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# HISTORIC AND GEOGRAPHIC ASPECTS OF EKISTICS

## TOWN-PLANNING IN THE ANCIENT GREEK WORLD

By Arnold Toynbee

Town-planning came late in the history of the Hellenic World. The historical background to the rise of the Hellenic civilization was an age of insecurity that followed the breakdown of the Mycenaean Civilization and the post-Mycenaean *Völkerwanderung*. The sites of the earliest cities in the Greek World in the subsequent Hellenic Age were determined by considerations of security.

In Continental European Greece, the new cities (*poleis*) started as hill-towns, many of them on the sites of the castles of the rulers of the former Mycenaean principalities. In Crete, where the Minoan rulers had lived in unfortified palaces in lowlands near the coast, the earliest Hellenic cities—e.g. Dreros and Lato—were founded on new sites on mountain-tops out of view of the sea. The refugee settlements, founded during the *Völkerwanderung* on the west and south coasts of Anatolia, were mostly located on hill-sites—some previously occupied, others not—a little way inland.

As conditions gradually became less insecure and as population increased, unfortified lower cities overflowed from the fortified citadels (*poleis*) down the slopes of the hills on which these stood, and on to the plains below.

Most of these lower cities—e.g. those along the west coast of Anatolia—seem to have remained unfortified till as late as about half way through the sixth century B.C. (The lower cities of some of the Greek colonies in Sicily may have been fortified earlier). The lower city of Athens may not have been fortified before the building of the Themistoclean wall just after 479 B.C.

When a lower city was fortified, (i) the ring-wall usually included the former citadel (*polis*), which now came to be called the *akropolis*, to distinguish it from the rest of the enlarged city; (ii) the section of the existing walls of the *akropolis*, facing the lower city, that was not incorporated in the new ring-wall was pulled down in many cases, in order to make sure that the *akropolis* should not be used by a local despot or by a foreign invader for dominating the city; (iii) the line of the new ring-wall was usually determined by topographical considerations. It was carried along ridges that provided natural defenses, and it often included a larger space than the build-up area of the lower city.

The ring-walls of cities like Corinth, Megara, and Athens, which lay close to the sea-coast but not on it, were now linked with a fortified port or ports by "long-walls."

When lower cities developed, the focal point of the city's life shifted from the *akropolis* to an agora in the lower city. The agora was originally an all-purposes place of assembly. Some Minoan Cretan palaces had had "theatral areas" that were reproduced on the citadels of Cretan cities of the subsequent Hellenic Age, e.g. Dreros and Lato. These theatral areas were the embryos of both the agora and the theater of the fully developed Hellenic-Age city.

The agora was originally a common meeting-place for social intercourse, festivals, political assemblies, the administration of justice, and retail trade. It retained its social and judicial functions throughout the history of the Hellenic civilization; but, in most cities, festivals and political assemblies were eventually moved to other locations—both of them to the theater, usually—and, in some cities—especially those in which the political regime was normally oligarchic—the commercial agora was segregated from the social agora.

As civic life in the Hellenic World decayed, the architecture of the agora became more elaborate and pretentious. In the age of the Roman Principate, the architectural development of the agora reached its peak at the moment when civic life was breaking down—even on the level of municipal self-government to which it had been reduced by then. By the second century of the Christian Era, the agora, which had started as an unorganized but animated open space, had turned into a cloisterlike quadrangle.

The Ancient Greeks, in their expenditure on buildings in their cities, gave first priority to the temples, second priority to non-religious public buildings, and third priority to private houses. But Greek cities, unlike Sumerian cities, were not centered on a temple, and, unlike contemporary Etruscan cities, the layout was not determined by ritual considerations and the city-limits were not consecrated. In a Greek city at all stages of Greek urban development, unplanned or planned, the layout was secular, and was mainly governed by the character of the local terrain.

The essential secular buildings were: (1) foun-



Professor Toynbee lecturing.

tains; (ii) the seat of the executive authority (prytaneion); (iii) the council-house (bouleuterion); (iv) the theater, which steadily grew in importance, and attracted to itself political as well as festive functions; (v) the gymnasium, which started as a park used for physical training, and gradually changed (at any rate at Athens) into an institute for higher intellectual education; (vi) the stadion and hippodrome. These, because of their size, were usually located outside the city's ring-wall, while, in order to keep the cost of building and maintaining them down to a minimum, they, like the theaters, were located, wherever possible, on sites where the natural lie of the land lent itself to the purpose with a minimum of artificial adaptation and construction.

The original Greek cities of the Hellenic Age, on both sides of the Aegean Sea, had grown gradually, without being planned, from the nuclear citadels (eventually distinguished from the lower cities by the name "akropolis"). Our earliest archaeological evidence for town planning dates from just before the close of the sixth century B.C., and comes from colonial sites that are as far away from each other as Olbia, a Milesian colony on the north shore of the Black Sea, Selinous, on the south coast of Sicily, and Marzabotto, where an Etruscan colony had been planted on the northwest slope of a pass over the Appennines from Faesulae (Fiesole) to Felsina (Bonina, Bologna).

The embryo of the Greek and Etruscan town-plan seems to have been a pair of coordinates, intersecting each other at right-angles. This embryonic layout has been found on the akropolis of Selinous, and it was most probably Greek

in origin. The Etruscans and their Roman successors and imitators gave this axial layout for their planned cities a ritual significance, and retained it as the dominant feature of a townplan. The Greeks, on the other hand, converted the original pair of coordinates into a grid, by laying out parallel streets on either side of the two primary streets; and, in this Greek development of town-planning, the original axiality disappeared. A planned Greek city, unlike a planned Etruscan or Roman city, had no center-point. The Greek planned city and the Etruscan or Roman planned city resembled each other, however, in being laid-out, alike, on rectangular lines—in contrast to the Assyrian camp and its successor the Iranian planned city, which developed the same original pair of coordinates into a star-shaped or wheel-shaped layout, with a circular perimeter.

In Roman colonies sited on level ground, the rectangularity of the grid was matched by a rectangular layout of the ring-wall. On the other hand, in planned hill-towns (e.g. Akragas and Olynthos) and in planned coast-towns (e.g. Miletos and the Piraeus), the tracée of the ring-walls was determined, as in unplanned towns, by the lie of the land, and therefore, in many cases, was highly irregular and was also out of relation with the regular grid-shape of the built-up area inside it. Besides the built-up area, the ring-wall embraced, in some cases, large uninhabited areas that were included in it for strategic reasons (i.e. because the ring-wall itself was carried along steep ridges and over commanding heights). This was characteristic, not only of Greek planned hill-towns and coast-towns, but of Etruscan and Roman ones too.

The original Greek cities in the Aegean area



remained unplanned, and so did Rome. Moreover, when Athens had been destroyed by the Persians in 480 B.C., Sparta by an earthquake in 464 B.C., and Rome by the Gauls *circa* 386 B.C., these three famous antique cities were rebuilt in their original irregular style. On the other hand, the Milesians seized the opportunity, given them by the destruction of Miletos by the Persians in 494 B.C., to lay out for themselves a grid-plan on a site after their liberation in 479 B.C. from Persian rule. The Thebans, likewise, took advantage of the destruction of Thebes by Alexander the Great in 335 B.C. to lay out their citadel, the Kadmeia, on a grid-plan. All but three of Miletos's sister Ionian cities along the west coast of Anatolia followed Miletos's example without having been previously destroyed. They too, like Miletos, provided themselves with a grid-plan by shifting, like Miletos, to a new site. In the planning of Greek cities—Miletos, above all—the planners looked far ahead. At Miletos, they laid out their plan on so grand a scale that it took centuries to put the plan into effect by covering the whole of the planned area with buildings.

After the laying-out of the new Miletos on a grid-plan at some date after 479 B.C., almost all newly founded Greek-cities (e.g. those founded in Asia and in Egypt (Alexandria) by Alexander and his successors) were laid out in the same rectangular form. This became the standard pattern for the layout of the built-up areas of cities in the Graeco-Roman World. An outstanding exception was Pergamon, a hill-town whose layout was inevitably as irregular as the shape of the *crag* on which it was perched. The prototype of the Attalids' Pergamon was not New Miletos; it was pre-Hellenic Mycenae.

The invention of the grid-plan is explicitly ascribed by Aristotle to Hippodamos of Miletos. Aristotle's statement is in contradiction with the archeological evidence for grids dating from before the close of the sixth century B.C., since the earliest probable dating of Hippodamos's birth is *circa* 500 B.C. At the same time, Aristotle's statement does suggest that Hippodamos must have given some new turn to Greek town-planning while it was still in its formative stage, and that he left on it a permanent impress of his own. Whether or not Hippodamos played any part in the laying-out of New Miletos, it is certain that he was the planner of the new Piraeus, which was laid out not long afterward. He is also credited with the planning of Thourioi, the international Greek colony founded in 444/3 B.C. in the "toe" of Italy to replace Sybaris, which had been destroyed by the Crotoniates *circa* 511 B.C. Strabo tentatively credits Hippodamos with the planning of the city of Rhodes as well, but most modern scholars consider this to be impossible, because the city of Rhodes was built to serve as

the capital for the island after the political union of the three city-states among which the island had previously been divided, and the date of their union was 408 B.C.

It was a tour de force of ingenuity to impose a rectangular grid-plan on a peninsula with an irregular coast line, like the site of New Miletos, or on an irregular-shaped peninsula that had a rocky and uneven surface as well, like the Piraeus or on a steep mountain-side, like the sites of Priene and Assos. One means by which this problem was solved by Greek (though not by Etruscan or by Roman) town-planners was to break up the grid into several separate sections, set at different angles to conform to the irregularity of the terrain.

In the laying-out of a grid-plan the unit was a block (called *insula* in Latin). These blocks were uniform in shape and size—and this not only within one and the same planned city but also, in some cases, as between different cities, far away from each other. The standard unit of shape and size seems to have been an oblong of the dimensions of the Roman *actus*. Whereas the shape and size of the blocks was standardized, the streets that divided the blocks were of different widths.

The sites of cities in the Graeco-Roman World were usually determined by the presence of springs; and, in Greek cities, conduits and fountains, built for the convenience of the women who had to draw the water and to carry it home, were well provided for as early as the age of the despots, which, in the Aegean area, coincided approximately with the seventh and sixth centuries B.C. In the provision of paving and drains, the Greeks lagged behind the Etruscans and the Romans. It was not till the age of the Roman Principate that the paving of a city's streets, and the provision of adequate drainage, became the rule throughout the Graeco-Roman World. Before that, the streets of even Alexandria and Antioch had been left unpaved. The streets of Athens remained a byword, from first to last, for being unpaved and crooked.

Private houses, in all Greek cities except Delos, during its brief "boom" from 167 B.C. to 88 B.C. as a slave-mart, also remained, from first to last, unpretentious and, in some cities, squalid. And at Delos the relative sumptuousness of the houses was counterbalanced by the extreme narrowness and steepness of the streets.

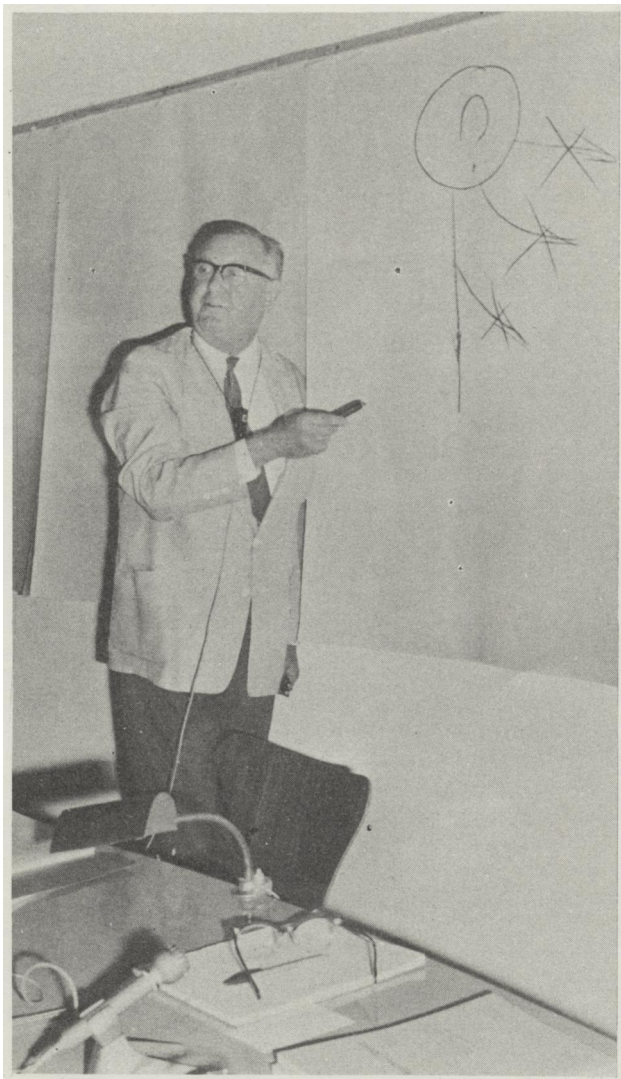
In an archaic unplanned Greek city, the agora, the temples, and the secular public buildings stood out individually as isolated monuments, not related either to each other or to the city as a whole. By contrast, in a planned Greek city, the agora and the public buildings were merged in the overall plan. A certain number of standard-size blocks was assigned to each of them. This extreme regularity, which was characteristic of a Hippodamian city, was esthetically pleasing to Greek eyes. Living, as the Greeks did, in an irregular and

intractable natural landscape of uneven surfaces and jagged coastlines, they delighted in the regularity that was imposed on nature by a grid-plan city. To modern Western eyes, on the other hand, Hippodamian Greek town-planning, and Greek architecture too, seems tame and dull, because most of the great cities of the modern world

(with some notable exceptions, such as San Francisco and Rio de Janeiro) have been located on terrain that has been relatively easy for Man to dominate. In a tame natural setting, the element of variety that Man's esthetic sense demands has to be supplied by Man himself.

## THE IMPACT OF MODERN EVOLUTION ON THE GEOGRAPHY OF PEASANT FARMING SETTLEMENTS

by M. Ionides



M. Ionides lecturing

Up till a few generations ago, man could always produce more crops by opening up more virgin land, without increasing productivity; that is, by geographical (or horizontal) expansion.

Along with the industrial revolution, man began to apply "science to the practical arts" of agriculture (to use the dictionary definition of "technology") so as to improve productivity (vertical expansion).

Now, the remaining potential for horizontal expansion on the land surfaces of our globe is far too small to meet the future demand.

Action is therefore needed:

a. *On the supply side*

To increase agricultural productivity all round, and to exploit the potential of the seas (i.e. to continue geographical expansion over the waters).

b. *On the demand side*

Restrict population growth by birth control.

On the supply side the biggest and most urgent thing is to up-grade the standards of peasant agriculture in the developing countries. Reasons for priority are:

a. It is the developing countries which are being hit by food shortage.

b. This is because in these countries it is the peasant farmers who produce the staple foods, and peasant agriculture has been relatively neglected in the economic policies of most of the governments concerned.

c. In these countries, the rural population comprises the bulk of the total. So the peasants are the main consumers of food as well as being the main producers of food. The best and quickest way to meet their shortage as consumers is to improve their output as producers.

If peasant farming is to be up-graded, they must adopt new technologies. These new technologies must be formulated so that they are