crivelli The Annunciation

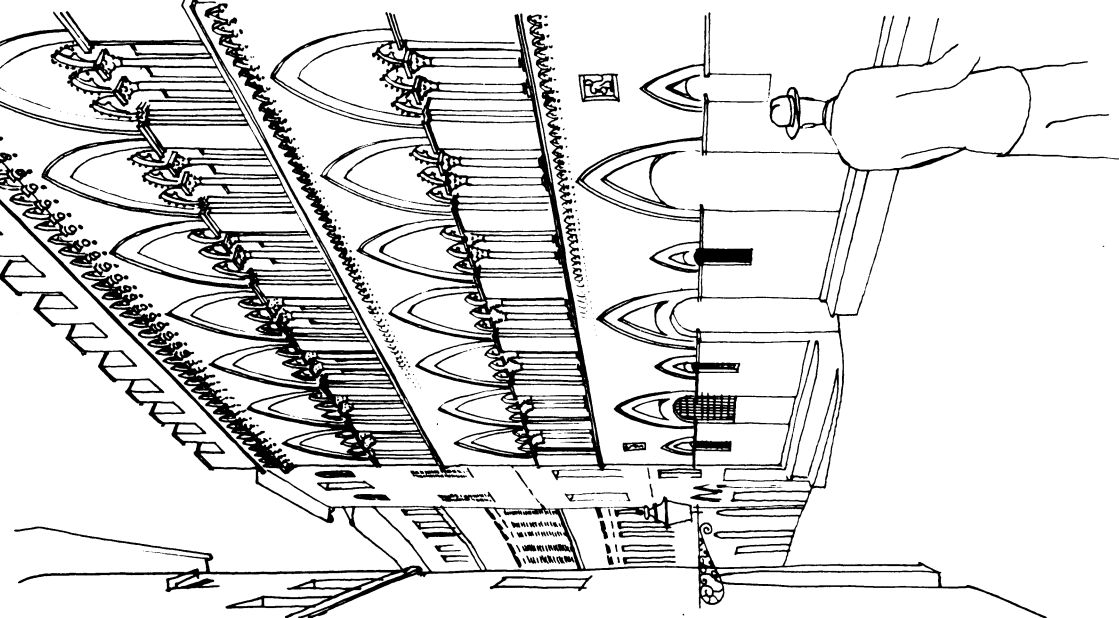
1456



(b) Pal. Spada . Rome
Colonnade in courtyard



(c) S I E N A Palazzo Spannocchi



(d) S I E N A Palazzo Buonsignori

The ultimate step in this direction is the entirely flat facade with architecture or ornament painted upon it, and this we actually find in some cities. Genoa, in its pre-Alessi period, was noted for it, and at least one such facade remains, though not in a street¹. It was a feature of Verona, where the Pal. Fioretti had frescoes painted by Bathista d'Angelo del Moro in 1600. Sir Kenneth Clark describes the painting of houses with garlands and pilasters as "universal"². Details of at least one painted house in Rome were recorded by le Tarouilly³.

Perspective

All these concessions to the observer could be forecast by the new science of perspective. This new structure of pictorial art - Geidion⁴ calls it "the unchallenged canon to which every artistic representation had to conform" - was of particular interest to architects. Those who were painters used it in backgrounds to their pictures⁵, or like Peruzzi⁶, Scamozzi and Palladio, used it to simulate reality in stage scenery. In illusionist reliefs they put it to practical test. Upon Bramante's choir of S. Satiro, Milan, its use is justifiable. On the facade of the Scuola di S. Marco, it is not. The entrance to the Palazzo Farnese is a border-line case. Borromini's trompe l'oeil in the courtyard of the Palazzo Spada in Rome (Figure XIIb) which le Tarouilly⁷ dismissed as "un jeu puéril et indigne des nobles réalités de l'art" - is justifiable as an attempt to give relief to the closed view of the courtyard, similar in intention to the wall paintings at Pompeii.

¹ The Palazzo Luigi Pallavicini

² Architectural Backgrounds in Renaissance Pictures, R.I.B.A.J., February 1934, p.326

³ Plate 344

⁴ Space Time and Architecture, p.31

⁵ Kenneth Clark: Op cit. Figure XIIa shows an early example

⁶ Vasari: Lives II, p.297

⁷ Op cit, p.529

Linear perspective postulates a fixed observer. The optical success of these few examples depends upon whether the observer's position is fixed or not. In a street where the observer moves freely along a line opposite and parallel to the facade, the application of perspective could give the value of horizontal projections from the normal viewing position, but its greatest assistance would be in the design of terminals to the street. However the observer moves in a street, the end of it is an inescapable attraction for his eye. Vertical lines disappear, while strong horizontal lines - of which there are many in the medieval and Renaissance facades - together with the joints of the paving, present in stone the construction lines of a perspective drawing. We may be sure that the Italian eye, sensitized to pictorial values, demanded something in the focus of the picture that should be worthy of it. There was, as we have seen, no live tradition of axial street planning in the Middle Ages, so that the terminal building regained its classical value not through the classical element of motion, but through being the chief element in a picturesque view, or vista.

The Straight Street

Long views were rare in the medieval town. To us, the act of breaking a vista through these huddles of houses and roads symbolises the Renaissance imagination bursting the barriers to new knowledge; and perhaps the Popes, dreaming in the Vatican gardens of the old Roman roads, thought so too. They had in the city's traffic congestion a practical stimulus for their aesthetic plans.

To judge from the increasing numbers of stables and coach houses provided in town palaces in the first half of the sixteenth century, it appears that at that time the wealthy came to prefer driving in coaches or carriages to riding in sedan chairs or on horseback¹. The century saw

¹ The Pal. Altieri, for example, had 58 stables and ten coach-houses, while even modest houses (Figure XIVE) had two or three coach-houses.

the first four-wheeled vehicles with swivel fronts - more manoeuvrable and able to turn faster¹. This invention must have aggravated the hazards of the streets, which in the preceding century had inspired Leonardo to advocate streets on two levels for the new Milan. "No vehicles should go in the upper streets; these should be reserved for the use of gentlemen. And through the lower streets would go the carts and barrows and things used by the populace²."

There were, then, good reasons both practical and aesthetic for straightening and widening streets. How the two incentives stood in the architect's mind we may judge from Palladio, who set out the Renaissance theory of street design. We see in his writings, firstly, a medieval concern, prompted by the plagues that swept the cities of Italy, for the quality and movement of air. Secondly, there is an attempt to make the town lay-out suitable for wheeled traffic. Thirdly, throughout the discourse he makes it clear that the question of beauty can clinch any argument: the buildings are to adorn the street as trees adorn a country road. His ideal of a street is that which shows the buildings to advantage, to delight the citizen's eye and to impress the stranger's.

This is what he wrote: (Quoted from Leoni's translation published in 1715³)

"The ways ought to be short, convenient, secure, pleasant and beautiful. They will be short and convenient if made in a strait line: and so large, that carriages and horses be no hindrance to each other when they meet; wherefore it was provided by law among the Antients, that where the ways were strait, they should not be less than eight foot in breadth; nor less than sixteen, when they were crooked or winding. The ways will be further convenient, if they are made everywhere equal; that is to say, that there be no places in them where armies may not easily march..

"In the city there cannot be a more agreeable sight, than a strait, even, and large street, having magnificent houses on each side, and built with those ornaments which are mentioned in the preceding books. Now as in towns, the streets are beautified by buildings; so in the country are the ways adorned by trees, which, being on both sides, delight our minds with their verdure, and highly refresh us with their shade."

¹ Godwin: *Op cit*, p.82

² Kenneth Clark: *Leonardo da Vinci*, p.64. A drawing of Leonardo's showing his design is reproduced in the *Architectural Review*, July 1952.

³ Book III, Chap. I

In Chapter II he proceeds to planning, recommending that where the air is cold or temperate -

"there the streets ought to be made large and noble, since thereby the city will become more wholesome, convenient and beautiful."

In such a climate the streets should be built wide and high -

"that therefore the one side of such a street is less eclips'd by the opposite side, the beautifulness of temples and palaces must needs be seen to greater advantage in the large than in the narrow streets, whence greater pleasure arises to the mind, and greater ornament accrues to the city. But if the town is situated in a hot climate, the streets ought to be made narrow and the houses built high; that by the shade and straitness of the passage, the heat of the Air may be temper'd, and consequently that it may become more healthy. as this is well known by the example of Rome, which, as we read in Cornelius Tacitus, grew more hot and less healthy, after Nero, in order to make it more beautiful, had enlarged its streets. In this case, however, for the greater ornament and convenience of the city, the street that is fullest of the principal trades and the most frequented by strangers, ought to be made large, and adorned by magnificent and sumptuous buildings; because the strangers that pass thro' it will readily conclude, that the other streets of the city bear a proportion to the largeness and beauty of this."

Streets should lead directly from the gates to the chief square, to the public buildings. They must not face the principal winds. They must always be paved, and pedestrian ways provided at each side, paved in large stones or tiles -

"the reason is, that in walking, they never offend the feet."

There must be a kennel in the middle of the roadway to take water from the roofs.

The impression we get is that he is glad to have any practical reasons for reinforcing his aesthetic recommendations. It is significant of this attitude on the part of the Renaissance architect that the new straight streets of Rome laid out by the Popes from Julius II to Gregory XIII did little to relieve traffic congestion¹. Dr. Giedion's recent study² has shown that, with the exception of the Via Guilia and the straightening of streets from the Pons Elius bridgehead, the new roads of the sixteenth century were not cut through the living Rome, but were laid through the derelict ancient

¹ See Fokker: Roman Baroque Art, pp. 90, 91

² Sixtus V: Architectural Review, April 1952

city. Of these, the Sixtine roads were ecclesiastical in origin, intended to link the seven churches of the pilgrims. They were built, wrote Domenico Fontana, without concern for the hills and valleys they crossed -

"revealing in several places which they pass, the lowest portions of the city with various and divers perspectives; so that, aside from the devotions, they also nourish with their charm the senses of the body."

Although Alberti recommended sinuous streets in small towns for artistic reasons¹, in all new building straight streets were the rule. Bernardo Rossellino (1409-64) designed three streets leading from the square at the Castel St. Angelo to the Vatican, lined with shops and arcades². His plan of large blocks is, however, really the bastide system; it had no closed views. In his ideal town plan, Scamozzi gave coherence to road and building by placing a block at the junction of three streets and giving four vistas to each piazza. The plan of Palma Nuova (1593) contained similar motifs.

Terminals

The practice of leading roads to important buildings had its corollary in the planning of buildings that faced the end of streets. The axis of the street gave the pictorial axis to the building facade: an axis that did not penetrate far into the plan. Peruzzi took the entrance of the Palazzo Massimi alle Colonne to one side of the plan to present a symmetrical facade to the street. The Palazzo Lancellotti at Rome was similarly treated³. If a street were long, the terminal building had to be very high to dominate the view. As an alternative, it could be symbolised by an obelisk. Those at the Piazza del Popolo, S.M. Maggiore and S. Giovanni Laterano symbolised the gate and the churches. The turning of the horizontal axis of the streets into the vertical axis of the obelisk was an artistic idea of the

¹ "This winding of the streets will make the passenger at every step discover a new structure, and the front and door of every house will directly face the middle of the street ... it will be both healthy and pleasant to have such an open view from every house by means of the turn of the street." (S.Lang: The Ideal City. Architectural Review, August 1952.)

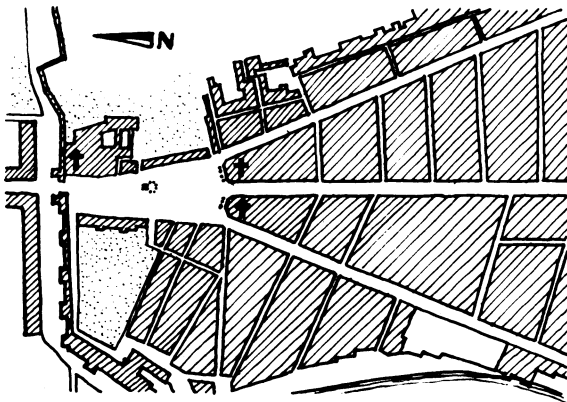
² Fokker: Roman Baroque Art, p.203

³ Le Tarouilly, Pl. 346

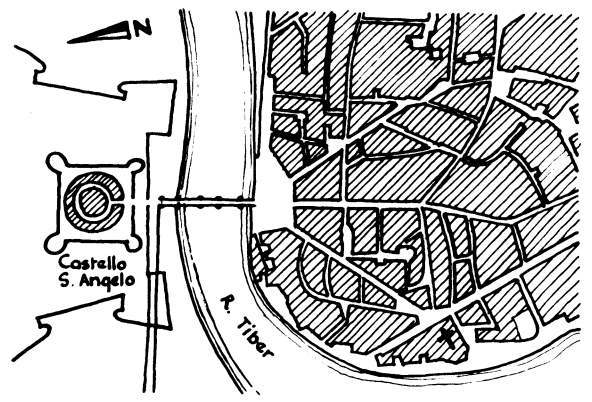
FIGURE XIII

- (a) Plan of the Piazza del Popolo as laid out by Sixtus V and Domenico Fontana. From Giambattista Nolli's plan of 1748.
- (b) Plan of Piazza di Ponte, Rome, from the same source. The church upon which the lower radial road terminates is S. Giovanni dei Fiorentini.
- (c) The Quattro Fontane, Rome, at the junction of two streets laid out by Fontana. From a print reproduced in Bolton: Gardens of Italy, p.85.
- (d) Plan of Quattro Fontane from Nolli's plan.
- (e) S. Maria in Campitelli, Rome, and adjacent houses. (Rainaldi: 1656). The main cornice common to the three buildings constitutes one of the earliest successes in uniting different buildings. From Fokker: Roman Baroque Art, Vol. II, Figure 54.
- (f) A stairway in the Gardens of the Villa d'Este, Tivoli, laid out 1550-59 by Pirro Ligorio. From Bolton: Gardens of Italy, p.205. In such garden shapes the Baroque architects developed the form that later became the architectural street.

ROME

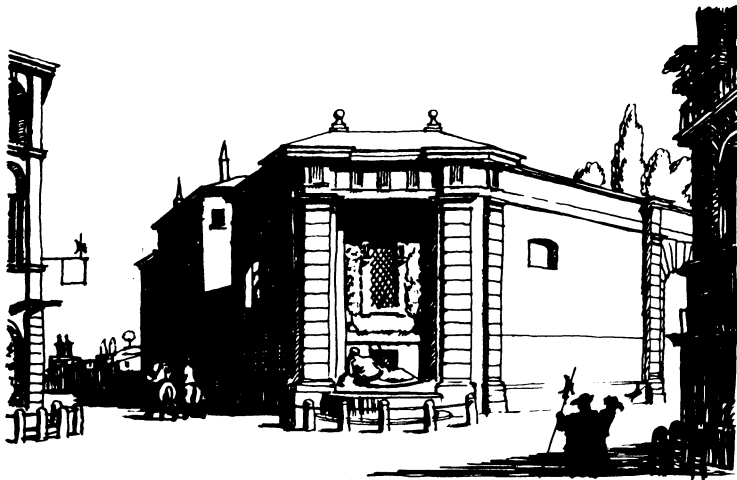


(a) Piazza del Popolo

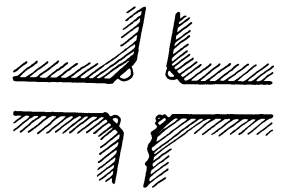


(b) Piazza di Ponte

Scale 0 500 1000 2000 feet



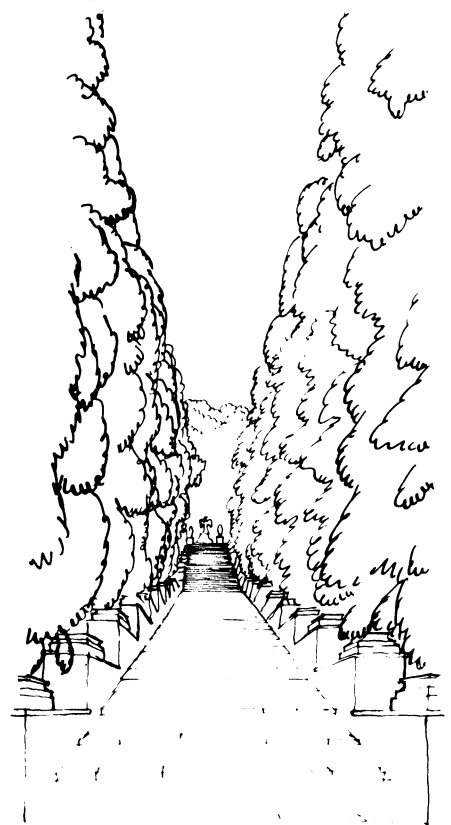
(c) The Quattro Fontane



(d) Quattro Fontane : plan



(e) S. Maria in Campitelli



(f) Villa d'Este, Tivoli : stairway

highest order: it is comparable to Bramante's design for St. Peter's, which having a snow-crystal plan may be said to have a vertical axis. For the Mother-Church of the world this idea of approach from all points of the compass, culminating in the implied upward movement of the vertical axis, was superbly appropriate.

Any symmetrical facade has, of course, a vertical axis, and therefore implies upward movement in one plane; it is the concentration of this movement in a solid object that gives such tremendous effect to the obelisks, approached from a number of directions. The first star plan - that of the Piazza di Ponte at Rome (Figure XIIIb) - dispersed traffic from the bridgehead of the Pons Elius. There was no axial climax to the converging streets, but the Castel St. Angelo provided one as soon as the piazza was entered.

When they regulated the three ancient ways leading to the Porta del Popolo and created the long piazza within the gate, Sixtus V and Fontana placed the obelisk where it could serve two purposes; it terminated the view toward the gate from the city and it also gave to those entering the city a sense of destination - they were in Rome. As it then stood, the piazza (Figure XIIIa) was a finer composition than it is today. Its long, narrow shape threw attention towards the three roads, and the twin domes gave to the churches a stream-line appearance, like the cut-waters of a bridge: motion and traffic were everywhere suggested¹. It was a mistake to add the bell-towers; they give honour to the Corso at the expense of the other two roads, destroying the trinity of the design. Today, seen from Valadier's enlarged piazza, the Ripetta and Babuino each has a lopsided entrance, leaving no dominant element, either road or building. Enclosure and escape are expressed equally and the architectural road junction of Fontana is thus robbed of its virility².

¹ A drawing attributed to Bramante shows a corner building, domed over a rounded wall (Hegemann and Peets: *Op cit*, p.40 : the earliest classical treatment of a corner.

² How interesting it would be to know how Fontana intended to handle the junction of the fourth road (the Strada Felice) with the Piazza!

That Fontana was sensitive to the aesthetic qualities of the road is also apparent in his handling of the crossroads of the Strada Pia and the Strada Felice - the Quattro Fontane. A fine view in each direction made it a place for special treatment, and the corners of the garden walls were splayed after the fashion of the Vigna di Papa Giulio and ornamented with statuary and a fountain (Figure III c and d). Thus each pair of fountains framed the further view as the crossroads was approached. It is not an embryonic or vestigial piazza, but a place of pause in the journey, marked by an arrangement that reminds us of the Roman quadrivium with its tetrapylon. By seeing a fountain and not an entrance on each corner, our attention is kept upon the roads.

The Street as an Architectural Entity

By degrees, the street was dignified into an architectural whole. Its ideal shape - the formal trough-- was first created in gardens. The Alley of a Hundred Fountains at the Villa D'Este at Tivoli (1550-59): the great avenue punctuated by statuary, leading to the Isolotto at the Boboli gardens; stairways such as the eastern stairway at Tivoli (Figure XIII f) the ascending ramp to the Casino at Caprarola, enriched by its medial cascade, all were variants of the same theme¹. But what in gardens was only a matter of design, in the making of streets had to be carried out against the difficulties of ownership, age and size of the buildings. The intention was made clear by suggestions. Maderna and Giacomo della Porta emphasised the channel shape by the way they designed fountains in two streets. The first fountain faced the straight Via Giulia, and consisted of a flat sheet of water falling to a tank; the second, in the Piazza Bologna, was placed in line with the buildings of the Corso, at the end, not in the middle of the piazza².

When the street was considered as one complete shape, it was natural that it should attain some measure of uniformity

¹ For illustrations see Bolton: The Gardens of Italy.

² Fokker: Op cit, pp. 91, 92

in its architecture. Throughout the Renaissance we can see the wish to contain diverse elements in one architectural expression. The Cancellaria facade screened a palace and a church. Lombardo's old Procuratia (1480) in the Piazza San Marco at Venice gave a cursive facade to one whole side of the square. On the Capitoline, the Palazzo dei Conservatori was given its twin to complete a symmetrical composition. Uniform house fronts were designed by Cortona for the pentagonal piazza to S.M. della Pace at Rome, and the first example of sympathy between different buildings was the Church of S.M. in Campitelli at Rome and its flanking houses¹ (Figure XIIIe). These examples were tentative steps towards the unified architecture of Turin and countless later examples outside Italy.

Inherent in idea of the street as a formal entity were the symmetrical terminal and two symmetrical sides. Perhaps the first and certainly the most important example in Italy of a street with bilateral symmetry was Giorgio Vasari's Uffizi in Florence. It was completed in 1574² in the astonishingly short time of five months³. The architect was commissioned to rectify the old street leading from the Piazza di Signoria to the river, and to preserve the old buildings that lined it. He took a colonnade at ground floor along the two sides of the street and returned it at the end with a triumphal arch giving a vista across the Arno (Figure XIV a and b). Above the colonnade, two storeys one room deep gave a uniform facade to the street. The sides have eleven repeated bays, with no mark at the centre or the ends.

The facade treatment is really that of a palace cortile, extended to embrace a street. By closing the end at the Arno, Vasari strengthened the sense of enclosure that its architectural treatment suggested. The courtyard of the Uffizi was an important intermediate between cortile and street.

¹ Fokker: Op cit, p.203

² Anderson and Stratton: Architecture of the Renaissance in Italy, p.292

³ Vasari: Lives, Vol. IV, p.285

The Baroque Street

In the naves of churches and in street facades, the rhythmical repetition of units in the early Renaissance was a continuation of Gothic practice. Windows occurred at regular intervals in the facade; the door did not interrupt the rhythm but merely took the place of a window. During the Baroque these simple rhythms were dissolved in larger units. Progression was expressed in a different way.

If we pass from one room to another in a house, we are aware that we have moved by our changed surroundings, not by counting our steps, either consciously or subconsciously. The Baroque architects found that by abandoning rhythm in favour of change, they could transport the observer as he walked along a church nave. His exaltation came from the subduing of his bodily rhythms. No chequered tiles, closely spaced columns or vaults reminded him of his pulse, breathing or steps; in their place were larger gradations of shape, each slowly succeeding the other. Ornament beckoned his attention hither or thither, seducing him away from the selfish to the sublime. The simple rhythms of Brunelleschi's S. Spirito, Florence, are entirely absent from Vignola's Gesu. In walking from the door to the altar of St. Peter's, our experience is hardly one of progression at all: it is almost one of translation. The whole picture develops and enlarges itself, as if we were still and the building moving about us. Baroque church interiors in this way induce a feeling of heightened importance in the individual, in contrast to his abasement in a Gothic cathedral. To take an example of a different sort; a long flight of stairs, such as those approaching the cathedral at Amalfi, tempts one to count each step one takes. If, on the other hand, the stair is arranged to develop in different shapes and directions, like the de Sanctis steps approaching the Trinità, then we forget ourselves in the changing scene.

To maintain interest upon a distant objective through successive changes, the architect must place great emphasis upon it. Baroque altars were consequently elaborate and

enlarged. Upon the facade, the line of approach was given overriding importance. The door regained its Roman proportions, and dominated the whole facade. This is naturally more noticeable in churches than in dwellings; though Fokker notices that in the early Baroque period axially placed fountains commanded the attention in palace courtyards¹.

Genoa

The straight street, lined by sumptuous palaces, remained during the Baroque period, the ideal of the architect. Only one man seems to have given it reality, and that was Galeazzo Alessi, Perugian by birth, he knew Michelangelo in Rome, and in 1549 was summoned to Genoa to construct the mole². He had attained some reputation as a military architect, and perhaps on this account was entrusted with restoring the city walls and laying out some new roads outside the gates. He conceived the idea of a new aristocratic quarter for the city, built about a new street. This Strada Nuova was to run at the foot of a steep hill to the north of the city. At the time of his death in 1570, the project was well under way. It gained an immediate and wide reputation. Rubens³ published drawings of many of the palaces, and half a century after it was built John Evelyn noted in his diary⁴ -

"The famous Strada Nuova, built wholly of polished marble, was designed by Rubens, and for stateliness of buildings, paving and evenness of the street, is far superior to any in Europe, for the number of houses."

Vasari⁵ called it "the most magnificent street in Italy, and the richest in palaces."

With its later extension (the Strada Nuovissima) the new street ran for a distance of over 650 feet (Figure XIVc). The width of the road was 24 ft. The palaces all had facades at the road line, generally of three storeys and an attic.

¹ Fokker: Op cit, p.64

² De Foville: Gênes, p.76

³ In 1622. (Burckhardt: Recollections of Rubens, p.16) His drawing of the Pal. Lercari-Parodi is reproduced in De Foville, op cit, p.83

⁴ 17th October, 1644

⁵ Lives: Vol. IV, p.242

Thus they made the street very narrow, but many had gardens beside them, so that it was well lit. Cornices at the same level and string courses at the same heights as their neighbours, gave unity to some groups.

Precisely what part Alessi played in the building of the palaces is not clear. He has in the past been credited with many¹. Whether he laid down the main lines of the facades of others is still questionable, but those which can be attributed to him with certainty² show that he preferred plain astylar facades without the ornament in relief that covered those built later.

The Strada Nuova held up an example to Italy of how impressive a street could be if the palaces lining it were built in a restrained, flat and friendly manner, each subdued to the larger conception of the street.

Buildings in Streets

The use of the courtyard plan in Italy must be left as an unexplained phenomenon. Its coolness in summer is unquestionable; but to an English visitor, shivering from All Saint's Day to Easter in rooms with no fireplace, and risking pneumonia in passing round the cortile, the courtyard house defies explanation in terms of climate. We have to fall back upon some such post factum as Geoffrey Scott's: "Classic forms in Italy were indigenous and bound to reappear³." In a strangely literal sense this is true, for it is remarkable that the plan of the smaller Renaissance house was arranged very similarly to those of Pompeii, which still lay hidden under their pall of earth⁴.

Even in two-storey houses the light from the courtyard did not penetrate far into the ground floor rooms.

¹ Gauthier (in *Les Plus Beaux Edifices de la Ville de Gènes*, Vol. I) attributed five in the Via Nuova and one in the Via Nuovissimi to his hand.

² The Cambiaso and Parodi (*De Foville*, op cit, p.86)

³ *The Architecture of Humanism*, p.20

⁴ Cf. Figures VI d - j and XIV d and e.

They were thus built high¹. It was an extravagance, because they were put to mundane uses - stables, kitchens, servants' rooms, laundries, lavatories and sometimes shops. This was a legacy of medieval street conditions. In Venice the living and reception rooms could not be on the ground floor, which was subject to flooding. In Rome, according to Le Tarouilly², guests paused only for a moment in the courtyard before passing up the stairs to the mezzanine where the owner lived and on to the first floor reception rooms. It is to this practice that we owe the monumental stair of the Renaissance palace³.

This is not the place to give any account of the palace plan. Two things, however, we may notice. Firstly, the courtyard was always treated as an open space, never as a light well. It was graced with architectural forms often in excess of the facade, showing that it still enjoyed something of the affection that the Roman gave to his atrium, that the emphasis of life was inwards. The absence of bays, oriels and balconies from the facade is notable⁴. Secondly, the arrangement of windows fixed the partitions between rooms on the street front. This planning method, which was so searingly criticised during the early years of this century, has now given way to determination by the centres of the structural columns, a practice hardly less censurable.

Facade

The design of late medieval churches of Italy reverted to the Roman temple practice of giving special attention to the entrance wall, making it almost a separate feature of the building. Although there are notable examples elsewhere in Europe (e.g. Exeter and Peterborough Cathedrals) of this isolation of the facade, it was in Italy, particularly

¹ For example, Pal. Massimi alle Colonne: over 22 ft. from floor to floor.

² Edifices de Rome Moderne, p.12

³ Basements were common. Those of the Pal. Massimi alle Colonne and the Pal. Giraud, for example, took up the whole site.

⁴ In Venice balconies were common owing to the attraction of the canals.

during the Baroque, that it developed. We must look for the cause precisely where we found it in Roman times - in the procession or the idea of approach to the altar. The facade of the island church was the expression of approach along its axis; its symmetry was that of the interior; the door was the invitation to the altar. The Renaissance architect accepted this perceptual attitude to facade design, and neglected the sides of the building accordingly. Often his facades bore no relation whatever to the sides or the interior shape. In street churches he had no compunction in making the facade a separate problem entirely. The difficulty of making the right angled change of axis from the street to the church was partially overcome by giving dominance to the door, making it the aesthetic object of the whole face of the church.

No prejudice about expressing the interior of the building existed during the Baroque. The lively facade of S. Carlo alle Quattro Fontane, which today epitomises the Baroque street front in Italy, completely defies relation to the interior. It was added 26 years after the church was finished¹, and it takes up only part of the street wall². Attached and detached columns crowded about the doorway until they almost replaced the wall itself.

Palace facades reflected these developments. In the Antinori and Strozzi palaces at Florence and those of Cornaro and Vendramin at Venice, we see the street wall distinguished from the body of the building, the cornice returning upon itself at the ends. The spacing of windows was closer about the door in early Baroque palaces such as the Palazzo Caetani, Rome.

In working out the problems of the street facade, the Italian architects were fortunate, compared with those of Northern Europe, in having courtyards in most of the houses.

¹ Wellesley: Francesco Borromini. RIBAJ, March 1952, p.38

² Out of courtesy for the Quattro Fontane crossroads.

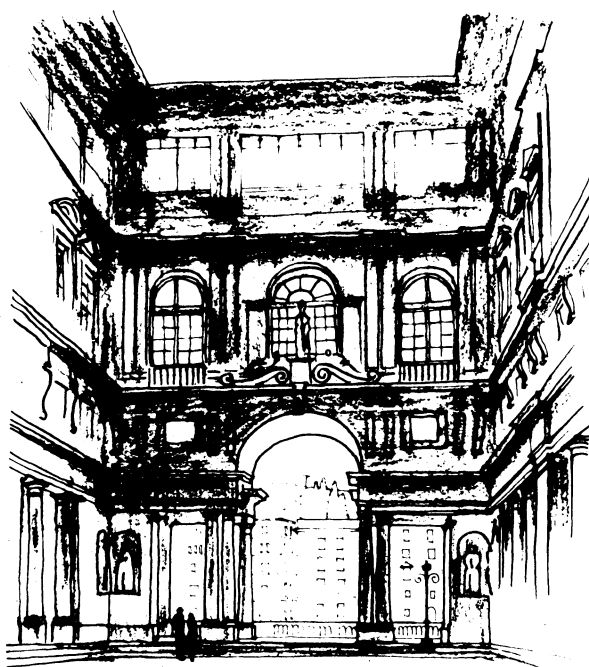
For the Northern European street facade, with its large windows below and small above, was not satisfying as a simple wall; the area of the wall, as the carrying member, increased as the building rose. In the courtyard house, windows were not important for lighting the ground floor rooms, and the area of wall diminished upwards. The difference is shown in the two buildings illustrated in Figures Xf and XIId.

During the Middle Ages it was the practice to render the street wall defensible by building a sturdy wall at ground floor and piercing it with embrasures. Fighting in towns did not die down until the sixteenth century, so that this feature remained in the Renaissance front. But this "stronghold" type, so popular in Florence, could never really succeed as a facade in the enclosed and unified street that the Renaissance developed. Large windows to the piano nobile were vulnerable, if the ground floor was not. The very seats that ran along the rusticated base of the Antinori, Riccardi and Strozzi palaces belied the military aspect. Worst of all, whenever shops were placed along the ground floor, all pretence of impregnability in the facade was in vain. Palaces and houses, particularly in Rome, therefore, reverted to the simple wall pierced with windows of more or less equal value, while the rusticated basement was retained to give a suggestion of structural, not military strength. An echo of the embrasured ground floor remained in the grilles that covered the windows.

The Florentine facade was the last stronghold of exclusion in the street. In breaking it down, the shop was the strongest agency. Exclusion is the last thing a shopkeeper wants to convey, and in times of stress he must throw in his lot with the street for good or ill, relying upon the city wall as his last line of defence. From the beginning of the period, enclosure was the keynote of the shopping street in the North Italian towns. The same arcade that sheltered shoppers extended along residential streets in Bologna and Padua. It consisted of a series of light arches, carried on columns, supporting the face of the building

FIGURE XIV

- (a) The courtyard of the Uffizi, Florence. From (a) Haupt:
- (b) Renaissance Palaces of Northern Italy, Vol. I, and
 (b) a postcard. The actual courtyard measures 467 ft.
 by 58 ft. wide.
- (c) The Strada Nuova (now Via Garibaldi), Genoa, from De
 Foville: Gênes. The palace on the left (Raggio-
 Podesta, by G-B Castello) exemplifies the flat, bas-
 relief facade of Italy.
- (d) Small houses in Rome from Le Tarouilly, Pl. 26 and 99.
- (e) The first, on an irregular enclosed site, and the second,
 with the characteristic arrangement of the palace, both
 show similarity to Pompeian plans.
- (f) An early Renaissance cortile, from Baum: Baukunst der
 Fruhrenaissance in Italien, p.111.
- (g) S. Spirito, Florence, from Baum: Op cit, p.41.
- (h) The facade of a palace in Bologna, built about 1500;
 from Schutz: Renaissance in Italien, Pl. III.
 The same architectural elements of arcade and vaulting
 surmounted by a wall with windows are used to enclose
 courtyard, nave and street.



(a) Towards the Arno

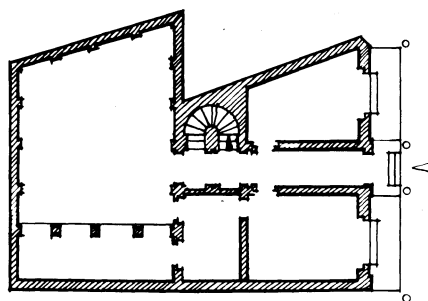


(b) Towards the Palazzo Vecchio
The Uffizi

FLORENCE

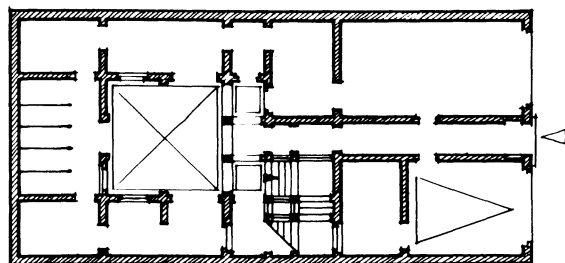


(c) GENOA Strada Nuova



(d) ROME House in Via Alessandrina

Scale of plans
10 5 0 10 20 30 40 50 60 70 80 feet



(e) ROME House in Via delle Cinque Lune



(f) Pal. Medici Florence. Courtyard



(g) S. Spirito Florence



(h) Pal Farnese Bologna.

above. It is of the greatest significance that the identical system was used to line nave and street alike, to enclose both cortile and piazza (Figure XIV f - h) .

These North Italian arcades were side aisles to the volume of the street, taken out of the buildings: they were not verandahs covering the footpaths and intruding into the street like those of South Africa. Once again we see an analogy between the church and the enclosed street, as we have seen it in Syria and medieval Italy, indicating that the street had a positive shape of its own.

Conclusions

The fair and regular paving of the Italian town enlarged the citizen's sense of ownership. He could leave his bed-chamber and without strapping pattens to his feet walk through the dustless ways and spaces of his city, often under cover, in perfect physical freedom. Paving was a great socializing influence; it was the common floor of all. In completely paved towns, the main barrier between shelter and exposure was not the house door, but the city gate. The streets of Italy thus became the open air galleries of the town, deserving a positive, definite shape and the same degree of adornment as the house courtyard.

For the shape that evolved, there are formal antecedents in the garden alley and an architectural prototype in the courtyard of the Uffizi. It may be wrong to credit every architect in Italy with a desire to build regular streets; up to 1650 there are few material grounds for doing so. The ideal of the street as a long prism of space grew over a long period, from seeds sown by the painters, and it is more by hints than by actual examples that we can judge. But when Alessi finally accomplished the straight, rich and regular form of the Strada Nuova, the assent it received can leave us in no doubt that here was the street that all would have built if they could.

This regulation of the street was not such an obvious step as it seems. It was a fearless enlargement of the architectural unit; a very different matter from laying out straight roads merely to simplify surveying and make encroachment evident. It was a marriage of road and building into one form; a process involving compromise between the opposing needs of traffic and building owner. It lifted the whole question of the street out of the practical into the aesthetic, and gave to the street a place among monumental forms. Insofar as it called for sacrifices by the owner, who had to keep his building to a fixed height in order to satisfy an aesthetic precept, it was entirely new, and was possible only among a people of high artistic aims. That these people were strongly individual in their outlook makes it even more remarkable; had they not had the riches of the port of Genoa in their purses, perhaps they would not have been ready to make the sacrifices.

The road itself was not, during the Renaissance, glorified in Italy. It was the excuse, not the reason, for making straight streets. Traffic, moreover, was not reflected in the facades. Rhythm in the early Renaissance facade was a residue of structural Gothic rhythms and was abandoned in the Baroque. The Baroque facade was not concerned with providing a setting for traffic, so much as with halting traffic at its door. It was left to other countries in later ages to relate traffic to buildings by providing settings in which people could enjoy the sensation of movement and speed.

Renaissance and Baroque street architecture was pictorial architecture. If we consider the street to be an enclosing shape, then the design of its walls comes within the realm of interior decoration - a profession which came into being during the Baroque period. The design of interiors is homocentric and perceptual, with regard for the observer as its main rule. It was the application of this to street architecture that was the main contribution of the Italian architects.

VIII. CONTINUOUS ARCHITECTURE IN NORTHERN EUROPE

To build a perfect city, in which to live the perfect life, is one of mankind's oldest dreams. Such a city would be faultlessly planned, and therefore perfectly convenient. Its walls would be impregnable, its air and water healthy, its roads durably paved. The buildings by their unity would advertise the perfect accord of its citizens. But because there have never been perfect citizens, the city has remained a dream.

Whenever man has recorded the vision, he has described its unified architecture. Plato himself stated plainly¹: "All the houses must have good walls, built regularly and in a similar style, facing the roads so that the whole city will have the form of a single house". Lydgate, to whom we referred in an earlier chapter, saw the New Troy of the fifteenth century furnished with houses of uniform height for rich and poor. Dr. Lang² quotes from Philip II's ordinance of 1573, Thomas More's Amaurot (1516) and Van der Neck's ideal city of 1764. They all made uniformity of architecture an aim - derivative, she says, from Plato.

During the Renaissance the ideal is evident in the imaginary town plans of the architects. They were theoretical and abstract in that they took no account of the sun, they never supposed rivers to run through the town, nor provided for expansion - that is to say, for children. Those of the sixteenth century³ seem to have been simply paper exercises embodying patterns of roads, squares, blocks of buildings, and fortifications. What is significant about them is the enlarged view they betoken - the expansion of architectural planning to embrace the whole town. In drawing geometrical plans, the architects presupposed regularly shaped buildings,

¹ Laws 779 A and B, quoted by Dr. Lang (The Ideal City: Architectural Review, August 1952)

² Ibid

³ For example, by Martini, Palissy, Lorini, illustrated in Rasmussen: Towns and Buildings, p.23, and Brinkmann: Stadtebau - Ideals seit der Renaissance.

not collections of different buildings. For the plan is only one analysis of an object; a geometrical plan cannot be really representative of an irregularly shaped idea.

In these early plans there is little thought for the appearance of the city from the usual level. The patterns result from the shortest length of wall, the central strongpoint, the slopes of the conical hill their authors chose for a site. Roads and buildings fitted perfectly within the fortifications. Only in the square with roads from its mid-sides (a motif often occurring, and one which we have already noticed in Leghorn) do we see any aesthetic intention. It is in Wren's and Evelyn's plans for rebuilding London after the Great Fire that we see the first practicable plans for a complete town. In them appearance stands on an equal footing with utility. Geometrical plan-shapes were not suitable for towns built in Northern Europe in the sixteenth century. Fra Giocondo and J.A. du Cerceau prepared designs for "places" upon circular plans¹, with gabled buildings. Their appearance is complicated and, with their pitched roofs radiating and rising, impracticable. What stood between the geometrical plans of the Renaissance and their fulfilment was the gabled front. Until the regular block upon the Italian model was developed, the geometrical plan had to remain a paper plan, and continuous architecture was possible only when the form of the Northern house had been changed.

The street buildings of Northern Europe were in a number of ways quite unsuited to receive Italian Renaissance and Baroque influence. Differences in climate (shown by the low roof pitches and courtyard plans of Italy, contrasted with the steep gables, the chimneys, and the close plans of the North) underlined differences in construction. Stone was the material in which most of the Italian forms evolved; in England, France, Germany and Holland timber was still at the

¹ Hegemann and Peets: Civic Art, p.48

end of the sixteenth century the main building material. London was mainly a city of oak up to the Great Fire; In Utrecht, houses were build wholly of timber as late as 1750¹. Although stone and brick were used, the facades still showed unmistakable signs of timber origins (Figure XV a and b)

Inevitably the Renaissance showed itself first in decoration rather than form. By the time the influence had deepened to include the whole building, and had passed down from Royalty to the merchants, it was no longer that of the Early Renaissance but that of the late Renaissance and early Baroque. In one matter this was important to the street scene and the cause of unified architecture: the scroll and its variations were available for the treatment of the gable (Figures XV b and c).

From Medieval times, architects in Italy had found difficulty with the facades of churches with side aisles. They could not with success repeat the sloping lines of the nave gable lower down the facade in separate halves, for they thus introduced a disturbing set of slopes among the upright and level lines that made up the facade. They tried a number of other solutions - carrying the nave slope out to meet the outside wall of the aisles, so making a flying wall; placing towers to stop the aisles; running a strong colonnade across the facade at the level of the aisle eaves. If they used orders with pediments (as did Palladio at S.M. Maggiore, Venice) the two ends of the wider pediment at a lower level were so far apart that they looked like separate forms; the imagination could not connect them.

Vignola, in his church of the Gesu - the first Baroque building - solved the problem by using scrolls; an astonishing innovation, for they took the shape of modillions blown up to the height of columns. The result of their repeated use upon Jesuit churches was that, either as scrolls or as sculptured form, the cyma became the accepted means of linking horizontal to vertical. In Northern Europe the steep gable, without some such device, could not have been given

1

Vriend: Bouwkunst van ons Land, p.107

a classical flavour. Another difficulty was the windows, which had traditionally been larger below, diminishing in size as the building rose. This was native to timber, but foreign to stone wall construction. It imparted a vertical emphasis to the house fronts, and stood in the way of unity between them.

When classical forms were introduced to Northern Europe, they brought with them the tendency towards continuous architecture in the streets and squares. By resolving all the lines of the facade into horizontal and vertical, by diminishing the strong upward axis and by emphasizing the wall, the sixteenth and seventeenth century architects brought neighbourliness to the towns of the north. In the following brief account of this transition, much belongs to general architectural development; the church and the country house altered in much the same way. But the persistent selection of forms that made up a continuous street architecture can leave us in little doubt that Plato's city with the "form of a single house" was a constant ideal.

France

The French knights returning from the Italian expedition of 1494-1515 brought news of architectural wonders. Just as the cannons and arquebuses of the French revolutionized warfare, so architecture in France was thrown into confusion by the novel buildings of Italy. It was as something new, exotic and curious, a new fashion full of foreign glamour, that this architecture appealed to the French. The burgess at the end of the fifteenth century was proud; he kept what Viollet-le-Duc¹ called "la plénitude de son individualité", and he siezed upon the new forms of decoration as a way of showing it. Classical mouldings, arabesques, balusters and columns appeared on the face of buildings. Jetties, gables and oriels showed strange, misbegotten features, though the body of the house was unchanged. In the South, where the influence

¹ Dictionnaire Raisonné (Maison): Vol. VI, p.272

of Rome seems never to have died, stone houses were general, often with courtyards, and lit by small windows on the street. In the north, the timber house of the Middle Ages still kept its gable to the street, with a glazed wall at the ground floor and large windows above.

Under Francois I timber uprights became pilasters, beams became cornices and friezes, corbels became volutes and caryatids. As early as 1530 Il Rosso arrived at Fontainebleau; Primaticcio, Serlio and Cellini followed soon after. Vignola himself spent a few months there in 1540. Thus there was an actual Italian school near Paris, under the aegis of Royalty. The first example of continuous architecture came directly from Henri IV. It dates from 1604, when he laid out the Place Royale on the site of the old horse market. The regulation governing the building of the houses round the square realized the king's intention that they should be similar (though not identical) with shops on the ground floor¹. A promenade under an arcade recessed in the ground floor gave circulation to the inhabitants "fort presses en leurs maisons"². Israel Sylvestre's drawing made in 1652 shows the fronts of the houses with strong Italian influence in the Roman colonnade and the flat facades; though the steep roofs, with windows that were half lucarne and half dormer, and the hipped ends breaking the skyline, are Medieval.

Henri IV's ideas were again evident in the triangular Place Dauphine, which had houses similar in general appearance³. Royal taste in these matters was a long way ahead. The rank and file learned the new forms more slowly, and it was only in the latter half of the seventeenth century that a single house facade took on the simplicity of the royal innovations.

During Louis XIV's reign Perrault designed the building that had the greatest single influence in the course of

¹ Bonnier: Notice sur les architectures obligatoires

² This utilitarian reason bears comparison with Libanius' praise of Antioch, p.67 supra.

³ Ward: Architecture of the Renaissance in France I, p.249

French street architecture. It is interesting to see that Italian architects of the first rank were concerned in it. The east front of the Louvre had to be a facade in the exact sense of the word. Behind it, the three-floored palace was simply an excuse for it. Colbert was so convinced of the prestige of this front that he called for an architectural competition. Illustrious French architects submitted designs: Le Mercier, Francois Mansart, Cottard, Marot, F. le Vau and Perrault. From beyond the Alps came those of Pietro da Cortona, Rainaldi and Bernini himself¹.

Although the final design was not Italian - Bernini's scheme seems to have been too strong for the delicate palate of the French - it had three ingredients so remote from contemporary French architecture that we must assign them to the Italians' influence and Bernini's presence. These were the giant order to the first and second floors, the embracing of the whole front in one long architectural sweep, and the low-pitched roof. The facade, completed in 1667, set a type that served street architecture for the following two centuries.

The roof added a final touch of Italianisation. Lescot had attempted in the sixteenth century to make lighter roofs, and in pursuance of the same end Mansard introduced the roof of two pitches. This was very suitable for street buildings, because it moderated the outward thrust at the top of the street wall. But in its context of classical forms, it was probably the low area of roof presented to view that made it popular. The severely classical and delicate facade of the Louvre could not have supported even a Mansard roof; a low lead roof was the only answer.

Shortly after the Louvre front was complete, J.H. Mansart designed the circular Place des Victoires in Paris. It was regular and quite uniform. The Place Vendôme was also from J.H. Mansart's hand. It was

¹ A full account is given in Ward: Op cit, II,
222-223 et seq.

completed in 1701, and followed the Louvre prototype. Regularity in the facades was assured by building the facades round the place first, and only then selling off the ground behind¹. At Versailles Le Vau's scheme for the town was carried out by offering sites only to those who undertook to build in conformity with it².

It is true to say that in France the individual house front was a quotation from these royalist schemes; but in Holland and England the house front was altered before any large pieces of town planning were made.

Holland

The new decorative forms found their way into Holland via her neighbours, and from every direction they arrived, like the craftsmen who brought them, travel-stained. Those from the East showed German influence; those from the South French. Some of the Dutch architects obtained their knowledge directly from the soil of Italy, the most important names in the Dutch Renaissance being those of men who had travelled and worked there, such as Vredeman de Vries who spent four years in Italy, or Jacob van Campen who worked in Vicenza and came under the spell of Palladio³.

As in France, the Renaissance left the plan and general form of the house untouched. In Holland it left its mark only upon the gable; and perhaps in the mixture of materials that formed the facade there is a sign that a new awareness of the lowlands light and colour was abroad.

As an object for Italianisation the Dutch house of the late Middle Ages was not promising. The windows were, more than in any other country, habitually wide below and narrow higher up. Constricted high houses, seldom more than three windows wide, formed the bulk of the towns. Steep and emphatic gables were the main element in each front. They crowned facades that often had strong vertical lines and always had strong individuality.

¹ Rasmussen: Towns and Building, p.108

² Ward: Op cit, II, p.327 (See Figure XXj)

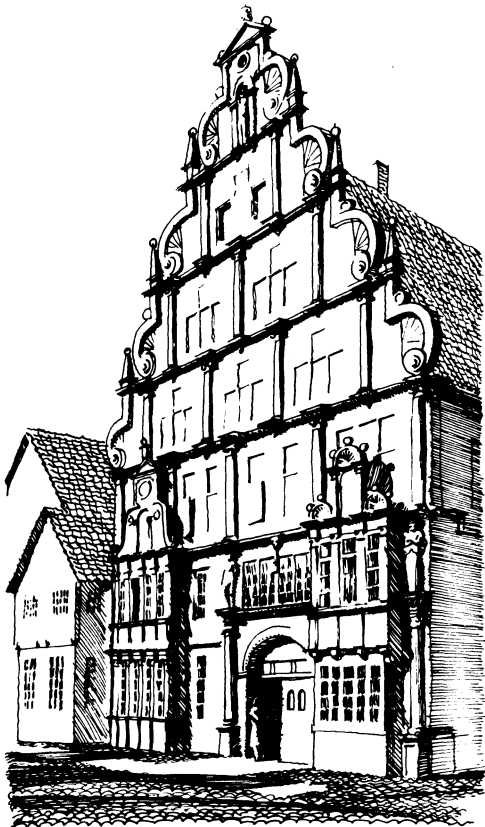
³ Vriend: Bouwkunst van Ons Land, pp. 104, 141

FIGURE XV

- (a) Oak front of Sir Paul Pindar's house, as it existed in Moorgate, London until 1890, when it was moved to the Victoria and Albert Museum. Sketched in 1930. The original house was erected about 1600. (Catalogue V and A Museum).
- (b) The so-called Hexenburgemeisterhause in Breitestrasse, Lemgo, Germany, erected in 1571. From Fritsch: Denkmäler Deutscher Renaissance Vol. III. The singular arrangement of columns could only have been acceptable to a designer who worked in a timber tradition.
- (c) Facade of the Baumeister's house, Schmiedegasse, Rothenburg, erected in 1596. From Fritsch: Vol. IV.
- (d) Piazza, S. Gimignano, from a photograph by G. Mitchell (Journal of Architectural Association, October 1950).
- (e) From an aerial photograph. These two sketches show the type of roof proper to the South and North of Europe during the Renaissance.
- (f) Ground and first floor plans of Baumeister's house,
- (g) Rothenburg, from plans supplied by Bayerische Landesamt für Denkmalpflege.



(a) LONDON : Sir Paul Pindar's house



(b) LEMGO : Hexenburgermeisterhaus

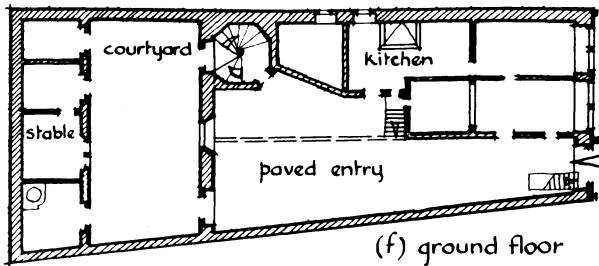


(c) ROTHENBURG : Baumeister's house (plans below)

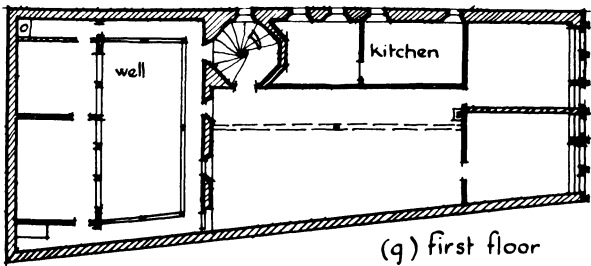


ROOFS

above (d) S. Gimignano
below (e) Lübeck



(f) ground floor



(g) first floor

10 5 0 10 20 30 40 50 feet

There is no connected sequence either of place or time in the bewildering variety of house fronts of the Dutch Renaissance (about 1530 to 1630). But there are broad movements towards Italian form. In the early years gables were stepped, without finials. Windows crept together, as the building rose, towards a single light in the gable. Strong horizontal bands of stone in the form of classical mouldings ran across the front at each floor level, sometimes repeated in the gable to connect the kneelers. Hendrik de Keyser, city architect of Amsterdam from 1595 - 1621¹ produced a style of his own, in which pilasters flanked each window as a wall adornment.

In the East, the German influence appeared in a stronger pilaster treatment. Gable steps except in the simplest houses were relieved with sculpture. During the classicist movement, pilasters were even more effective than before in lining up the windows and squaring their heads. Timber tradition, under which each upright could be moved along a beam at will, gave way to stone tradition, demanding that each column stood exactly over that beneath. Van Campen was the founder of classicism on the French model. He designed whole facades with a columnar grammar and windows of the same width on each succeeding floor. Rich merchants adopted his classicism for their houses in the new heart of Amsterdam laid out in the first decade of the seventeenth century. This set the seal on its success; by 1650 the plain wall with orderly rectangular windows had emerged as the accepted urban facade.

Two gable types remained. The first - the bell gable - was a simplification of the earlier ogee gable; the second - the neck gable - was a part of the wall projected upwards to contain a window, flanked by scroll work and capped with a curved cornice. Thus the gable lost its dominance. It finally gave way to a hipped end above a cornice, the gable window being replaced by a dormer (Figure XVI).

¹ Vriend: Op cit, p.116

Before 1650, a more severe classicism had appeared with van Campen's house of Balthazar Coymans. This facade had a simple array of windows set in a framework of pilaster and cornice. Above the cornice was a low roof parallel to the road, an object that would have been incredible in Holland a century before.

Speculative builders repeated houses; in Caspar Phillip's drawings (see Figure XVI), a front is sometimes repeated ten times. This in itself militated against the traditional Dutch facade: for each time a front was repeated its individuality was halved. The larger blocks comprising a number of houses therefore followed the French models more and more; emphasis in the facade became almost entirely horizontal.

England

William Harrison¹ in his Description of England (1587) wrote:

"Many of our greatest houses have outwardly been very simple and plain to sight, which inwardly have been able to receive a duke and his train, and lodge them at their ease. Hereby, moreover, it has come to pass that the fronts of our streets have not been so uniform and orderly builded as those of foreign cities."

Fynes Morison's Itinerary of 1617 gives strong confirmation²:

"Now at London the houses of the citizens (especially in the chief streets) are very narrow in the front towards the street, but are built five or six roofs high, commonly of timber and clay with plaster, and are very neat and commodious within; and the building of citizen's houses in other cities is not much unlike this."

Speaking of gentlemen's houses:

"if they were joined to the first in good order, as other cities are built uniformly, they would make not only fair streets, but even a beautiful city, to which few might justly be preferred for the magnificence of building. Besides that, the aldermen's and chief citizen's houses, howsoever they are stately for building, yet being built all inward, that the whole room towards the streets may be reserved for shops of tradesmen, make no shew outwardly, so as in truth all the magnificence of London building is hidden from the view of strangers at first sight."

¹ Quote in Wilson: Life in Shakespeare's England, p.271

² Ibid, pp. 116, 117

When these writers admired the foreign streets so uniformly built, they were undoubtedly thinking of the gabled streets of Delft, Ghent or Munster, and the simple facades of the Borgo in Rome. We can sense the regret they felt for English reticence. Here and there in London were houses left from Tudor times - magnificent and richly ornamented houses in Cheapside and Lombard Street, the street of jewellers. But most of London in the early seventeenth century was in timber and plaster. The change to brick was heralded by a proclamation of 1605, compelling owners within the city and one mile therefrom to build the forefront and windows of all new houses in brick or stone¹.

The works of Palladio, Michelangelo and Vignola were becoming better known from books and Dutch influence upon detail had passed when Inigo Jones, armed with the complete repertoire of Italian forms, galvanised London with Covent Garden Piazza. Speculative building was common, but to clothe it in Italian dress, causing each house to sink its identity for the good of the whole composition, was quite new. The piazza was built in 1631. Twenty-six years later followed London's first regular street (as Great Queen Street was called in the next century). It was not a monumental street; its claim to the description rested only upon a run of 14 houses built along one side. The houses had three storeys, the upper two united by the pilasters of a giant order, supporting a heavy wooden cornice, with a steep roof and dormers above (Figure XVII b).

Lindsey House, Lincoln's Inn Fields, built in 1640 from designs by Inigo Jones², set for England the precedent that the Perrault's Louvre later set for France, and its elements were the same; a strong ground floor acting as podium for the giant order above, with a roof hidden behind a balustrade.

¹ Gotch: Early Renaissance Architecture, p.203

² Godfrey: History of Architecture in London, p.235

It is some time - until the Great Fire in fact - before we hear of a monumental street again. By then the most recent houses had developed to the plain facade with square windows (such as Thorpe Hall, 1656, Pratt's Colleshill, 1662 and Eltham Lodge, 1664). Nathaniel Lloyd¹ attributes the hipped roof, the central pediment and the spacing and proportion of the windows to Dutch influence. To these may be added the timber casement frame and its successor the sliding sash².

Fire-fighting appliances were hardly more effectual than those of the Middle Ages. Hooks for pulling down frames and roofs, buckets and two-handed squirts that discharged only a gallon at a time were poor weapons against a fire that spread by brands borne on the wind over eight or ten roofs at a time. The loss of the 13,200 houses and 84 churches devoured in the flames of the Great Fire crippled their owners, for there was no fire insurance. This made it unthinkable ever again to build a city of inflammable houses.

John Evelyn's plan was almost entirely concerned with appearance. His hemicycles, ellipses, rectangles and stars were cut from an amorphous matrix of buildings, and connected with straight troughs. Subdivision of the residual area into building plots would have been difficult. Evelyn, however, was not an architect, but a cultured amateur who had admired the latest in town building in France and Italy.

Wren's plan on the other hand gave equal value to roads and buildings. He dignified the more important buildings with vista streets, and the highways he punctuated with churches. Every plot was workable, and the road system thorough and efficient. The dispersal of traffic from London Bridge into the city would have been more complete than any city can boast today.

¹ History of the English House, p. 111. Wren had in his possession books by Vingboon, van Campen and Hendrik de Keyser, as well as the standard Italians - Alberti, Scamozzi, Palladio: Ibid, p.112.

² Vriend: Bouwkunst van Ons Land, p.150 - The sliding sash superseded the casement in Holland about 1665.

Wren's most likely inspiration for the placing of the churches was High Street, Oxford, which as Savilian Professor of Astronomy he knew well. In his time, four towers rose along its length: at Magdalen College, All Saints, St. Mary's and Carfax. The street, all in stone, with the uniform quadrangles of the colleges, undoubtedly influenced his conception of what a town could be.

There can be no doubt that Wren saw his new London as an artistic whole. Earlier in the year 1666 he had returned from a visit to Paris, where he had seen the Place Royale; Lincoln's Inn Fields, Covent Garden Piazza, Great Queen Street and the Place Royale were the only connected pieces of contemporary architecture that he knew, though as Weaver points out¹, Bernini may have shown him his designs for the Piazza S. Pietro.

The King and Parliament made a really serious attempt to prevent such another catastrophe as the Great Fire. Some of the suggestions they considered - such as that of making every street 100 feet wide - did not survive a cooler appraisal². But a minimum width was accepted (of 14 feet) and some of the main streets were substantially widened; Ludgate Hill was increased to 45 feet.

With or without Wren, the ideal of uniformity was accepted in the new city. The Rebuilding Act of 1667 ordered that all new buildings should be of brick or stone, with unpierced party walls. Four types only were allowed, one type to a street, "for better regulation, uniformity and gracefulness³". Strict economy in the rebuilding was enforced. Street fronts were to be in plain brick, with square openings, cornices in wood and steep tiled roofs. Bressummers supporting floors had to be the same height except where the surveyors ordered otherwise. Often roofs were the same height and shape throughout a street. "All houses to be erected in the high

¹ Sir Christopher Wren, p.53

² Reddaway: Rebuilding of London, A.A. Journal

³ Bell: The Great Fire, p. 251. Examples of each type existed until 1941.

FIGURE XVI

Houses from Keiser's and Heeren Grachten, Amsterdam.

This drawing, one of a series showing 1400 houses, was made by Caspar Philips Jacobsz in 1768-1771. It shows the development outlined in the text, from the Medieval type to the Dutch Classical type. From *Het Grachtenboek van Caspar Philips Jacobsz*.

The following references are all to houses that face the reader:

Heeren Gracht 230, 238/240. Early Renaissance stepped gables with diminishing windows.

Heeren 248 possibly had pilasters

Keiser's 396 shows the later small house with windows lined up vertically.

Keiser's 380 and Heeren 219 show klok-gevels, while Keiser's 378 - 374 and 330 and Heeren 236, 222 show halsgevels in the style of Vingboons.

Keiser's 319 and Heeren 237 are classicist fronts.

Keiser's 384 and 321 and Heeren 233 show fronts from which the gable has disappeared from narrow houses, the roofs being parallel to the road.



and principal streets shall have Balconies four feet broad, with Rails and Bars of Iron, equal distant from the ground; every of which Balconies shall contain, in Length, two parts of the Front of the House on which it shall be placed, in three parts divided; and the remaining vacancy of the front shall be supplied with a Pent-House, of the Breadth of the Balcony, to be covered with Lead, Slate, or Tile, and to be ceiled with Plastering underneath¹".

The streets of the new London were the result of architectural design carried out by regulation. Not one designer's name survives². That those who framed the regulations were enlightened is obvious, and it is likely that they consulted Wren. They wanted continuous architecture and legislated to get it. They set the form of the regular streets of the eighteenth century; continuous brick walls and roofs, each house having a facade that subscribed to the whole; a facade without decoration, with no mark at its ends, no proud axis to the front, but with strong horizontal lines in roof, cornice and bands at each floor level (Figure XVIIa). Gables disappeared from the facade, and the attitude towards them we may judge from one of Wren's tracts³.

"Strait lines are more beautiful than curve; next to strait lines, equal and geometrical Flexures.. There are only two beautiful Positions of Strait lines, perpendicular and horizontal Oblique positions are discord to the Eye, unless answered in Pairs, as in the sides of an Equicrural Triangle".

Conclusions

Continuous architecture in the streets of Northern Europe originated in the ideal of the uniform town, expressed in the ideal plans of the Renaissance architects. This ideal developed in Italy, where the subject for design expanded from the palace or church to the whole square. In France and England, these architectural syntheses were at

¹ Quoted in Richardson and Eberlein: The Smaller English House, p.121. The present by-laws of Johannesburg also allow balconies for only two-thirds of the frontage.

² Bell: Op cit, p.290

³ Tract I. Wren Society, Vol. I, p.126

first isolated phenomena. As continuous architecture became common currency, it passed from the square to the street.

During the period of transition the individual house suffered a transformation from the northern to the Italian form; from an individual gabled house to an innominate house with a low roof¹; from a timber house to a stone or brick house with a flat wall to the street, the windows arranged to a pattern and decorated with forms imported from the south. It was a change that flouted the climate. Starting with the ornaments, the northern house copied the dress and finally the figure of the Italian house, making it seem that fashion, as we know it in dress, and not architectural style, (the result of structure, use, philosophy) was the guiding force. Architects seem to have remodelled the whole house for a visual end.

The whole change was one aspect of the larger change towards a new modulus in town design. In designing a town or a part of a town, the architect no longer thought of houses, but of squares, rows, streets, made of long runs of architecture, of which the house was only a lower notation.

¹ See Figures XV d and e

IX. CULMINATION

During the early years of the eighteenth century, the new street architecture shed the last vestiges of its Medieval origin. The rebuilt London showed that wide regular streets were not only practicable, but handsome. In the same way that the citizen's house had different rooms for his family's various activities, with his manufactory separate from it, so the city and the street each developed their separate parts. Markets were removed from the streets to special quarters and itinerant vendors, once inseparable from the streets of Paris and London, gradually disappeared. Whole new areas of the town were built solely for houses with gardens. Paving with gravel became general, with lines of posts and, later, raised sidewalks for pedestrians. Sewers were laid underground; streets were lit at night. Except in the heart of the city, the hurly-burly of the Medieval street was silenced.

The new professional man was able to afford a place of residence away from his work place. He inclined in matters of art, as in other things, towards the aristocracy for guidance. Speculative builders, such as Barbon and his followers in England, who built the residential quarters, had their eyes fixed upon architectural style. By building fashionably they sold well, adding large districts of good architecture to the cities.

The centres of the towns decayed and were rebuilt along the old street lines, changing the aspect of the street but not its shape. Thus it is that the matter for a study of eighteenth century street architecture consists almost entirely of the domestic street.

Town Life

A general background of filth and disease heightened the spaciousness and elegance of the new quarters. All but a minute percentage of the population of Europe in the early

eighteenth century lived in conditions worse than the worst of the Middle Ages. For the cause of sanitation had lost one of its most ardent advocates: the successful merchant now built himself a house away from his shop or factory, and the sanitary condition of the centre of the city, though it may have affected his purse, touched his person much less.

Gwynn's Essay written in 1750¹ on the improvements in London listed the two greatest nuisances as ordure and rubbish, respectively, left lying in the streets. All our admiration for the refinement of the eighteenth century - for the work of Boucher, Mozart, Adam, Sheraton - would hardly support us if we had to sample what nine out of ten town dwellers had to suffer. "The first noticeable thing about these towns," writes one authority², "would have been their stench." Overcrowded rooms, unlit basements, open sewers and cesspools, all led to recurrent plagues, and it is not surprising that only one child of four born in London survived infancy; it was only in the last quarter of the century that the birth-rate overtook the death-rate. Violence and lawlessness, with no police force strong enough to combat them, ruled unchallenged. Upon this background the new squares and streets sat, like lilies on the mud, clean and self-contained.

In the residential life of the fortunate upper classes, women filled a new rôle; they had to advertise to the world the prosperity of the master of the house. Their accomplishments and conversation displayed the taste their husbands had the inclination but not always the time to acquire, while their hands and dress gave notice of the elegance enshrined in their home - the Chinese lacquer and pottery, the Indian silks and Italian paintings that adorned their rooms and stairs. Above all, these women had to appear idle. During the preceding centuries women worked as hard as men; now

¹ Bayne-Powell: Eighteenth century London Life, p.13

² Plumb: England in the eighteenth century, p.12

it was thought degrading to do so. The idle lady was "the first waste product of the new economic system"¹.

Walking and Riding

Within the limit of her purse, this lady of the new professional class modelled her life upon that of the nobility. In one respect, however, her town surroundings limited her: she found it difficult to take exercise. Town gardens were too small to walk in. Riding for exercise was confined to the rich. It is said that no lady of the eighteenth century would walk alone in the streets, but many a drawing of street life belies it. An existence of needlework varied by a ride in a sedan chair and an occasional ball would have been insupportable. We may be sure that, alone and escorted, the upper class woman walking in the streets for exercise was a common sight.

The Elizabethans thought walking sufficiently important to provide special rooms for it. Sir Henry Wotton² wrote of chambers "that are appointed for gentle motion, as galleries." Such galleries had a protracted shape; that at Buckhurst House was 245 feet long and 16 feet wide³. In town houses they were even more necessary, and one of John Thorpe's drawings shows a gallery the full width of a house of 57 feet frontage⁴. During the seventeenth century the gallery in France reached its zenith, and in the eighteenth century the street itself seems to have been the urban equivalent. The women brought out of doors something of the daintiness of their indoor life, and to their presence we may attribute the paved sidewalks shaded by trees, and the eminently suitable background of light vertical railings that protected the front areas of the houses.

¹ Winifred Holtby: *Women in a Changing Civilization*, p.36

² Nathaniel Lloyd: *History of the English House*, p.88

³ Gotch: *Early Renaissance Architecture in England*, p.195

⁴ Ibid: p.204

FIGURE XVII

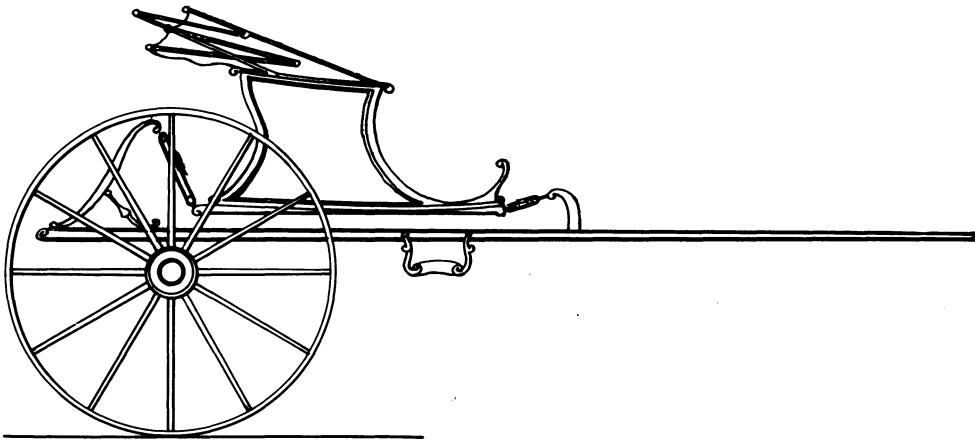
- (a) House at the corner of Milk Street, Cheapside. The wall at first, second and third floors shows the plain building of the years immediately after the Great Fire. From a photograph in Bell: The Great Fire of London, p.294.
- (b) Part of the South side of Great Queen Street, London: "The first architectural street in England", from a print reproduced in Gotch: Growth of the English House. The facade was in brick with a timber cornice. The windows were originally mullioned. A photograph of two of the houses is reproduced in Godfrey: History of Architecture in London, Figure 167.
- (c) From Lacroix: The Eighteenth Century, p.488.
- (d) A military town founded by Napoleon, with a plan designed upon the visual principles of vista and axis. From Hegemann and Peets: Civic Art, Figure 1055a.
- (e) Doorway of Alfred House, Alfred Street, Bath, by John Wood, Jnr. c 1768. From Mowbray Green: Bath Doorways. (Architectural Review, April 1905). The overthrow incorporates a lampholder, link extinguishers and a hoist from the basement.



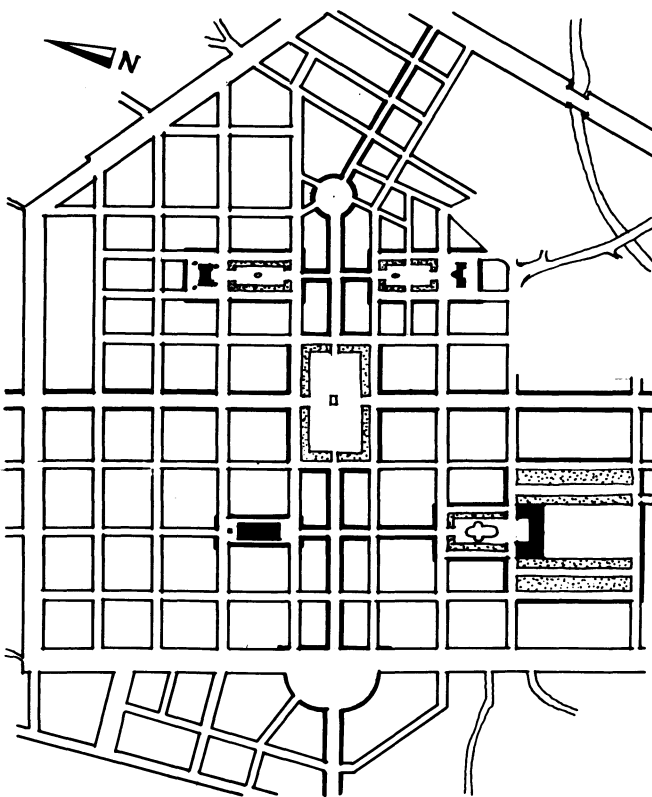
(a) LONDON Post-Fire House



(b) Houses in Great Queen Street



(c) French light carriage of the 18th century



(d) LA ROCHE SUR YON



(e) BATH Doorway in Alfred Street

As a means of getting about town, coaches replaced riding in the last years of the seventeenth century¹, and thenceforward riding in coaches for pleasure became popular. Some of the jolts were taken from travel when soon after 1660 leather straps were used to isolate the carriage from the axles², and more still when about 1665 steel springs were used for the same purpose in England³. Comfortable coaches for hire were available to the middle classes about the turn of the century⁴. Roads improved, allowing lighter and faster vehicles. Soon the aim became speed for its own sake. Faster and faster times were made on the coach and diligence runs. During Queen Anne's reign, the famous Darley Arabian horse was imported into England, infusing new speed and staying power into the bloodstock. The sports models of the day - the two-wheeled gig and cabriolet - were beautifully finished and miraculously light (Figure XVIIc).

Trees

It was over the period of the development of the fast carriage that the avenue found its way into the town. Palladio, as we have seen, referred to "ways adorned by trees.. being planned on both sides." The idea was brought to Paris by Maria di Medici, who caused the "Cours de la Reine" to be built in the Tuileries gardens. Andre Mollet in 1651 was the first writer to advocate the extensive planting of avenues in private estates⁵, and it was a popular adornment by 1665, when Bullet and Blondel planned the tree-lined streets (called originally "cours") on the sites of the old boulevards of Paris; they intended them to be promenades⁶.

¹ Burke: *Travel in England*, p.26

² *Encyclopaedia Britannica* (Carriage)

³ Boumphrey: *British Roads*, p.99

⁴ *Encyclopaedia Britannica* (Carriage)

⁵ Inigo Triggs: *Garden Craft in Europe*, p.77

⁶ Abercrombie: *The Era of Architectural Town Planning*, TPR. Vol. V, and Hegemann and Peets: *Civic Art*, p.241

As the fast carriage developed, the estate avenue also spread. Its later proliferations, such as those at Badminton, where avenues with little origin and less destination careered over the landscape in unending lines, can only have been caused by the love of driving. The rhythm of regular trees was a suitable accompaniment for fast movement; a delight in itself. It is not surprising that the wheel came to be the pattern for road junctions (e.g. the rond points of the Champs Elysees¹) and even the pattern for a whole town plan at Karlsruhe, where a tower stood for the axle.

Trees gave the final touch, the fitting adornment to eighteenth century urban architecture. Severely disposed facades made a perfect background for swaying foliage or the tracery of bare branches. When accompanied by water, as they were in the Grachten of Holland, they made a trio that was the ultimate blend of nature and artifice.

In the street, then, there were three rhythms. Firstly, there was the Renaissance rhythm of windows regularly repeated, the doors suppressed and falling into the beat. Secondly, the trees marked equal intervals throughout the street. Thirdly, as a foil to the movement of clothes and a measure of the walker's steps, was the quick rhythm of the area railings. The simple upright, or lance, was the universal pattern of railing (Figure XVIIe).

The Street in the Town Plan

In the eighteenth century the usual unit of design was the rectangular block arranged in a chequerboard pattern; a plan not encouraging good street architecture because each block could, by departing from the height, style or colour of the area around it, injure the architecture of four streets. The chequerboard, whose street views are all open, without terminals, is in essence a road plan, but it

¹ Or the settings for the Louis XV monuments in the competition of 1748 (Hegemann and Peets: Op cit, p.79)

is not, even as a road plan, efficient. The L'Enfant plan for Washington attempted to provide diagonal access by diagonal streets, but the number of crossroads this made was excessive, while the triangular building plots that remained were, in an ideal plan, inept. Away from main thoroughfares, roads exist to serve buildings, and this function of the road can only be expressed if the road appears to lead to the buildings. By planning buildings as terminals to streets it can be made clear why the road exists. Karlsruhe was planned entirely with roads, the buildings filling the spaces left. But the radial roads all terminated upon the tower of the castle, giving at least one building to express in a visual way the fact that it was the buildings that caused the roads.

The great motifs of eighteenth century town planning can be divided into two groups: those that gave the road dominance, and those that glorified the building. In the former are the long straight town road (which Abercrombie has called the Primary Straight Street¹), the triple junction and the rond point. Perhaps the triumphal arch, which terminates a view but does not stop the road, also belongs here. The building group comprises the square, the circus (when the roads entering it are few enough to make the enclosure continuous²), the crescent and the vista closed by buildings.

According to its planning, the street falls into one category or the other. If it is straight and open, it is a road street; if terminated, it expresses as its main purpose, the serving of the buildings. Eighteenth century streets in the great majority were of the second category. The great highways of the Champs Elysees and the Unterden Linden were primarily royal routes from palace to hunting lodge, and both passed under arches. Their trees shut off the buildings.

¹ The Era of Architectural Town Planning: TPR. Vol. V

² Compare, for instance, the Circus at Bath which is composed of a circle of buildings, and the Place de L'Etoile, composed of twelve roads meeting, the tapering buildings being insufficient to suggest enclosure.

For every highway road such as these in towns there were scores of minor roads that, deliberately or by accidents of development, ran into squares or oblique roads or terminated at buildings. Planners evidently favoured a visual objective for every important road¹. Rond points and squares usually had a central focus, and squares consequently had roads entering in mid-sides. This practice, common in England in the seventeenth century was happily dropped in the eighteenth, giving the square its English characteristic of enclosure.

Axial Planning and Symmetry

In planning, the axis was the line of view and the line of approach. All symmetrical compositions of buildings and gardens suggest approach along the line of view. Approach may be physically impossible, as it is when an axial lake leads to a country house facade, inviting us to wing our way in fancy over the water. It may be physically forbidding, causing us, for instance, to ride from Church Street to the Union Buildings in Pretoria, rather than climb the terraces. But bilateral symmetry in an interior always impels us. Such form, we may notice, is senseless when both sides cannot be seen at once. Street patterns planned symmetrically about an axis are entirely wanton, and are unjustifiable on any grounds.

Bilateral symmetry about the axis, such as le Nôtre in the 1660's had exploited at Versailles, was not a feature of eighteenth century town streets, however much the planners may have desired it. What was possible with trees, shrubs and gravel paths was out of the question when buildings and roads were the material. "Churches" as Abercrombie has said² "are not usually produced in pairs like China vases.". Neither are radial roads, bridges, nor town halls. Symmetry of the two sides of a street is comparatively rare.

¹ See Figure XVII d for an example of visual planning.

² Town and Country Planning, p.58.

As terminals to streets, architects first of all sought important and spectacular buildings. Wren recommended a new street to the front of London's Guildhall. Blondel had the Rue Merciere cut through to the Gothic cathedral at Strasbourg, as part of an axial scheme of planning for the city. Orleans cathedral, too, had its new approach (Figure XVIIIb). Schemes of reconstruction upon axial lines were made by Hawksmoor for Cambridge¹ and for Oxford by an unnamed Italian², with a Trajan column at the Carfax crossing and a triumphal arch where the Broad entered Cornmarket Street. Neither scheme was realised. The architect Gabriel produced an axial scheme for the town of Renne, burnt down in 1720³.

The commission of Artists' recommendations for Paris in 1793 included taking vista streets to many important buildings. If large buildings were not available, statuary acted for them, often so small as to be insignificant. Roman arches were a substitute, glamorous to the upper two per cent who knew of their Roman religious connotations, but puzzling to the rest who did not. In close domestic development, the line of the cross street was marked by a feature such as a portico upon the building facing it⁴. This made a good contribution to visual order in the town; it was a simple application of the principle that aspect and prospect are complementary.

Where bilateral symmetry was used to great effect was in the marking of streets leaving open spaces. We have seen how the bell towers of the twin churches of the Piazza del Popolo threw emphasis upon the central road of the three leaving the piazza; as the central road it already held a dominant position, and the towers thus divorced the two outer roads from the composition. A much more orderly scheme was that at

¹ S. Lang: Cambridge and Oxford Reformed

² Unwin: Town Planning in Practice, p.80

³ Hegemann and Peets, p.72

⁴ For example Adam's terminal to John St. Adelphi

Versailles, where the apices of the triangular blocks were cut back and recessed, leaving wings flanking the three avenues: a dramatic way of enclosing the 'place' and framing the exits¹. The two curved facades flanking the entrance to the Rue Soufflot from the Place du Panthéon deal with a similar problem - the treatment of blocks enclosing a space and marking a street. Porticoes used as pylons to streets occur in the Place de la Concorde, where the twin palaces are posted on each side of the Rue Royale, and at Orleans, where they stand at the end of a bridge leading to another Rue Royale. Calton Hill, Edinburgh, and Waterloo Place, London (Figure XIXa) are further examples. Two houses in Cavendish Square, London have similar facades on each side of a narrow lane; a remarkable piece of bathos².

Anti-climax was not always easy to avoid. Short vistas were produced with success³, but the central practical difficulty of axial street planning is to provide a terminal building of esteem or size or beauty to justify its position. A closed vista throws emphasis upon the terminal in direct proportion to the length of the street from which it is seen. Cathedrals, palaces, even churches could not, as they cannot today, be called up to order; often an architect had to see a lesser building erected than he had envisaged. Remodelling about an existing building produced, on the whole, better results.

Great Pulteney Street, Bath

It is difficult to choose an outstanding example of the eighteenth century street. No single street was, like Miranda, "created of all creatures' best." But Great Pulteney Street, Bath embodies the ideals that the eighteenth century attained - order, enclosure and climax.

¹ Le Pautre's plan for Versailles is reproduced in Gothien: History of Garden Art, Vol. II, Figure 41

² A scheme has recently been prepared to connect them with a bridge, thus resolving one of the worst dualities in existence.

³ For example, Stratford Place, London. Rue Hoche, Versailles.

In 1777, a few years after he had built Pulteney Bridge, Robert Adam prepared a scheme for a street connecting the Pulteney estates on the east side of the Avon with the town¹. Though it was not carried out, it may have influenced the three architects who finally designed the estate² (Figure XVIIIa). This was entered by a short street leading from the bridge to a traffic junction set diagonally, from which branched two lateral streets and Great Pulteney Street itself. Laura Place (Figure XVIIIc) is large enough to be a square, but its axes make it in the direct lineage of the Quattro Fontane; there is no strong building axis, and the middle is all paved but for a fountain in the centre³. The splays are narrower than the width of Great Pulteney Street, which is 100 feet. Laura Place is thus a crossroads, not a square. Great Pulteney Street is 1,100 feet long; it has in its length two streets joining it on the west and one on the east. It ends at the Sydney Hotel, dividing in two to embrace the grounds, the building being set back some 60 feet.

Laura Place, Great Pulteney Street and the Hotel are all in Bath stone, and are of one height and in one pattern throughout; a rusticated ground floor, supporting two floors in ashlar acting as a colonnade. The colonnade is suggested by pilasters placed at strategic points, for example at the ends of blocks, in pairs around Laura Place, and on each side of a portico marking the centre of blocks (Figure XVIII d). The hotel has a projecting Palladian portico. Roofs are of the Mansard type, hidden generally by a low parapet and in places by a full balustrade. The usual basement area with wrought iron railings separates the buildings from wide footpaths. Trees, sometimes in the path, sometimes in the

¹ M.I. Batten: The Building of Eighteenth Century Bath

² They were Thomas Baldwin, John Eveleigh and Harcourt Masters

³ Compare the St. James Square, Bath, entered at the corners, but planted in the middle (See Figure XVIIIa)

road, line the street. The facades throughout are flat - almost too flat for such a wide street; but they are refined and graceful.

Great Pulteney Street epitomises the speculative residential street in England. It was built as one scene, in one material, spaciouly and elegantly. It is a surprising achievement, a piece of fine patrician architecture fit for a king's progress, but leading fittingly enough to a hotel, where upper middle class families who could not afford a house in the street could stay for a few weeks in the season.

Arcaded and Colonnaded Streets

Arcades and colonnades have never been successful in Northern Europe; they were the one Italian form that would not stand the journey to a colder climate. Yet the difference between the recorded climates¹ of Kew and Rome is hardly enough to account for it:-

	Kew	Rome	(Kimberley)
Rainfall:			
Mean max. per month, in.	2.7	4.4	2.9
Mean min. per month, in.	1.5	0.7	0.6
Total per annum	23.8	32.7	16.2
Rainy days per year	167	102	73
Cloud amount (January)	7.4	5.0	4.3
(July)	6.7	2.0	1.8

More sunshine is available in Rome, and although Rome has the greater rainfall, London has it more continually. But through some twist of their character, Northern Europeans can abide rain - their poets even speak in praise of it - and they love sunshine. There is so little sun in the latitude of Greenwich² that to sacrifice its warmth simply to keep dry at other times seems to them absurd.

¹ From Brooks: Climate

² In a letter to the R.I.B.A.J. (November 1937) Mr. Trystan Edwards showed that in midwinter a street 35 ft. wide running East to West with buildings 9 ft. high could have one wall completely sunlit for only a quarter of an hour a day.

Wren suggested a number of covered footways in his London plan and in subsequent designs. There were to have been arcades around the Exchange piazza and that of St. Paul's¹ after the fashion of Covent Garden Piazza. He designed a 2,000 ft. stoa of Doric columns along the bank of the Thames². None of these were carried out. Apart from Baldwin's short colonnade at Bath (Figure XVIIIe), England had to wait until 1820 for a colonnaded street; and the colonnades were removed from Regent Street 28 years after they were built³. If Nash had had his way Regent Street would have had a continuous cover for pedestrians from Oxford Street to Pall Mall⁴ - useful in wet weather, but otherwise exasperating. Possibly a copy of Wood's "Ruins of Palmyra" published in 1753 may have been Nash's inspiration.

In the meantime in Paris, Percier and Fontaine designed for Napoleon the continuous scheme of the Rues de Rivoli, Castiglione and des Pyramides. It was a simple Roman arcade in ashlar supporting a plain wall of three stories with continuous balconies at first and third floor levels. Thanks only to official protection, these have survived.

Terraces

To line a street with palaces was an ideal of the Italian Renaissance. Princes were few in England, so that a similar object had there to be accomplished with medium sized houses. Single houses, separated each from its neighbour by a narrow street, sometimes reached a size to merit being called palaces⁵. Such were those of Portland Place, London (Figure XVIIIg) designed by the Adams in 1776⁶.

¹ A reproduction of the drawing is given in Ansell: Surroundings of St. Paul's R.I.B.A.J., August 1944

² Hegemann and Peets: Op cit, p.187

³ Summerson: John Nash, p.221

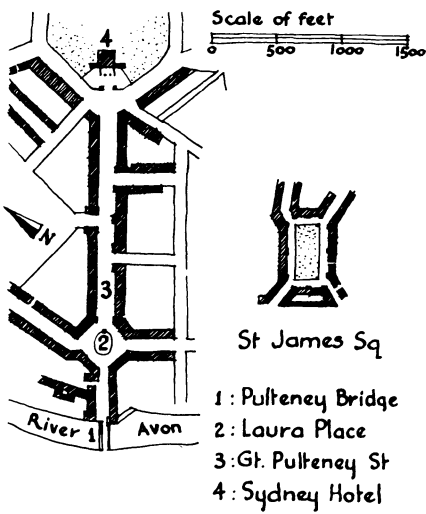
⁴ Ibid, p.125

⁵ This sort of house was called a "Maison Anglaise" in France in the Nineteenth century (Bonnier: Architecture Obligatoires, p.229)

⁶ Bolton: Architecture of Robert and James Adam, p.118

FIGURE XVIII

- (a) Plan of part of Pulteney Estate, Bath, from Donne's plan of 1810, reproduced in Architectural Review, June 1910.
- (b) Street leading to the Cathedral, Orleans, from Hegemann: Facades of Buildings, Figure 104.
- (c) From postcards. The fountain in the centre of Laura Place is Victorian.
- (d) Portico in the middle of the south-west side of Great Pulteney Street.
- (e) The colonnaded street at Bath, from a postcard. The terminals at each end are inadequate.
- (f) From Richardson: Georgian Architecture, p.149. This country house of about 1745 exemplifies hundreds that were built with the roofs and blank party walls of urban houses.
- (g) Great Portland Street as designed by James Adam about 1770. From a print reproduced in the Architects' Journal, November 22, 1934.

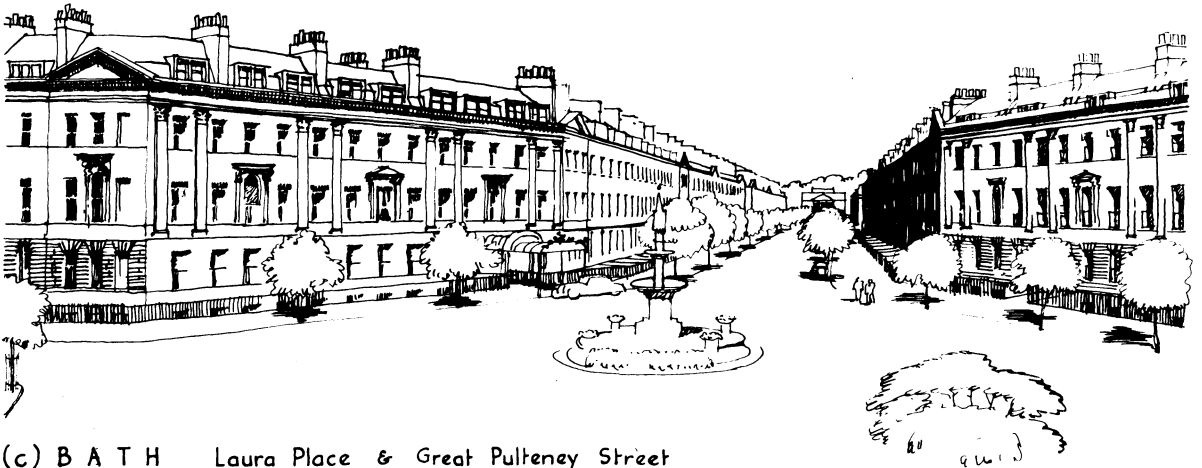


(a) BATH
Plan of Pulteney Estate



(b) O R L E A N S

Approach to the Cathedral



(c) B A T H Laura Place & Great Pulteney Street



(d) Houses in Great Pulteney Street



(e) B A T H

Bath Street



(f) Roughton Hall Lincolnshire



(g) L O N D O N Great Portland Street (late 18th century)

G.Q.L. '53

But this arrangement was uncommon; more usual was the complete palace facade, taking up a whole side of a street. It was borrowed from the square, which it had graced since 1728, the year of Queen's Square, Bath. The standard type in England had a central portico and pavilions at each end. It occurs in Stratford Place and the Adelphi in London and Rodney Street, Liverpool; all narrow streets compared with Great Pulteney Street, Bath, where we have already noticed it.

Building a number of houses in the form of one palace has been condemned often enough upon moral grounds. In street architecture the result was a failure in two ways. Firstly, the facades were not legible, in spite of their flatness. Seen from some distance away in front, such a facade is obviously symmetrical. But in looking at a long symmetrical facade from an acute angle, it is very difficult to verify its symmetry from one viewpoint; the only way to do so is to walk along the street and estimate the number of windows on each side of the centre - a process that gives reassurance but little pleasure. As Wren put it (quoted in full later in the chapter) "There are different Reasons for Objects, whose chief view is in Front, and for those whose chief view is sideways." Secondly, in a street it is wrong to mark the centre of the block with an arresting feature, particularly if the two sides of the street are symmetrical as well. Street facades are seen usually by a moving observer. Palindromic symmetry gives no sense of movement towards a destination, but of movement towards and then away from an object, while continuing in a straight line. A much more satisfactory way of defining the size of the block is to mark only the ends. Gordon Place, Bloomsbury is an example of how this could be done successfully. The "morality" of such a design can hardly be questioned, because it is simply a number of houses collected into a block, with the size of the block determined by emphasis upon its corners.

Corners

Houses at rectangular corners were seldom specially designed - they usually consisted of a party wall suitably enlivened to face the side street. Trystan Edwards¹ has shown how the use of blind windows accomplished this while at the same time expressing the habitability of the building. During the early Regency, specially designed end houses were more common: the house at Gordon Place had the entrance on the cross street.

Acute and obtuse angled plots facing junctions posed a new problem, for which there were very few precedents for solution in the classical manner². The dramatic aspect of these corners and the prospect from them deserved special treatment. It had to fit into the columnar system, and the motive that emerged during the Regency was the circular temple; eminently suitable, for from inside it was just a bay window, and from outside it presented to the observer turning the corner a constantly legible form. The Charing Cross Hospital, Victoria Square and many other corners had this romantic feature (Figure XIX c and d). In the finest of all - the Tivoli Corner of the Bank of England - Soane achieved Roman magnificence.

Nash

The genesis of the new Regent Street was the need for a north to south traffic connection³. This problem was something quite new to London. Development, that is to say expansion, was a normal everyday activity, but making a new road through the living city was untried, and its unfamiliarity startled influential Londoners into the loud protests and denunciations that all but drowned the noise of its building. Nash in his selection of the route anticipated

¹ Good and Bad Manners in Architecture, p.196

² Bramante's sketch reproduced in Hegemann and Peets: Op cit, p.40, is the only one I can find.

³ Summerson: John Nash, p.122

the great discovery of our generation; that a traffic road does not unite, but separates the areas on each side of it¹. His first design, consisting of straight lengths of street, belied this in the awkward offset by which he brought the street onto the axis of Carlton House - a square entered from the north on the west side and left from the south on the east side. In the middle was an Opera House that would, upon his own principle, have been isolated by the traffic. As it was built, the road above the Quadrant abandoned axial planning and became a route, ending finally upon the spire of All Souls, Langham Place (Figure XIX). It was when he abandoned the axial straight roads hinged on circuses that Nash must have reluctantly foregone his vision of formal architecture for the upper part of the street.

Instead, he took as his model the urbane architecture of High Street, Oxford, which had none of the continuous quality of the eighteenth century, but was united by being all in stone, and having important buildings linked with domestic fronts. If it had not been built all in stucco, Nash's Regent Street from All Soul's to the quadrant would have been quite unremarkable as a piece of street architecture. It was not monumental in scale nor had its buildings much rapport between them. In Summerson's words "Logical unity was sacrificed, and that variety within unity which is the essence of good street design was achieved."

In every town in England there were now lengths of street, built without benefit of single ownership, that somehow contrived to look as if they were built as one. The type of house and house front was so universal that from 1750 - 1810 the common builder seems to have known no other. Small villages had an engaging touch of urbanity in town houses that lined their market place or winding streets,

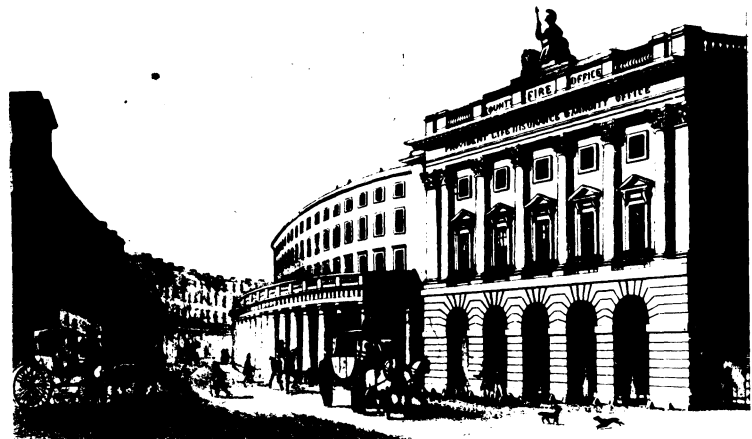
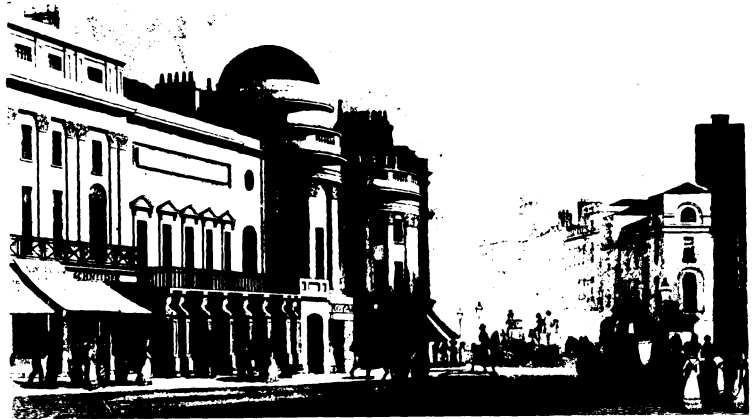
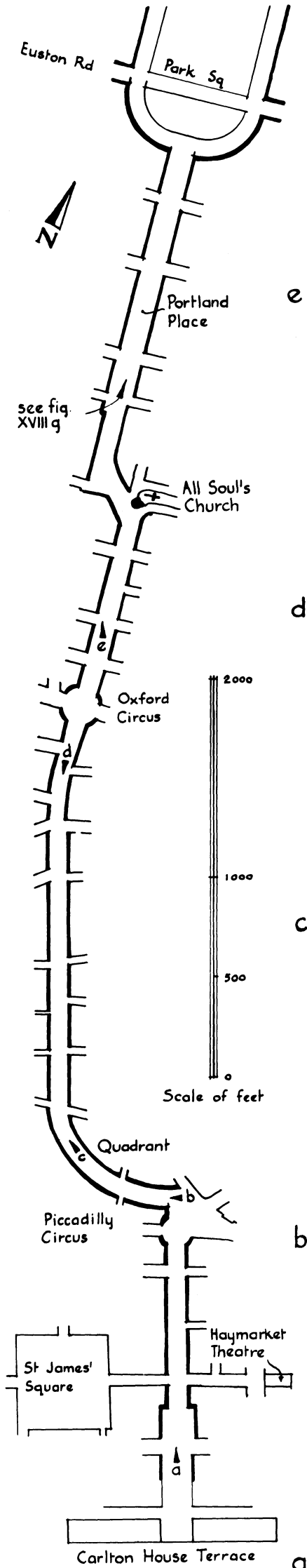
¹ One of Nash's objectives was the cutting off of the poor area on the East from the West End, which began west of the street (Summerson: Op cit, p.124)

FIGURE XIX

Regent Street, London. From drawings by T.H. Shepherd,
published in the years 1827 - 1828.

- (a) Waterloo Place looking ^{east} ~~wards~~ Piccadilly Circus.
- (b) The entrance to the Quadrant from Piccadilly Circus.
- (c) The Quadrant and part of Regent Street.
- (d) The Harmonic Institution.
- (e) Part of the west side of Regent Street.

Carlton House Terrace replaced the original Carlton
House.



obtaining their unity both from the continuous architecture and the uniform materials of the houses. The contiguate house form was even lifted from its urban context and used for free standing country houses (Figure XVIII f). Regent Street had the advantage that whole blocks were often from the hand of one architect, but colour was undoubtedly the main unity.

It is difficult to find a prototype for the Quadrant, and all credit must go to Nash for an extremely original invention. It was obviously a vestige of the earlier scheme for colonnading the whole street, but the immense trouble Nash had in building it (to ensure that the curve was properly set out and executed, he leased and built every plot himself¹) show what importance it had for him². It was romantic and exciting. To drive along it, between the racing columns; to become lost in it - for the road was narrow enough for the end to be concealed for a third of its length; and then to emerge upon the temple corner, was surely the epitome of adventure in a town. It formalised once and for all the winding country street. Such a singular conception raised the road to a new level in urban design.

Below Piccadilly Circus, the approach to Carlton House was a straight-forward piece of axial design, the street having a cross vista to the Haymarket Theatre and St. James Square, and widening into Waterloo Place.

The Age of Stucco in England saw the final flowering of eighteenth century ideals. Neo-classical architecture, when built in a number of materials, was never free of individual whim. In stucco it was pure and universal, with few local variations. Thus each building in a stucco street sank its individuality, and the whole had a unity in addition to its colour. Shops were integrated with small

¹ Summerson: Op cit, p.219

² He had already explored the idea in his mind when he designed the double-ring circus in Marylebone Park (Ibid, pp. 112, 113)

window panes preserving the scale. One interesting feature was the way in which colonnades were mocked by projecting porches, supported upon columns. Nash in Park Crescent carried the porch roof right through the house fronts, with coupled Ionic columns to support it. This gave the illusion of a projecting colonnade, though it darkened the ground floor and basement rooms.

Hausmann

What Nash did for London, Haussmann in 1853 tackled in Paris. He admired London's cleanliness, healthiness and greenery, and he was inspired by the greatness of France under Napoleon III and the Second Empire. Grand effects of space, splendid monuments and, informing everything, an iron order - these were his visions. Practically his preoccupation was roads, or rather communications. The traffic in Paris of the 1850's was disorderly but not, compared with that of 1880, congested. Haussmann's roads were fantastically wide for the traffic that used them. He produced a city like a habitable Parc de Versailles, and the dwellings received as little thought as le Nôtre gave to the boskage that filled the space between the alleys. Luckily Haussmann had in his gardener Alphand a man more humane; one who saw the new routes as promenades rather than highways, and developed them with care and artistry. Haussmann and his specialists produced a fine road system, many avenues and parkways, some fine vistas but few streets. The vistas of Paris are pre-eminent in the world for the splendour of their terminals: The Opera, the Louvre, the Colonne de Juillet, the dome of the Pantheon, the flèche of the Sainte Chapelle, the Fontaine St. Michel and the Chambre des Deputes, and most dominating of all the Arc du Triomphe. Even these were not, as Giedion¹ points out, adequate for the length of the vista. The Opera and the Pantheon are the climax to closely built streets, and the effect would have been greater had

¹ Space, Time and Architecture, p.496

the facades of the streets been designed to enclose the space, thus devoting it to the buildings and the terminal.

Haussmann's political and financial work left him little time for detail¹, but he took to himself all responsibility for uniformity². There was much less variation in the matter than Nash gave to Regent Street, and there was so much similarity in the finished houses that regimentation and monotony are really the keynote of Parisian street architecture. In their uniformity of material, height and style, the streets of Paris have ingredients that are important to good street architecture. Why is it that they fail?

In the stucco facades in London a desperate attempt was made to extend the Palladian facade from three to five storeys. The first floor was made a mezzanine, the second became the piano nobile, an additional set of windows came either under or over the cornice. Even in late eighteenth century work in London the columnar system sometimes broke down. But in Paris it was stretched to breaking point and then abandoned. Many of the boulevards have six storeys to eaves and one in the roof (Figure XX a). In order to get one major floor in the composition, the architect placed the piano nobile sometimes at first floor, sometimes at second floor and often the second, third and fourth floors were the same height, the second being honoured with pedimented windows. In view of the different character of the Parisian maison a loyer from the London house, there is some excuse for this; the more distinguished floor could show a more distinguished facade without. But by using classical detail throughout, the architect invited criticism on classical grounds, and it is on their upward development that these facades fail. The Palladian facade was heavier below and

¹ An account of the financial arrangements for the reconstruction is given in Robert Moses: What happened to Haussmann.

² Giedion: Space, Time and Architecture, p.495

lighter above. The Haussmann facade had a very involved upward development; large and small windows, with enrichments capriciously used, confused rather than explained the facade. Often it was capped by a heavy stone balcony simulating a cornice. Perhaps the upper part could have escaped criticism had it not been that shops took up the ground floor; they were always glazed with plate glass in large sheets, headed by an architrave and cornice spanning at least twice as far as a classical column could bear.

Viewed from the side, the greatest fault of these facades is their insistent and continuous balconies. Not only do they break up the street wall (already threatened by the large proportion of window in them) but they precipitate the eye to the end of the block, to the neglect of each building. Balconies are an extension outwards of the inward life of a building. One balcony on a house front is romantic, and it does not destroy the feeling of enclosure in a street; but balconies at every floor emphasize the outwardness of the street, and destroy the sense of enclosure.

On these counts we may judge that the street architecture of Haussmann's Paris was of a movement that had passed its zenith. In many ways it was a natural development of eighteenth century style. It was continuous in that there was little vertical emphasis and little symmetry in each facade. The streets were organic in colour and height. But the classical dress was being worn by buildings it did not fit, and the observer was at a disadvantage because his view was not considered and he could no longer invoke the force of gravity to explain what he saw.

The Eighteenth Century Street House in England

Continuous domestic architecture developed in England only because of the circumstances that surrounded domestic building. There were, firstly, in the cities large numbers of middle and upper-middle class families with similar means and requirements. The row house of the latter part

of the eighteenth century had a frontage of about 23 ft., and a depth of about twice that. In the basement, ground floor, two upper floors and attic it had a total floor area of over 6,000 sq. ft.: an astonishingly large house, capable of taking a family of eight and their servants comfortably. Mile upon mile of these were built. Secondly, the system of land speculation, which is now well known¹ favoured repetition rather than variety. Thirdly, the fact that everyone connected with building acknowledged and obeyed canons of design that covered the whole field of architecture, down to the smallest detail, made for standardized houses. The copy books of Ware, the Langleys and others² were the agency for spreading these standards, and the surprising scholarship of country examples show how far afield their influence went.

As I have shown in Chapter VIII, the Italianised house had become firmly established by 1720. From then on it changed little in essentials. Houses in squares set the fashion for those in streets, and there is little of the street house that was not copied from their more distinguished neighbours. I propose here only to complete the story of those features examined in the previous chapters, up to the start of the decline.

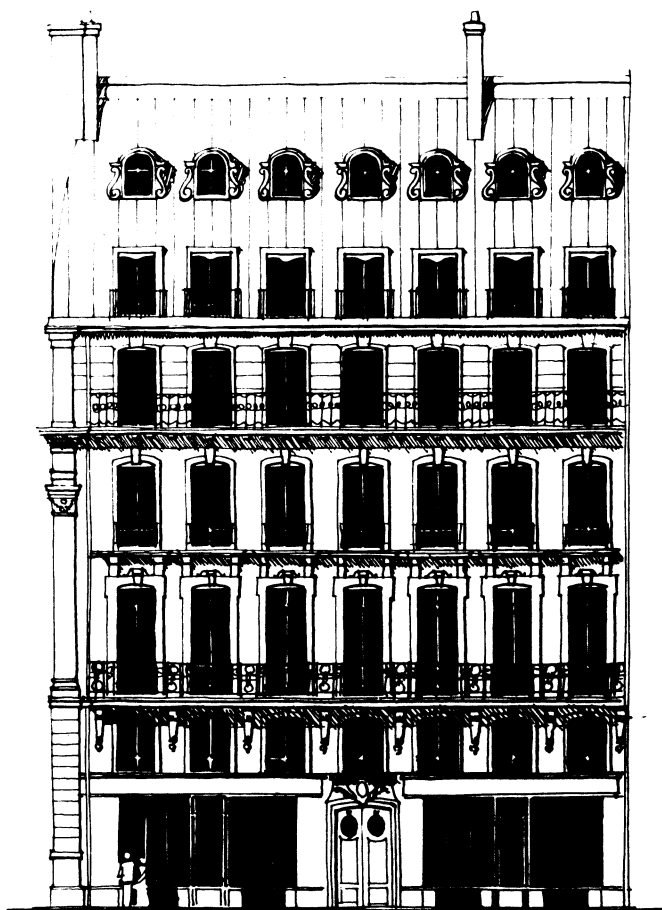
The contiguate form peculiar to England was standardised and adopted throughout the country. Building between party walls was the most significant characteristic of the row house. For economy, that is to say to enclose the greatest volume with the least external surface, a rigid prismatic form was developed, with as few serrations at the back as possible. Frontage was kept to a minimum. Within this shape there was surprisingly little variation; the plan followed the pattern common in the Middle Ages, with one room in front and one behind and an entrance at one

¹ Thanks to the researches of Summerson and others (particularly "The Great Landowners")

² An account of these books is given in Richardson: *Georgian Architecture*, p. 28 et seq.

FIGURE XX

- (a) Street elevation of the type of 'maison a loyer' built under Haussmann (Lecomte, architect.) From Daly: L'Architecture Privée, Part II, Vol. 1. The slender relationship that these elevations bore to the columnar system is shown by the base and column on the left.
- (b) Plans of the same building. From the same source.
- (c)
- (d) Plans and facade of 17 - 19 Featherstone Buildings,
- (e)
- (f) Holborn - early Regency houses showing the importance
- (g) of the party walls and stacks in the arrangement of the plan. From The Builder, June 3, 1949.
- (h) Sketch showing the features of the contiguate form of the town house in England: narrow frontage, prismatic shape, continuous roof, chimneys on party walls, high first floor, cellars under pavement and coach houses and stables entered from mews.
- (j) Stone-fronted house of about 1684 in Rue des Reservoirs, Versailles. The type of astylar facade used in Le Vau's new town. From Hegemann: Facades of Buildings.

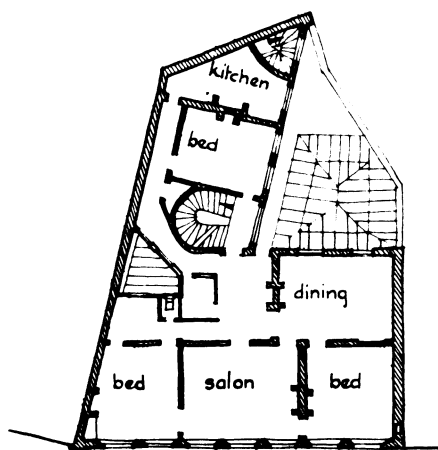


(a) Elevation to street

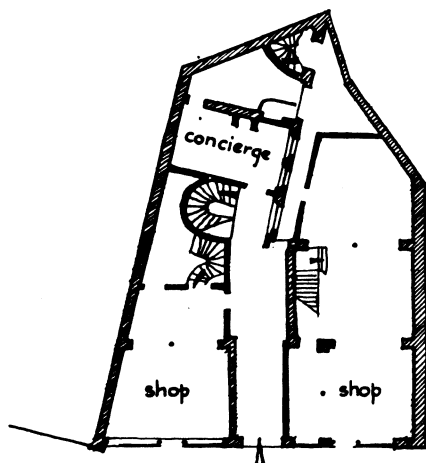
scale

10 5 0 10 20 30 40 feet

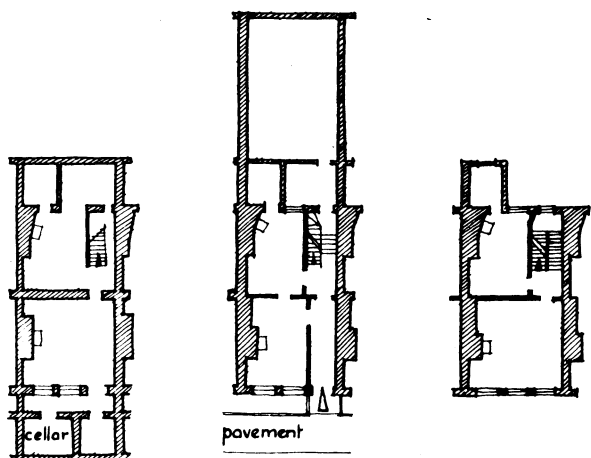
P A R I S N°1 Boulevard de Sébastopol



(b) Upper floor plan

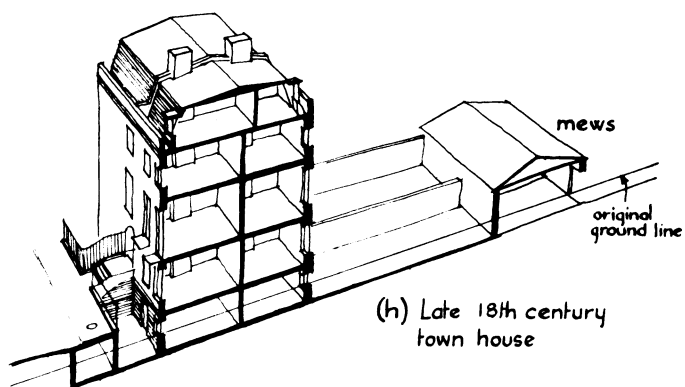


(c) Ground floor plan

(d) basement
LONDON(e) ground
Houses in Bloomsbury

(f) first & second

(g) on right: facades

(h) Late 18th century
town house

Scale of plans

0 5 10 20 30 40 50 60 feet

(j) VERSAILLES
Rue des Reservoirs

behind and an entrance at one side from the street leading to a stair in the middle. As Summerson says, humble cottages had the same plan as the great houses in Carlton House Terrace. (Figure XXh). Houses on the Continent seldom had basement areas, but had the same flatness in the facade, with higher coach-doors leading from the street to a courtyard (Figure XXj).

Basements

Gwynn's essay, already quoted, on improvements in London put number three nuisance (after ordure and rubbish left lying in the streets) as open cellar doors and stone steps projecting into the streets¹. In order to keep dry, the eighteenth century pedestrian hugged the wall wherever he could². Open traps and steps, though supposed by law to be protected by posts³ were a devilish hazard at night. About 1700⁴ the whole basement system was blessed by the invention of the continuous light area between the house and the pavement. The little "airies" - a euphemism if ever there was one⁵ - protected by sloping wrought iron grilles thus disappeared, and all the basement windows opened on to a substantial volume of air. This allowed the kitchen to be at the front of the house, leaving the garden free for social purposes. Basement kitchens seem to have been imported from country houses⁶, which in turn got the idea from Italy⁷. The dining room was on the ground floor; servants carried meals up to it by stairs often inhumanly steep⁸. The continuous

¹ p. Supra (Bayne-Powell: Eighteenth Century London Life, p.13)

² Gay (in Trivia) mentions this a number of times.

³ Ibid: Book II, line 95

⁴ Among the earliest are houses of 1704 in Queen Anne's Gate and Mecklenburgh House, Buckingham Gate, built in 1706 (Chancellor: Eighteenth Century in London, Figure 110.)

⁵ The word "airy" was first used in this sense about the end of the seventeenth century (OED). It was later corrupted to "area".

⁶ Those of Coleshill (about 1650) were partly underground.

⁷ Quennell: History of Everyday Things, Part II, p.44

⁸ In a house near Old Street, London, the stair negotiated the whole height from basement to ground floor in one quarter turn.

area made basement rooms habitable, and by means of a stair within it, goods could be taken to the kitchen and garbage could be removed without entering the house. The coal cellars under the pavement were a further development about 1750. Summerson¹ has described the way in which excavations were used to make up the level of the road. A happy solution to the lighting problem was the wrought or cast iron railing.

Fire

Methods of fighting fire improved slowly. Gay² about 1715 wrote:-

"See forceful engines spout their levell'd streams to quench the blaze that runs along the beams. The grappling hook plucks rafters from the walls and heaps on heaps the smoky ruin falls."

He was referring to Newsham's newly-invented fire engine, the first that was really effective. It replaced the hand-squirts used against the Great Fire³.

There were now fully effective brick chimneys, placed always upon the party wall, where they lent their own stability to it. The party wall remained the strongest line of defence against the spread of fire, and all by-laws after the Great Fire were inflexible about its construction: they had to be unpierced throughout their height and carried up to the underside of the roof covering.

This placed strict limits upon both structure and planning. The main structural elements in the house were the party walls, and the fire-places, set along them, made a starting point for planning the house. The London Act of 1774 finally banished all woodwork except windows and door-cases from the facade.

Roofs

The Mansard roof was adopted in England about the time of the Great Fire, but the steeply sloping Queen Anne roof was for a long time more popular. By 1750 the Mansard had commonly two slopes, about 60 and 30 degrees,

¹ Georgian London, p.49

² Trivia: Book III, lines 369 - 373

³ Bell: The Great Fire, p.296

covered with tile or slate, and a parapet gutter. From 1700 rainwater heads and down pipes were in general use.

When slate came into favour in the second half of the eighteenth century, the two upper slopes were covered in lead, the dormer window heads being almost level with the lower edges. This roof was an English compromise between the flat invisible roof proper to classical buildings, and the pitched traditional roof.

Lighting

A much greater refinement of the facade was possible when about 1710 the sliding sash was brought to England. As the window did not have to bear its own weight from one side like the casement, larger panes of glass and lighter glazing bars could be used. The miraculously light pine windows of 1780, which are - or ought to be - the despair of every metal window manufacturer, set a new standard for the whole facade.

The method of lighting rooms with high, fairly narrow windows was, according to P.J. Waldram¹, reached after a long period of trial and error. High storeys and high windows were more necessary for lighting the ground and first floors than those above. The dining room was on the ground floor, tied to the kitchens, so that the first floor reception room gave the piano nobile expression to the exterior.

Plans

To give access to the first floor, the stair was an important feature of the plan. It generally rose halfway along the one party wall; later a service stair was placed just behind it. In the more sumptuous houses, the reception suite demanded something more consequential than a simple passage from the front door to the stair, and elegantly varied shapes were arranged to do so. Bilateral symmetry was quite absent in the type plan. Lighting was given to the stair by an open well glazed with a lantern at the top.

¹

The Lost Art of Fenestration - Builder: January 23, 1942

Where needed, greater depth was given to the house by repeating the Medieval device of leaving a small courtyard and starting a new suite of rooms behind. This practice was the forerunner of the nineteenth century building that covered the plot almost completely except for funnel-like lightwells. Upon irregularly shaped plots architects showed great ingenuity in the arrangement of classical shapes, but they could not escape the discipline of the party walls and in essence every plan was the same. (Compare Figures XX d - f and XXId and e).

Facades

The essential need of the street facade - that it should be legible when viewed from an angle - was understood by the Queen Anne architects. In his First Tract¹, Wren wrote:-

"There are different Reasons for Objects, whose chief view is in Front, and for those whose Chief View is sideways In Buildings where the View is sideways, as in Streets, it is absolutely required that the Composition be square, intercolumnations equal, and uniform. Breaks in the Cornice, Projectures of upright Members, Variety, Inequality in the Parts, various Heights of the Roof, serve only to confound the Perspective, and make it deformed, while the Breaches and Projectures are cast one upon the other, and obscure all Symmetry Fronts require a Proportion of the Breadth to the Height; higher than three times the Breadth is indecent, and as ill to be above three times as high."

The Queen Anne street house always had a flat facade from ground to cornice, and sometimes above it a plain brick parapet. Plaster plates bandes, keystones and rusticated quoins, usually symptomatic of the school of Wren, were dropped after 1720, and the main wall became brick throughout and in this sense continuous with its neighbour. (Figures XXI a and b).

Wren's injunctions were followed in the simplest way possible: by building a flat wall and piercing it with rectangular windows. The only projection was over the door - the hood that was a Medieval necessity and died

¹ Wren Society: Vol. XIX, p.127

hard. Apart from this, the face of the wall was flat with even the glass in the windows brought as near as possible to the brick face¹. Doors were of the same size as those to the rooms inside. Unlike the Continental house, stables in England were entered from a mews behind.

By 1750 it was the custom to make the door resemble the windows. Only the railings swept up as an overthrow, with link extinguishers and a lamp socket, marked the entrance. (Figures XXI c and XVII e). Balconies were in the fashion during the second half of the century, but they were not the substantial slabs of pre-fire London. Never in history have local authorities encouraged balconies; they were too likely to be neglected and collapse². If the eighteenth century balconies collapsed they fell into the owner's area, and perhaps on that account were tolerated. They were of such lightness that they would hardly have been lethal. Confined to the first floor, they were not for sitting on, but were simply a guard for the french windows allowing the householder the joy of a sunlit threshold on a spring morning. When they were covered, their form had no bulk - just a light stone shelf with a wisp of wrought ironwork against the wall.

The quality of bas-relief in the street facade was evident throughout the eighteenth century. Detached columns were rare until the time of Nash. The astylar facade was the commonest, but where distinction was required, attached columns or pilasters were used. Podium, colonnade, cornice and pediment were represented with a minimum of projection and recession, often less than 10 in. from the wall face to the tip of the cornice. Architects achieved an unprecedented refinement as much by the detail as by the main members of the facade, which were apparently lighter than was needed for the work they had to do. At the present

¹ A practice stopped, for fire purposes, by the Acts of 1707 (Summerson: Georgian London, p.52)

² The rebuilding Act of 1677 called for balconies to the mansion houses not built on street fronts.

FIGURE XXI

- (a) A row of houses in London dating from 1722. From Chancellor: *The Eighteenth Century in London*, Figure 180.
- (b) A street facade built in 1708. From Chancellor: *Op cit*, Figure 177.
- (c) A large town house designed about 1760 by Sir Robert Taylor. The stone front is 35 ft. wide. From the *Architectural Review*, February 1910.
- (d) Ground and first floor plans. The front room on the
- (e) first floor is 30 ft. square.

L O N D O N



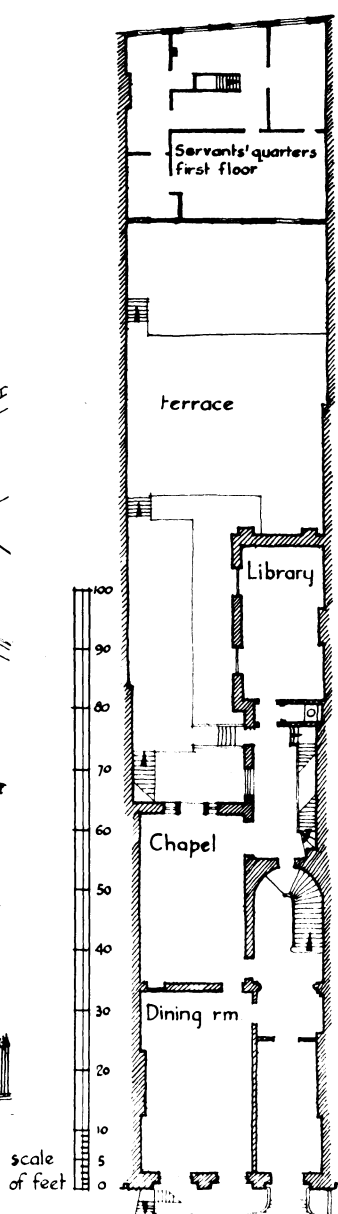
(a) Great Smith Street



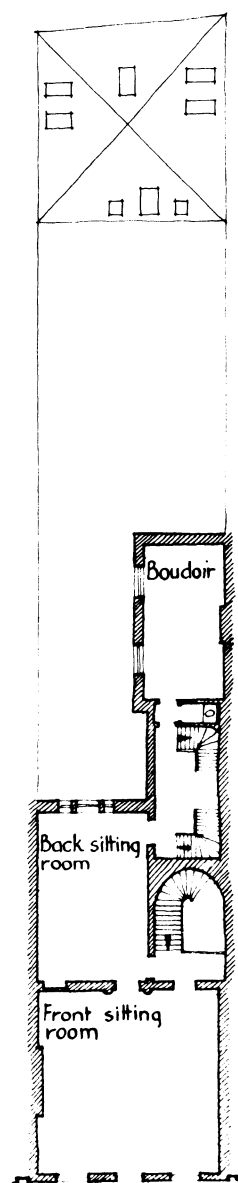
(b) No 44 Great Ormond Street



(c) L O N D O N Ely House Dover Street



(d) Ground floor



(e) First floor

time, as during the seventeenth century, it is accepted that what is exposed to the weather must be stouter and less finished than what is protected. But many an Adam doorway with its fanlight and sidelights, or balcony, or carved stringcourse would grace the fastidiously executed rooms within. Brickwork had as fine a surface as masonry. This made the greatest possible contribution to the feeling of inclusion in the street.

As a result of the subjugation of each house in the street, symmetry in the front was evident only in a preference for three or five openings. Even in five-bay fronts, the door was rarely in the middle.

Conclusions

The order of the eighteenth century town rested upon the order of the buildings in its streets and squares. Their simple appearance was the background to everything else in the town, the plain house front giving distinction and drama to the public buildings, statuary, greenery and water. The neutral seventeenth century facade, incomplete in itself and only having meaning when set among its neighbours, was the key that released the art of town planning. For it delivered design from the single building, so that it could deal with the whole town. With the house unit made repeatable, the architects could draw patterns on paper and play with fancied forms, certain that their patterns would still be legible in the completed town. Town planning was thus exalted from an administrative duty to a plastic art.

In the culmination of this movement, the street took, on the whole, a modest part, remarkable for reticence rather than splendour. When something splendid was required, avenues were planted, though these tours de force of road planning come outside any but the loosest definition of street. In the ordinary street, the motion of traffic was reflected in the simple Renaissance rhythm of windows and railings and trees. Baroque expression of motion by change was made in one or two instances (in the Square -

Circus - Crescent sequence at Bath and Randolph Crescent - Ainslie Place - Moray Place at Edinburgh) but it was left largely untried. It is impossible to deny the influence of motion and speed in the street decor.

With the help of woman's presence in it, the street became an ordered, refined gallery. Enclosure was suggested by the terminals, the flat facades merged into one wall, and a delicacy of detail comparable to that of the interiors. It is no accident that the names in England and France that we associate with the summit of street architecture - the Adam brothers and Percier and Fontaine - were interior designers of the first rank.

These attributes marked the culmination of street architecture: continuity in the sides of the street, rhythm, and enclosure; and it is in their decay that signs of the decline are first apparent in the work of both Nash and Haussmann. Order has monotony as its shadow; the 19th century revivals relieved the monotony, but cut up the continuity of the street, and broke its rhythm. Ruskin, who wrote some classical lines in praise of street architecture, helped by joining the battle of the styles to bring it down in ruin. Enclosure was injured when land values forced higher buildings, thus breaking the skyline, and it disappeared entirely when insular buildings replaced contiguate forms in the sides of the street.

All these influences may be traced back to one human trait: individuality. The whole elaborate structure of order wrought by the 18th century was, after all, at the mercy of human nature.

X. THE PRINCIPLES OF STREET ARCHITECTURE

Unity

The Shorter Oxford English Dictionary defines the word "street" as

- (1) A paved road; a highway.
- (2) A road in a town or village running between the lines of houses or shops. Also the road together with the adjacent houses.

It is the second definition that concerns us here, and in particular the second sentence. One road and two sets of buildings, taken together, form the street. If each side of the street is a row of separate buildings - detached houses, for instance - they do not, with the road, make one perceptible object. They make a collection or two collections of houses, but not a street as it is defined above. To be a street, the houses and road must be one thing, with one shape. This shape is an internal shape; only as an interior can it be seen as one architectural form and attain unity, which is the first requirement of any work of art.

It is then the first test of street architecture that the street should enclose, that it should form an internal space, that it should give us a feeling of being within. It need not constrict or confine, but it must enclose, and its architectural treatment must be devoted to that end.

The most notable streets of the past have achieved this by one of three ways; by physical enclosure, such as the curves, bends and tee-junctions gave to the citizens of the Middle Ages; in straight streets by analogy, at Palmyra with the inside of a temple, at Bologna with the inside of a church; or by association, which throughout the Eighteenth Century suggested an interior by refinement of detail and by omitting from the facade all architectural features, such as battlements or heavy plinths, whose original purpose was to exclude.

Internal Shape

If the shape of the street is to be internal, it must be homocentric: we must feel that the shape was formed about us and for us. It must be positive, not negative nor residual. It may have projections from it in the shape of niches, coves, side aisles, but not projections into it. The surfaces that bound it should bow towards us, not away from us. It should therefore not be lined with insular buildings, which are positive in shape for the street itself is the positive shape, and what lies behind must be residual from the street.

The human eye should dictate the street's appearance, and the observer must be able to see it all from within the street; particularly he must see some link with his own size; therefore the human scale must be apparent.

Architectural Treatment

The outside walls of the buildings are the inside walls of the street. To save space, these walls are usually plain, upright and continuous. Their forms should be in high relief in wide streets, low relief in narrow streets, and should be equally legible to one approaching at an angle along the street as to one standing opposite.

The design of street facades is a matter more of line than of mass. It is interior decoration - an entirely perceptual art, into which expression of purpose does not enter. Obviously such windows as are provided must light the front rooms of the building, but apart from that the facade should be dedicated to the street. Facadism, theatricality, pure decoration and all the tricks of illusion are here legitimate.

Enough has, it is hoped, been said in Chapter V to argue this point. Whatever the case for "honesty" and expression of purpose in other realms of architecture, in the street, the street must rule.

Traffic must be acknowledged. Particularly, it must not seem to obscure any part of the facades. In the

Eighteenth Century the Palladian plinth served to perfection as a background for traffic. If the facade starts from street level (as it does in the building illustrated in Figure XIXe), the traffic seems to intrude. The facade from first floor upwards should float over the sea of traffic.

Unity of Buildings

It is a matter of general agreement that if the terminal to a street is symmetrical, then as a matter of pictorial unity, the street should have bilateral symmetry. The identical treatment of the two sides need not, however, extend further from the terminal than the point from which we can see the composition in comfort. The converse is also generally agreed: that a symmetrical street must have a symmetrical terminal. If the terminal is a building, the axis must lead to a door - otherwise the symmetry is meaningless. But where there is not a symmetrical terminal, although there is no pictorial need for symmetry across the street, the two sides should in the interests of unity be similar. They should, to begin with, be similar in height. The illusion that the street is an internal shape rests heavily upon the illusion that it is roofed with the sky. If the buildings on each side of the street differ in height, this illusion is destroyed. If one side of the street is in brick and the other in plaster, then we walk between two blocks of buildings, we do not walk in one street.

In any architectural interior there must be unity of the enclosing surfaces. How this unity is to be attained in streets has proved such a difficult problem that it has generated, from time to time, advocates of laissez-faire, who point to picturesque streets in which there is apparently no unity, but which still contrive to be artistically satisfactory. Exactly why these streets are satisfactory the advocates of laissez-faire do not explain.

What degree of similarity is needed before unity is reached? At what point does diversity destroy unity? These

are probably the most vexed questions in street architecture. To produce a unified interior, each side of the street should appear as one building; but streets are made of separate buildings, with needs that are generally the same, but differ in detail, just as do the needs of the human beings who live in them. Absolute unity is no more possible with buildings than it is with people; but apparent unity can be achieved, just as it can in groups of people.

If we wish to group several people into one chorus or one platoon or one council, the most effective way to unify them is to dress them in the same colours. We may give them more unity by standing or seating them in a line. If, as well as doing these things, we can choose people of the same height, a still stronger unity is given to the group. These three unities of colour, alignment and height are the strongest means for grouping buildings in streets, and every well known informal street has unity in one or more of these respects¹. (See Figure XXII)

Buildings of different height can be further unified by sharing the same scale, thereby showing that people of the same size live in all of them. A fifth criterion of unity is character; whether the facades have mainly vertical or mainly horizontal emphasis, equivalent in human character to pride and independence on the one hand and humility and sociability on the other². A mixture of the two sorts of buildings can only result in domination by the vertical, and consequent disruption of the group. In the Eighteenth Century the continuous quality in street architecture was attained by abandoning symmetry in the facade and leaving the ends open. Every street facade should be a link between its neighbours; only a terminal can be a climax.

¹ For example, Oxford High Street and High Street Chipping Campden are bound with colour and alignment. Alignment is responsible for the unity along the Venetian canals, as it is in the streets of Nuremburg and Rothenburg. In the Herzog Friedrichstrasse at Innsbruck height and, to a lesser extent, colour are the unifying qualities.

² This aspect of street architecture is fully examined by Trystan Edwards (Good and Bad Manners in Architecture)

So disruptive of continuity is the symmetrical facade, that it may be said that no street building should have symmetry marked by a strong vertical axis. Symmetry along its length (which I have called palindromic symmetry) puts a stop to continuity. Large doors need an important approach directly to them; this is impossible in a street.

That architectural style, that is to say historical style, does not by itself link buildings together is shown beyond doubt by Scamozzi's drawing of a stage setting shown in Figure XXIIe. Style may link buildings by association, but it does not do so by any visual means.

If buildings share colour, alignment, height, scale and character they need by no means be identical. If they are the same colour, that in itself is enough to make them into one larger unit. If they differ in colour but stand to a line, presenting one continuous wall to the street, or if they are all exactly the same height, they also have unity, though to a lesser degree. Scale and character are not enough by themselves to unite buildings, though they can reinforce unity that comes from colour, height or alignment.

Thoroughfare Streets

There are two main types of streets in towns. Firstly, there is the street formed about a thoroughfare in which the through road is the most important element. Secondly, there is the access street, in which the road exists only to serve the buildings. We have seen how the two types are exemplified at Olynthus and Palmyra. This radical difference in the relationship of road to building affects the shape and architecture of the street.

The road is paramount in the thoroughfare street. It serves the buildings that line it only incidentally: its objective is always elsewhere. The course of the road and the needs of its traffic therefore should determine the street.

It should be clear, open and unhindered, its junctions fluent, the buildings always following its line, whether straight or curved.

Doorways, which are the instrument and symbol of access, should not be prominent in a thoroughfare street; they should be placed where they do not arrogate attention - never on axes of the road or at corners.

The architectural aim should be to make the thoroughfare street primarily a traffic channel; a suitable setting for the traffic and a suitable place to drive along. The motion of the traffic can be expressed by rhythm in the buildings and adjunct or by serial accents such as the towers of Oxford High Street. Progression can be made visible to riders and drivers by change. Movement along a street that is uniform and has no terminal is pointless. In such a street there is no sense of progression, no objective to reach. This is one reason why the pavement on the south side of the Rue de Rivoli is deserted. We have every right to expect, after walking 300 yards or so, that our energies have been rewarded by some new sight; but the same architectural scenery that we left at the Place de la Concorde still confronts us at the Louvre. Change may be gradual or sudden, of colour or treatment or shape of the street; but in a long thoroughfare, change there must be.

Access Streets

The buildings should dominate the road in an access street. The road exists for the buildings, and this can be expressed, firstly, by leading the road to a building, and more particularly to a door, and secondly, by emphasizing the doors in the buildings that line the street. Placing a building opposite a road completely subordinates the road. At junctions of access streets road axes should therefore determine the position of doors¹.

1

The Bressey report recommended this for thoroughfare junctions; surely a mistake, for the driver's interest would then be held by building entrances, when the road should command his attention.

In contrast to thoroughfare streets, access streets should not slavishly follow the road. Corners should be square, or whatever shape the building demands, so far as the dictates of unity in the street will allow.

Conclusions

The following, then, are the main principles of street architecture that a consideration of history shows:-

- (1) The street must have unity.
- (2) It can only have unity as an internal shape.
- (3) This internal shape must be emphasized by either physical enclosure, analogy, or suggestion.
- (4) The internal shape of the street should be positive.
 - (a) No street building should be of insular form.
- (5) All street architecture must be perceptible to the moving observer at street level.
 - (a) Expressionism is not valid in street architecture.
- (6) A symmetrical street terminal demands a symmetrical street.
 - (a) A terminal to a symmetrical street must be symmetrical.
 - (b) No street facade should have strong lateral symmetry.
- (7) Each side of the street should appear as one building.
 - (a) If various facades have colour, alignment, height, scale and character in common, they will attain apparent unity.
- (8) In thoroughfare streets the road is dominant.
 - (a) Buildings should take their line from the road.
 - (b) Doors should be suppressed.
 - (c) Corners should follow the wheel-line.
- (9) In access streets the building is dominant.
 - (a) Buildings need not follow the road line.
 - (b) Doors should be emphasized.
 - (c) Every access street should terminate at a door.
 - (d) Corners should be dictated by the plan of the building.

FIGURE XXII

Showing the qualities that unify buildings in informal streets.

Colour

(a) A street in Coggeshall, Essex, finished in stucco (from a photograph by the author).

(b) Part of the South side of High Street Chipping Campden.

The colour of the stonework is the common denominator in this group (from a postcard).

Alignment

(c) Buildings lining the Arno at Florence. Alignment involves not only alignment in plan, but the upward expression of the line by walls. Obviously the wider the street, the more the walls may be broken and still present a unified facade. Figures a and b also show the unifying effect of alignment on a curve (from a postcard).

Height

(d) The Herzog Friedrichstrasse Innsbruck. Tyrol. Though their other qualities vary, their equal height unites these buildings (from a postcard).

Historical Style

(e) Scamozzi's original drawing for one of the streets in the permanent setting in the Teatro Olimpico, Vicenza. (Reproduced in the RIBA Journal, 9th March 1935). Where other qualities are not shared, style is not enough to unify separate buildings.

Scale

(f) Frederick Street, St. Pancras, London. Though varying in colour and height, the three houses look in place because their scale is the same as the rest of the street (from a photograph by the author).



(a) COGGESHALL Essex



(b) CHIPPING CAMPDEN Gloucestershire
Colour



(c) FLORENCE Buildings on the Arno
Alignment



(d) INNSBRUCK
Height



(e) Design by Scamozzi for stage-set in Teatro Olimpico



(f) LONDON
Frederick Street
Scale

XI. THE PRESENT POSITION

I propose in this chapter to study whether our present habits of building allow us to observe the principles outlined in the last.

Unity and Enclosure

The street life of today differs in two major respects from that of the past: firstly, the home has to a large extent vanished from the central areas of the town, and secondly, the street scene no longer interests us. When the house disappeared from the larger streets of the town, it left the workplace and the shop. For neither of these has the owner that instinctive regard that makes him decorate his house. His workplace and shop show that he is proud of them; but not that he loves them. We have today nothing of the pageantry of trade or the civic pomp that made street life a constantly absorbing spectacle. Trading now takes place not in the street but inside the buildings. The spectacle of the street no longer attracts the public and one usually walks in a busy street *faute de mieux*. The promenade and parade are only enjoyable if there is no traffic, for five minutes of watching cars and lorries is enough.

In these conditions the wish for enclosure in the street - that is enclosure in which to enjoy the scene - has died. Physical enclosure for military protection is in these days of air attack no longer comforting, though as a windbreak it is still needed. The argument for enclosure today seems therefore to be primarily aesthetic.

In our architecture, enclosure is becoming more suggested than actual. The glass house of the adage has become a reality, and the interpenetration of interior and exterior space is now accepted as one of the aims of house design. In the process of breaking down the barriers between what is within and what is without, it is obvious that the door must

go, and this age is the first since the dawn of history that has tried to make the door invisible, by colouring it like the wall or making it, like the walls, of glass. Although a building may appear not to enclose, it must in fact do so, because storms and burglars still threaten it. Moreover, the instinct of man to seek enclosure is also unchanged. In the words of Lewis Mumford

"Without formal opportunities for isolation and contemplation, opportunities that require enclosed space, free from prying eyes and extraneous stimuli and secular interruptions, even the most externalized and extroverted life most eventually suffer. The home without such cells is but a barracks; the city that does not possess them is but a camp".

The expression of enclosure may change, but the principle remains. In street architecture, walls of glass can define the main form of the street as well as walls of stone. What is important is that the shapes inside the buildings exposed by the glass should be extensions of the volume of the street.

There are very few excluding features left in modern architecture, though banks and finance houses continue to build their premises with those abrasive plinths and defensible semi-basements that keep the onlooker at bay. Security can surely be suggested in other ways.

One instrument of unity that we have left quite untried is paving. Between the usual facade materials and asphalt no rapport is possible. In colour and texture they are antipathetic. The habit of paving side-walks with stone or concrete slabs makes them appear as a margin to the building, giving each block a positive or insular form and separating it from the roadway. If a jointed paving material were used for the roads, or if artificial joints were introduced into tarmacadam, the floor of the street would have some harmony with its walls.

The sense of enclosure we get in a street depends much upon its cross section. Nine different cross sections are available. (See Figure No. XXIII)

¹ The Culture of the Cities, p.29. Some writers, notably J.M. Richards, put enclosure as the first necessity in the layout of a present-day town.

(a) The simple trough, with or without basements under the pavement. Here only architectural suggestion can make the observer feel enclosed.

(b) The Eighteenth Century English street, providing habitable rooms at basement level, but today subject to the likelihood of carbon monoxide fumes from vehicles entering the basement. Only when treated with delicacy can this type suggest enclosure. If, for instance, the basement area is protected by a solid balustrade, the idea of exclusion is at once introduced.

(c) The simple verandah on columns or arcades, which is the most common in South Africa. This has (so far as enclosure is concerned) the disadvantage that it can never be anything but a projection into the street. In its favour, it could be a great unifying motive, if a standard pattern were adopted for the whole length of street verandah, and if it were not ruined by advertising signs.

(d) The cantilevered hood over the footway. As at present designed they are (with exceptions such as that shown in Figure XXIII j) clumsy and ponderous, and they do not appear as anything but an extension of the building. The pedestrian has not the feeling of safety from traffic that a colonnaded verandah gives.

(e) The full height colonnade of the type used at Jerash and Palmyra. To be suitable for weather it can only be built in the tropics, where the sun shines vertically and where there is little wind to blow rain into the verandahs. By analogy with a temple, it gives a strong feeling of enclosure.

(f) The side aisle street. For enclosure by analogy this type is supreme. It exists at Bolzano, Padua, Turin, Bologna and elsewhere in Northern Italy and is illustrated in Figures XIV h and XVIII e).

The side-walk is a side aisle to the main nave of the street - an analogy which is unescapable as long as a Gothic

or Renaissance church remains. It is a practicable way of providing new side-walks under the buildings, thus widening existing roads.

(g) The side aisle street without columns. This type could only be built as a new building: it can offer no advantages over the colonnaded side aisle street.

(h) The type of street at Chester, where the colonnade is at first floor, will probably never be repeated: it is unsuitable for the aged and infirm. But it very strongly suggests removal from the dangers of traffic.

(i) The raised pavement with or without columns, so often suggested as a solution to pedestrian traffic, would not give an enclosing shape for either pedestrian or motorist.

To sustain the feeling of enclosure, balconies should be kept to a minimum. They are often built to the limit of length allowed by the by-laws. In a street the view from a balcony or baywindow is more interesting along the street than across it; narrow balconies, like the boxes in a theatre, are therefore preferable to wide balconies.

Continuous trees make a street into an avenue; the road bounded by trees is one element - the footway between building and trees is another. They are successful only if the footway is so wide that a substantial width of sky is visible from it. To maintain unity of form between the buildings on each side, they must both be visible at once. Occasional trees (i.e. trees separated by at least twice their own width) are therefore better than closely-planted trees if there is strong similarity between the two sides of a street.

The various changes that have accompanied the decline in civic art (of which the decline of street architecture is only a part) are too well known to merit rehearsal here. Of them all the most active has been the advent of the high building - that unmanageable child fathered upon the city by high land values.

A six-storey building annihilates the order of the street of two or three storeys. Most high buildings of today are made up of flats or offices. The size of the building is not made by the expansion of one idea in men's minds, as were the large buildings of the past, but by the multiplication of small ones. This makes it impossible to make each building a unity without borrowing insular forms from elsewhere - from the tomb, the memorial or the shapes of rocks.

In street architecture, the high building is most destructive in that it introduces these insular forms into the street view; they destroy enclosure as completely as the insula of the First Century Roman towns destroyed the enclosure of the domus. To preserve light in the street by-laws enforce a set-back at the top, making an excluding form even if the cross section of the street is continuous; or they allow a tower, which dominates the street without being part of it. Despite the fact that the street plan is quite unsuited for the high buildings, ten-storey blocks are allowed in streets. Until architects evolve a new road and building plan, or find some way of adapting the street plan to receive high buildings, they must adapt the facade of the building to the street conditions.

Visual Design

High buildings commonly have a base in the form of shop windows, supporting (or attempting to support) a single form shooting upwards to terminate in a number of breaks and set-backs. From any angle in the street, such buildings are illegible, just as the street is invisible from their windows. Their blank side walls are really their facades - they are very much more easily seen than the front. To relieve these side walls is one of the most urgent needs¹.

¹ The London County Council will permit windows in such positions provided only that (a) the neighbours' agreement is obtained and (b) that the windows have fire-resisting glazing. But to build them in this wall would only emphasize their insular form.

No-one can enjoy looking at a building if he can only do so in an uncomfortable position. To suit the building to the viewer in the street, the building should literally be designed from that viewpoint. Cornices and projections from buildings are often designed in accordance with the vertical angle at which they are seen. We can also find a suitable horizontal angle to determine vertical projections from the facade. With the head held at the normal angle a field is seen that extends to an angle of 40° above the horizontal¹. Consequently, for a building 50 ft. high one has to be about 50 ft. away to see it all without unduly raising the head. If the street is narrower than 50 ft. it can all be seen only from further along the street. At this horizontal angle, which we shall call the angle of appreciation, the architecture of the building should all be as readable as when one is opposite to it. Particularly should windows not be obscured by vanes or projecting columns. (See Figure XXIII)

With a very high building - say 100 ft. high in a street 50 ft. wide - this angle of appreciation becomes so acute that the building cannot be seen at all, so far away is the observer. Consequently, it is necessary to postulate an angle of appreciation and to confine the observer's attention only to the lower few storeys. This means that the upper part of the building would be "written off" so far as the street is concerned, as it is visible only by craning the neck. The lower part, designed with detail legible from the street, would be the street facade².

Long facades may, after the fashion of Eighteenth Century English terraces, be broken up into fields of interest designed for the angle of appreciation. Where there is a verandah, the

¹ My reasons for choosing this angle are set out in the appendix.

² The exact effect of a building in any urban scene can be determined by photography (see Waldram: *The Use of Photographs in Town Planning*).

inside of the verandah itself should be designed in the intimate scale of a room.

An untried field for the narrow street is the facade with painted decoration in the form of murals designed to accord with the architecture.

Colour

There are practical difficulties in the way of ensuring unity of colour, alignment and height.

Unity of colour usually, but not always, means unity of materials. The ease with which building materials are now carried from their place of origin to anywhere else makes it all the more important to regulate their use in street architecture. Let us assume that a local authority wishes control materials in a street. The two difficulties are in the questions of cost and monopolies. If the authority were to lay down that the facades in a street must be in a purple facing brick, then an owner who could demonstrate that a red brick is cheaper would have a grievance. This is a transitory difficulty. When the control had been in operation long enough that the owner was forewarned of restriction on facade materials before he bought the land, it would disappear. Much more difficult is the question of monopolies. No local authority would agree - in fact its constitution will probably not allow it - to stipulate one building product for use throughout a street. To lay down a colour limit regardless of material is perhaps a solution. If the whole street is owned by one man, the difficulty disappears. Speculative building has always been a strong agency for producing orderly street architecture.

Alignment

By-laws prescribing building lines usually forbid the building to "project beyond" the line. They should in places where alignment is important be more specific in stating that the whole facade shall in fact be built to one line.

Projections, which are more damaging to the street than recessions, should be carefully limited.

Height

In dealing with the height of buildings it must be realized that a uniform scheme can only be satisfactory so long as it remains uniform. When maximum heights are prescribed, the result is always the same: two or three very high buildings among a street of low ones. To produce a uniform street, the exact height must be prescribed: no more and no less.

Scale and Character

It is impossible to control either scale or character. Exhortation and remonstrance are the only weapons the controller has. Fine examples exist of the effectiveness of these two qualities - perhaps the best being Edward Maufe's theatre in Beaumont Street, Oxford, where the facade fits perfectly into a street of houses.

Thoroughfare Streets

Up to the invention of the petrol engine, mankind recognized in general two sorts of speed - that which was measurable and that which was too fast to be measured. In poetry imagery was borrowed from a man limping or walking, a horse ambling or galloping, a hart running - all had speeds measurable by rhythms seen or heard. The express train had sleepers pouring beneath it, vibrating pistons and the sounds of the exhaust and wheels to give a comparative impression of its speed. For immeasurable speed the poets took the arrow or the swallow in flight, the shooting star or the bolt of lightning - things that had rhythmless, instantaneous motion. Our present means of locomotion are with the exception of walking and bicycling, entirely without rhythm. The measure of motion is therefore absent. A horse galloping at 30 miles an hour gives a greater impression of movement than a car going at twice that speed. Similarly, we seem to move

much faster riding on a scenic railway, with the sleepers of the track to watch, than riding in an aeroplane ten times faster. The difference between a caterpillar still and a caterpillar in a hurry seems more than the difference between 600 and 700 miles an hour, because there is no rhythm in travel at these speeds. Without rhythm speed cannot be measured by the senses: it becomes velocity.

In these circumstances it is important, if the street is to reflect the motion of traffic, to introduce visual rhythms. This is particularly so in a thoroughfare street. If it is a shopping street, verandah supports are the most obvious means, for the windows of shops are not susceptible of order. In other streets the rhythm can be given by the spacing of windows or structural members, small projections, lamp posts or trees. The new approach to St. Peter's in Rome is a fine example of how rhythm and consequence result from pylons spaced along a processional way.

Modern road design has formalised the biological shapes of the Middle Ages. But traffic roundabouts and the visceral shapes of modern intersections are not suitable foregrounds for insular buildings. The line of the road gives a full justification for the shapes that Brazilian architects so warmly favour at the moment - bent or curved and emphasizing the course of the thoroughfare.

Access Streets

In modern planning, particularly in England, architects are trying to recapture something of the casualness and variation of Medieval streets: they use every form of enclosure but the straight corridor street. In housing estates there are many examples of buildings dominating roads.

In planning, staggered intersections are favoured by road engineers, and the principle that each access street should lead to a building is therefore in accord with traffic theory.

Although town planning theorists condemn them, plans are being drawn every day that embody streets, or roads that in spite of the planner may become streets. In South Africa the chequerboard, despite its disadvantages, seems not to have run its course yet. The treatment of its streets presents the greatest difficulties. Summarized, they are as follow:-

- (1) There is no climax or termination; therefore every street is in character a thoroughfare street, but poorly defined because of the large number of intersections.
- (2) The block is the unit of design. This means that even if unity were achieved in each block, the view along every street would be of a number of differing blocks.
- (3) The block is an insular form, which makes the street itself residual and negative.
- (4) If an architectural dressing is applied to one street, the difficulty is where to stop it.

The formation of street architecture then is a hopeless problem unless we can emphasize some streets as thoroughfares. Where they leave open spaces, pylons (either free standing or as part of the buildings themselves) can be built to mark the thoroughfare. Along its length, the thoroughfare may be favoured with standards or other rhythmical treatments. If it is practicable to close some of the cross streets to vehicles, then the thoroughfare could be made continuous with trees planted across the cross streets. Where streets stop against hills (as often happens in South African towns) terminal buildings built against the hills would give the character of access streets to those that lead to them.

In spite of the difficulties presented by the high building and the chequerboard plan, it seems possible to build and rebuild streets that would be, if not equal to those of

the past, at least an immeasurable improvement upon those of the present.

There remains the matter of the individual, either owner or architect, and his willingness to co-operate in producing fine street architecture. Let it be said at once that there is no question where the responsibility lies. It is fashionable among opponents of aesthetic control to plead that it is the public that prevents good civic art; without an educated public, they say, the architect is hamstrung. But no great civic achievement of the past has been caused by popular clamour against the wishes of those in authority. The general rule has been that those in authority have started the schemes and the public has paid for them. Today the architect is in authority. Whatever prestige he has lost to allied professions, the architect is, and must always remain, the supreme arbiter of taste in building. He can impose restrictions upon his client in matters of materials and style. If he desired unified architecture in towns, and if his voice rang with the authority of his whole profession, the public could not stop him from achieving it.

No street architecture of the past has been built without controls and discipline. The controls have been in matters of building lines, fire protection and party walls. Nature has imposed the disciplines, engendering types of roof and walling suitable to the climate, and forcing the use of materials ready to hand. These controls and disciplines account for a large part of the quality of streets built before 1850. The stone of the Cotswolds and the brick clay of London made it almost impossible for Chipping Campden and the Eighteenth Century London street to be anything but beautiful.

The advocates of laissez-faire overlook this. Except for the building line, fire restrictions and a maximum height, the controls and disciplines have gone. The canons of contemporary style, if they exist, have none of the force

of classical canons. There is today no accepted contiguate form for large buildings, such as was general during the Eighteenth Century, in Renaissance Italy, Medieval Holland and in Republican Rome. Any building material can be had anywhere. Thus we see materials used out of their element, and forms used out of their climate - flat roofs in Norway and snow-shedding roofs in South Africa. I do not argue that this is bad for architecture in general; but it obviously means that orderly architecture can only be built under some control and some discipline.

Aesthetic control is to many undesirable, and to some detestable. Before it is imposed, every other possible step should be taken. One such step lies before the architects themselves; it is voluntary co-operation, fostered by the local authority or whatever body is most interested in the street. Whether architects work under controls by by-law, or in voluntary co-operation, there must be a definite end in view. It may be either a preconceived formal elevation for a whole street, or an informal street unified in colour, alignment and height. It must not be a matter of whim, such as that of the city architect in England who ordained that every building must have a black plinth. Within the limits imposed the greatest freedom must be allowed, but variety in its present manifestations must be prevented. The most worn weapon of those who object to control is the threat of uniformity. However monotonous uniformity is, it has none of the monotony of the unending variety our streets now display. The architect may give rein to his individuality in many buildings, but the street building is not the place to do so. I have tried to show that the street building presents an especial aesthetic problem as well as a planning problem. The natural surroundings of a building are always considered in the early stages of its design; the street surroundings should be given the same regard.

For submitting to more restrictions, what is the repayment?

An orderly town, with architectural streets; for the architect a communal act to replace an individual act; and the possibility of building something that deserves Ruskin's eulogy:

"There is a charm and sacredness in street architecture which must be wanting to even that of a temple: it is a little thing for men to unite in the forms of a religious service, but it is much for them to unite, like true brethren, in the arts and offices of their daily lives".

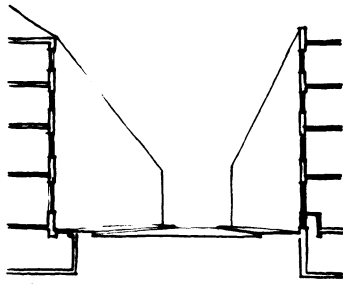
FIGURE XXIII

Street Sections

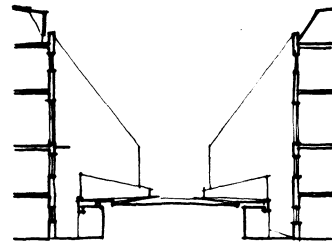
- (a) The simple rectangular section.
- (b) Eighteenth Century English street.
- (c) Projecting verandahs.
- (d) Cantilevered hoods over footpaths.
- (e) Full height colonnade.
- (f) Recessed colonnade or arcade at Bologna (Hegemann and Peets, Figure 816). Sometimes the colonnades rise through two storeys, as in the Via Po, Turin.
- (g) Recessed pedestrian ways with upper part cantilevered.
- (h) First floor colonnade as at Chester (from Hegemann and Peets, Figure 817).
- (i) First floor footways leaving road entirely clear for traffic.
- (j) Photographs showing diagrammatically the upper field of
- (k) fixation from viewpoints in plan (m) with the eyes
- (l) looking at point X. (10° above the horizon)
- (m) Plan showing the position of the building (Pieter Neethling Gebou, Central Street, Pretoria, Architects: Louw and Louw in association with Norman Eaton).
- (n) Illustrating the "angle of appreciation", which should control vertical projections from the facade.

Photographs by B.W.B. Ball ARIBA, M.I.A.

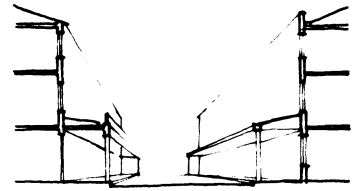
STREET SECTIONS



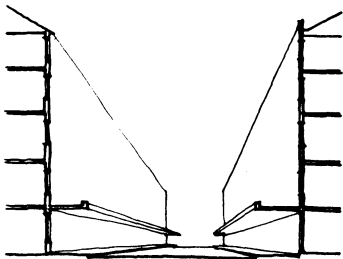
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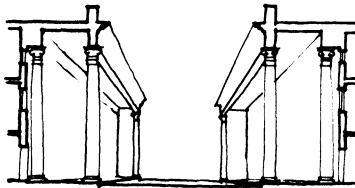
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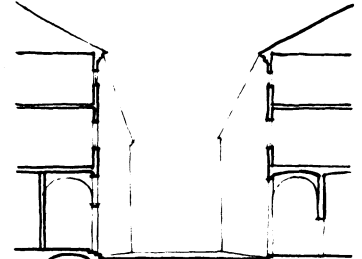
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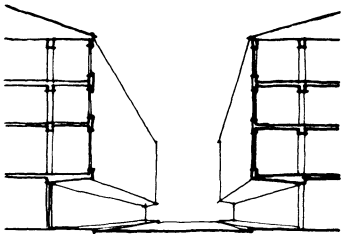
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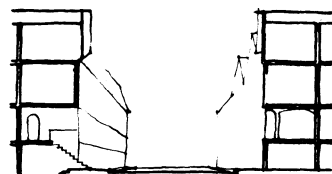
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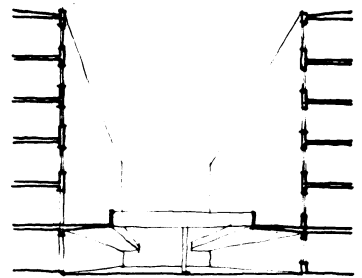
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(h)



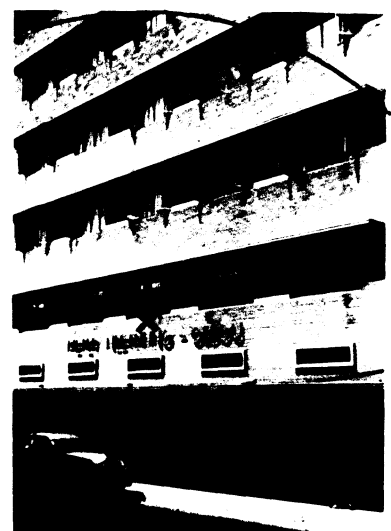
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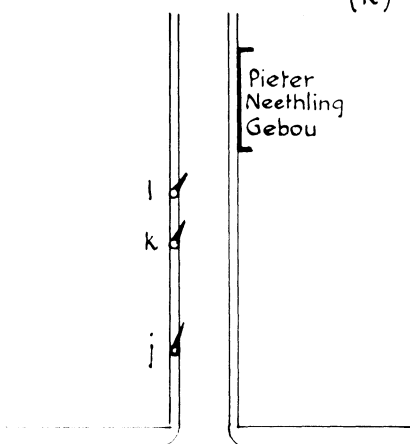
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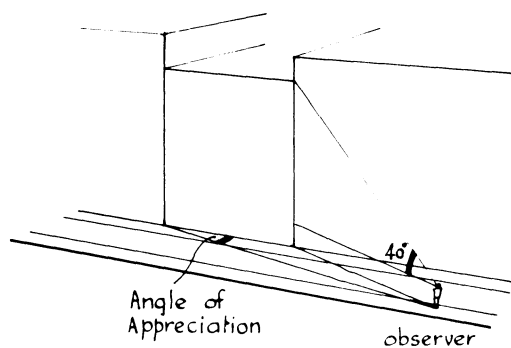
(k)



(l)



(m) Plan of Central Street Pretoria



(n)

APPENDIX TO CHAPTER XI : THE ANGLES OF VISION

In 1803 Humphry Repton¹ based his theory of garden design upon what is visible when the head is held erect. In this position, he stated, the eye sees up to 28° above the horizon and 56° below it. Unfortunately these angles vary with the conformation of the skull and the habitual poise of the head. Modern textbooks² give the field of vision as extending 50° up and 70° down and, within this field, the field of fixation (i.e. the field in which the eyes can focus upon an object without moving the head) as 35° up and 55° down. But we hardly ever hold the head still and roll the eyes in the way these figures suggest. Usually we tilt the head if we wish to study anything higher than 10° above the horizon. So that our critical angle depends less upon the eye than upon the muscles of the neck.

The figure must in any case be empirical, depending upon the personal factors already mentioned and the length of time that the observer must look at the higher parts of the building.

If we assume that a tilt of the head of 10° upwards can be sustained long enough to look at all the details of a building, then the field of fixation is 45° up and 45° down. With this position of the head the eyes can move to any part and focus upon it. As the building must come within this field, and the highest part of the building is to the side, away from the centre at which we are looking, then its top should not be more than 40° above the horizon.

Sideways the field of fixation extends 45° on each hand. No discomfort attends the study of widely spaced objects, but if they are part of one pictorial composition they must obviously be seen together. A lateral angle of considerably less than 90° should therefore determine the length of any facade feature.

¹ Observations upon the Theory and Practice of Landscape Gardening. Hegemann and Peets found the angle of 28° to be the cardinal angle in the design of the Piazza S. Pietro.

² For example, Laurance: Visual Optics and Sight Testing, p. 62

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