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TOWN PLANNING

1. *Land*

TOWN planning begins when two property owners come to an understanding to respect one another's interests in the development of their properties. One may imagine a number of owners, each acting with mutual sweet reasonableness with respect to his two or more neighbours, and their heirs all getting into a horrible tangle by trying, still with sweet reasonableness, to understand just what their parents had in mind and then seeking to interpret the old understandings in terms of one another. The need in such connexions for custom, crystallized in law, will be obvious, even supposing all land and building owners were reasonable. But many of them are quite deficient in an ability to see a neighbour's point of view when their own interests are affected, though reasonable enough to agree in principle that sauce for the goose is sauce for the gander, and to submit to laws and regulations. So it came about that a certain fundamental principle was established and enunciated in Roman law—so to use one's property as not to prejudice a neighbour in the use of his. This happened long before the Christian era.

Now that principle is all very well up to a certain point. It will work if property owners are all gentlemen farmers, or all own pieces of land much larger in area than the houses built on them. But when for mutual defence, or business, or social facilities, people decide to live close and fill the roadside with their structures, it must be admitted that some will inevitably begin to tread on each other's toes, so to speak; for one cannot do anything on properties so developed that does not in some way affect the interests of one's neighbours, prejudicially or otherwise. So all-round mutual agreements are made in the form of by-laws and regulations, which have the effect of approving certain limited ways of prejudicing each other's uses of property.

One of the simplest and most natural ways for the community, or state, to assert its interest in the matter is by direct land taxation; this brings it home to the dullest property owner that he only holds his land on a rental basis from the social group to which he belongs

for the specific purposes of protection against other communities, or states. But this kind of taxation, which is not popular among property owners, is not essential, for any taxes have the same effect so long as a man's immovable property can be seized for non-payment.

Property in land is thus not quite like other kinds of property. The owner cannot do with it just as he likes if he belongs to an organized community. In the last chapter it was observed that land was part of the material entering into the design of structures or groups of structures under one ownership. When the group is based on many ownerships the same is equally true.

2. *Town Growth*

A town may be said to have a natural plan in a case where no one ever sat down to think out its development and was energetic enough to get his views on the subject accepted. The old towns grew up where roads or rivers met, or where a river could be conveniently crossed, or where boats could find harbourage, or where a defensible position could be improved, or where several or all of these conditions were present. Many of these old towns have not changed much by growth in a thousand years, and have something of the quality of woods and shrubberies, where every tree and bush has grown into its position and form affected by its neighbours. So long as such towns do not exceed two or three thousand inhabitants, these are in some ways the best places in the world to live in. But if the town be destined to grow there soon comes a time when what is already there, in the way of streets and lanes and buildings and open places, begins to be in the way of the things that are wanted. A small town is not just an overgrown village, nor is a large town just an overgrown small town, in the sense that it cannot go on being that and go on living healthily. The organization of the several parts must have a relation to the size. A man weighing 180 pounds is not an agglomeration of eighteen 10-pound babies. He has the general scheme of one baby, but with harder bones and bigger arteries and a relatively smaller head and actually more tissue. With plenty of time at their disposal and an instinct for neighbourliness among its inhabitants, the little old town can be designed unconsciously by the joint effort of generations of townsmen. But between babyhood and adult development expert guidance is usually necessary, and with towns one never knows when they will

stop growing. Thousands of towns that were expected to grow in America have not done so, and many of them never will, but all the towns still marked on the map of the world have grown, and very many are still growing. Of these a considerable proportion are growing rapidly and some very fast indeed. One need not here concern oneself with the sociological question of whether very big towns are desirable things. But one must give some attention to the phenomena of growth.

3. *Life of Structures*

The obsolescence and replacement of buildings is a matter of the utmost importance if one is to understand how far, and in what way, premeditative design can be carried out in the case of so complex an organism as a town, with continual growth to add to the difficulty. It will help if one regards buildings as a crop. How long, in a given climate, will buildings built in a given way last? How long, in a given community, will buildings continue to meet the needs and uses for which they were erected? How long, in a given location, will a building's use be appropriate to that location? These and a host of kindred corollary questions can only be answered, as a rule, in terms of one another, for they are all interdependent.

In Rome a stone house, with walls thick enough to keep the interior cool and with a tile roof maintained over it, will last a thousand years. In London a brick house, substantial enough to stand wind and weather, with a slate or lead roof maintained over it, will last three hundred years. In Montreal a stone and brick house, elaborated to be habitable at 20° below zero, with a tar and gravel roof kept in order over it, will last seventy-five years. A house ceases to last, in this sense, when it reaches such a condition that the maintenance costs are out of proportion to the revenue on the investment.

What about buildings continuing to serve their original uses? That depends on the rate of progress in the community and varies from time to time in any given place. One may say, however, that in Italy the kind of accommodation people in general required hardly changed between the fall of the Roman Empire and the beginning of the Great War; that in England there has been a slow but steadily increasing rate in the raising of general standards of living from the conquest in 1066 until to-day, when the accepted idea as to how an artisan should be accommodated is so different

from what it was fifty years ago that the whole nation is in process of being re-housed, a situation partly due, of course, to increment in the population. In North America, where the standards have been generally lower than in England as to structural requirements but with notable development in mechanical conveniences and a very rapid increment in population, obsolescence is now reached in twenty-five years. All this is reflected in the character of Italian, English, and American slums. The Italian slum is at least a happy place, the English slum is depressing, the American slum is an utter abomination.

The third question dealt with location—the time it takes for a site to outgrow in value the buildings erected upon it. This depends on the rapidity of growth of the town; and the degree in which that growth is organically balanced. This in practice means the degree in which it is controlled. More will be said on this head presently when discussing zoning.

There are thus in any given case all sorts of matters related to structural life, social obsolescence, and change in land value which have to be taken into consideration with respect to the cropping of building land. This consideration is not primarily directed to the mere enrichment of the soil for a succeeding crop, but to arranging matters so that no crop need be cut, or rather pulled down, before it is ripe. There are many destructive animals walking the earth in boots and trousers, who gloat on the pulling down of buildings for replacement by others, without considering whether the community as a whole can afford the expense of building for fifty or a hundred years, and only getting twenty or forty years' use out of what has been built and paid for.

A devastating effect on the conservation of closely adjoining property values ensues when a building of totally different character, size, and use suddenly goes up in a more or less homogeneously developed area. That is another aspect of the matter which scientific zoning can deal with. For the moment the point to establish is that it is economically desirable to have structural, social, and site obsolescence concurrent—largely a matter of taking thought in good time.

The need of this is equally urgent, whether one is dealing with a complete new town site or, what is far more usual, designing for the conduct of a perennial city alteration job. This latter is what most town planning amounts to, and is what the new city problem

soon becomes. A Versailles, a St. Petersburg, a Washington, or a Canberra must be regarded as the rare occasional exception which first only proves, but later on obeys, the general rule.

4. *Planning Legislation*

It is now time to say a word on the machinery of town planning. A Canadian expert has pithily described town planning as civil and political engineering. The political engineering is in virtue of the many-headed monster that is the joint client, or corporate building owner and, of course, far more difficult to convince of what is good for him than any individual client or building committee.

First of all, then, there cannot, except in the most unusual cases under autocratic impulsion, be any town planning without a basic act of some kind giving general powers and providing for a respectable procedure. Such basic acts are usually of an enabling character, empowering municipalities to do certain things in a certain way, so that the public may be protected against the grosser forms of exploitation and scandal, to which operations of a far-reaching kind on a large scale so readily lend themselves in an imperfect world. This protection is usually achieved by providing for long-term commissions which employ the necessary experts and report to the municipally elected bodies who, of course, must retain full control of expenditure. The due protection of the plan is an important element in such legislation. The elected municipal body may refuse approval, or delay execution, but what it has once approved must have the stability of law. The due protection of individual rights and interests through hearings is another important element in most such basic acts; and a regulated procedure for expropriation costs is usual.

5. *Commissions*

The work of the commissions under such a system is advisory. They produce reports and they prepare master plans, amplified with major street plans and detail plans later on as required; all which is the work of the experts employed by the commissioners. These studies are in due course submitted for the approval of the municipal authority. This, in practice, largely takes the form of by-laws and regulations for future building development, with designs for such public works as are involved—streets, bridges, parks, and occasionally structures.

6. *Surveys*

The first steps to be taken by a commission are the surveys. The topographical survey made by aid of aerial photography largely takes the place of the old ground surveys, which can never keep up with the pace of the development going on in the case of a large city with a population growing at fifty thousand a year. The aerial mosaic map taken as a preliminary step in the preparation of such surveys, while it does not show the levels which the fully developed survey may do with marvellous exactness, does reveal to the expert 'reader' the fullest information as to development up to the moment of the exposure. So much so that, when the survey for zoning information is begun, it is possible to 'read' from the photographic map with its shadows, enough information to arrive at round figures as to the number of people resident per acre, or to deduce with a very fair degree of accuracy the use to which the buildings are put—heavy industry, light industry, business, and so on—and also the heights of buildings in question.

With the topographical and aerial surveys made, the next step is to elaborate the zoning survey so as to record accurate and detailed information on the existing occupancy and use of land. These are just the preliminary surveys for the continuous alteration job. For that is what planning for the future development of a city amounts to—an alteration job, complicated by a rigorous sense of the organism, as a whole, at all its foreseeable future stages.

7. *Zoning*

Zoning is an unfortunate word derived from the theoretic diagram of a city on a plain growing in all directions, and spreading its organic elements in concentric rings which successively take the place of one another. Cities do not grow that way. The fact that westerly winds prevail in those latitudes where most large cities occur is in itself sufficient to upset the symmetry of such a development. The location of rivers, harbours, railways, traffic routes, obstructions such as hills and existing neighbouring communities have far more effect than prevailing winds in upsetting the applicability of this regular figure. However, the word is there and one may as well use it, understanding that a zone is far more likely to take the form of a wedge than of a belt. Obviously the organic parts of a city cannot go on growing in the future without in large

measure occupying land now dedicated to other organic parts. In producing an orderly scheme of development which takes account of the probable life of construction of various kinds, the town planner must rely on that rare gift, scientific imagination.

Then things will happen to upset all calculations. Elasticity to meet unforeseen developments is a quality of high importance in any scheme. The planners of the New Town, to the north of the Edinburgh of Jacobite times, were nonplussed by the invention of the railway. The planners of urban development in the nineteenth century could not foresee the advent of the automobile. But with these lessons before them the planners of recent times have not been slow to make provision for aerial transport.

The constricted site of the City of New York forced building up into the air, and that city is full of madly uneconomic skyscrapers, embarked upon for competitive advertising purposes. But incidentally the true economic value of fairly tall buildings for certain classes of business has been proved. These, averaging eighteen stories, are practical, economic, convenient, sane, and actually reduce street traffic, except at peak hours, in spite of all that has been said to the contrary. This again was something which town planners of half a century ago could not foresee, but which they began to realize and take account of as soon as it was manifest. The advent of the economic tall building means that there is an organic element or zone in a city, which may grow very rapidly as to accommodation, while growing quite slowly as to land area.

At the root of much good zoning practice is the law of value support by homogeneous development. Even rival departmental stores gain support from close proximity. Houses of a kind, shops of a kind, business buildings of a kind, even factories of a kind, support one another in value by proximity. This is of the nature of things and has always been so; the reasons in each case are different but obvious, and the point need not be laboured. It is to advantage to group theatres in a district, and banks in a district; such districts being located in virtue of relations with other districts. This is what makes town planning a possible field for the designer. The districts of a town are like the rooms of a house, their traffic connexions are like the doors and passages. Only, the districts tend to grow and to displace one another. Without zoning control they will not do this to advantage and can only be expected to interpenetrate with destructive effect. That is to say, buildings behave like

the flowers in an ill-kept rock garden, where the dwarf iris, crocus, veronica, thyme, and silene all intermingle; they all suffer, but the one of least account, the last mentioned, takes eventual possession.

Zoning control is exercised by dividing the urban area into districts, each dedicated to a limited purpose—residential districts of three or more classes (of which one may be the hotel district), retail, wholesale, and general shopping districts, commercial and financial business districts, heavy and light industrial districts, theatre land, and *cité universitaire*. All this is in principle like the setting out of the districts of a house in rooms, or the setting out of the districts of a university in departmental buildings, but in selecting the confines of districts in a city, their future overlaps and displacements and extensions must be taken into account. Conservation, through the prevention of interpenetration and overlap until the time is ripe, is the root idea. Once the districts are allotted, by-laws as to the occupancy of land and the heights of buildings are promulgated to encourage the kind of building appropriate to the best use of the district. Until a zone or district is fairly closely occupied and built up with the class of buildings to which it is best suited, it is inadvisable to extend it; but long years before such extension is permitted it should be foreseen. It is in the interest of every property owner in the whole community that this should be done, and that it should be a matter of public knowledge. Otherwise there is no limit to exploitation of inside information, town planning by surprise, and lack of continuity in development.

A city may have twenty or thirty zones to which six or eight separate by-laws governing density and occupancy are made applicable—one district under one by-law, several districts under another, perhaps. All this is just as clearly design as if the whole thing were done with a pencil on a drawing-board instead of by resolution in a committee room.

8. Traffic

And now what about traffic planning? The traffic possibilities will largely determine the zoning and vice versa. As traffic specialists are human beings, they are very apt to magnify their office and suffer from the delusion that their part of the work dominates the whole situation.

Just as the theoretic zone diagram of a city leads to a figure comprising concentric circles, so the theoretic traffic plan resolves

itself into a spider's web of radial and circular routes, with a detail filling in of the compartments. This figure is, in practice, of quite limited application. Bits of such a figure or pattern can be very suitably applied in the districts towards the outside of a city, but to encourage cross-city traffic to pass through the centre in all directions leads to congestion of the worst kind. Thus a spider's web plan, if it persists to the centre, must be alleviated with by-pass routes. It may be possible to conceive, but it is not possible to find a city with a main arterial problem susceptible of a rational and at the same time a symmetrical solution. Parts of the problem may be symmetrical in their nature and therefore soluble by a symmetrical figure, but such are usually of very limited extent from the very nature of things.

In dealing with traffic it is always necessary to consider what proportion within a given length is through traffic, and what proportion is locally generated. Through traffic demands grade separation for its fullest efficiency, while locally generated traffic demands collection and dissemination by means of branch and cross routes. The zone served by the traffic may have very varied requirements. A heavy industries zone may be largely dependent on arterial traffic routes passing through it, while a residential section may be dependent for its continuance on the exclusion of through traffic.

The gridiron street plan when properly oriented is in many cases the most convenient pattern to adopt for filling in the detailed street plan in an area enclosed by main traffic routes, but all the dignity of the august precedent of ancient Alexandria cannot redeem the grid plan from irrationality, when applied to the arterial plan of a city. Cities which have been allowed to grow inorganically by the continuous spread of a gridiron plan, as so many cities in North America have been allowed to do, are sooner or later faced with the vast expense of replanning for radial or diagonal systems through the gridiron. Rossi's plan of St. Petersburg is a good example of gridiron planning properly applied within the radials and semicircular routes of a half-spider's web general plan. The grid fillings in different parts of that city vary.

The many great advantages of a hexagonal pattern for the major streets have been explored and demonstrated by the late Noulan Cauchon. It is not easy, however, to make out a case for hexagonal planning in the minor street fillings between. That procedure must inevitably involve the solution of building planning problems on a hexagonal, instead of a rectangular, basis. It may be possible to

solve the problem of the small house with a saving of area and an increment of convenience on a hexagonal basis, but allowing, for the sake of argument, that it is so, it must be admitted that such advantages would be more than offset by constructional difficulties and cost. 'Fair work and square work' will long remain the dominant basis for pattern in building. The amelioration of a gridiron plan by means of a superimposed hexagonal arterial system (instead of 45° diagonals or radials at various angles) is eminently feasible, and the many advantages of such a solution can be enhanced by not insisting too rigidly on the regularity of the hexagonal figures thus developed.

9. Axiation

Axiation applied to limited elements of the general plan, as distinct from a symmetrical solution imposed upon the

plan as a whole, is always in order when there are dual elements to deal with, or elaborate groupings of related buildings to be taken account of. This is pre-eminently the technique of the grand manner. The nuclear element in the St. Petersburg plan and the several nuclear elements of the Paris plan are cases in point. It is difficult to leave these citations without succumbing to the temptation to describe their superlative splendours. More will be said of this principle in a later chapter. Properly speaking, these are examples of composition in group planning rather than of town planning. But it is a function of town planning (from the architect's point of view its main function) to provide suitable sites for buildings and for groups of buildings. The conceptions of the

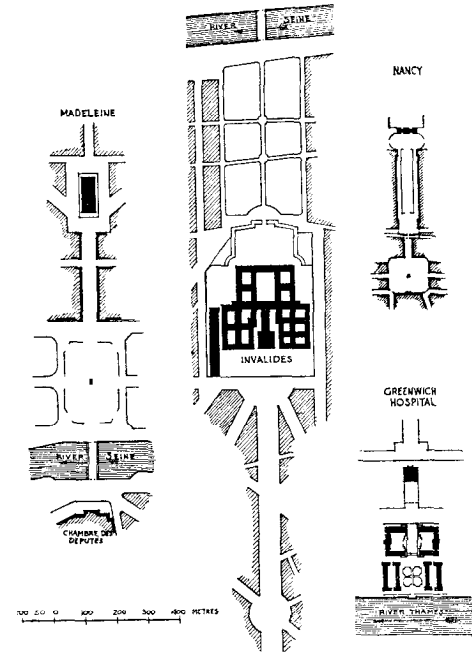


FIG. 133. Some notable plans in the grand manner.

closed vista, the whole block dedicated to one building, the whole street planned and composed as a unit, and the heterogeneous group planned as one thing are the contributions of those who deal with planning on the grander scale in connexion with the development of cities and towns. But exponents of the grand manner sometimes make themselves supremely ridiculous and provoke economic burdens when they push formality too far, resorting to its methods for their own sake, without reference to opportunity and occasion. On the other hand, when opportunities for grand planning are lost, as is often the case through lack of foresight and imagination, the whole world is the poorer.

10. *Summary*

Such are the main principles of town planning which differs from other planning in the scale of the things dealt with, the time it will take to achieve tangible and visible results, and the need to reckon with growth and change. A town plan is never done until the sands of the desert, or the trees of the forest, or the lava flows from a volcano have hidden the walls of its houses and the courses of its streets. These principles have been discussed under two main headings, zoning and traffic, and now, in conclusion, the importance of not keeping the two things apart in our minds may be emphasized. Action describable under either heading is always profoundly affected by possibilities under the other. A room is useless without a door and a door is useless without a room.

One might pursue this progressive review of design into the larger fields of regional planning and the planning of the physical elements of national life, but there is no need. That ungrateful task may be relinquished the more readily as, the farther one goes in that direction, the more does form tend to become vague and intangible and divorced from actual visual image. Whether purpose, material, and technique remain the determinants of things throughout the cosmos, as they are of forms throughout the visible apparatus of life, it is not here necessary to inquire. It is difficult to suppose it to be otherwise.

The remaining chapters are devoted largely to artistry—the modifications of form which reveal how the designer feels about his solution of the problem set him.