

RECONSIDERATION OF THE RESIDENTIAL UNIT CONCEPT AND THE PRINCIPAL WAYS OF ITS USE

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The principle of the system of residential services to be developed by means of city planning and construction was conceived — after long antecedents — some forty years ago by Clarence Perry, who established the concept of neighbourhood unit. This planning principle owes its convincing force to the easily understandable underlying ideas and the simple, seemingly overall effective methods of implementation. Its basic idea was to project the demand for public services from the number of population of a limited part of the urban area to be developed or redeveloped, and to define the system of facilities accordingly. It proposed the joint location of facilities of similar character and the separation of those of different character, suggested simple design methods for the realization of this purpose, thus providing the means to harmonize the basic elements of city planning projects: population, area and structures. By now, it has become obvious that the ostensibly general feasibility of this solution was due to its purely speculative character, both in the approach to the problems and in the proposals, to the neglect of the effects of concrete, individual circumstances.

Planning practice influenced by this principle adopted both its obvious advantages and its oversimplified solutions, the disregard for realities. This explains the up to recently widespread implementation of adjacent units of uniform size, character and layout, the constrained transformation of features for the sake of a uniform pattern. Therefore, plans were seldom followed completely in the realization of residential units, let alone whole systems of units.

Before World War II the implementation of the neighbourhood concept had been restricted, it became a widespread practice, the principal method of the planning of residential areas during the postwar period. When the new towns and quarters reached a certain level of completion, and their activities began to unfold, experiences gained spontaneously or by organized surveys of the living conditions they provide, and of the realization of the plans in general, revealed several deficiencies. This led to a critical attitude towards the neighbourhood concept, expounded in a great deal of books and theses during the last decades. Their manifold considerations, lacking scientific evid-

ence in most cases, represent two principal ways of approach to the problem: they either endeavour to improve the concept while upholding its basic idea, or concede the necessity of a certain type of service system, but reject the residential unit concept.

It is interesting to note that both critical tendencies retained the abstract view of the problem. This is typical even for the theses of non-speculative character which are based on the analysis of surveys, and thus are case studies of one or more urban quarters. Their analysis of concrete realities is restricted in scope and depth by their specific range of interest, they focus on certain social, economic or physical implications of the problem, observe them in the context of prevailing circumstances, but abstract them from the whole system and neglect many of their important relations.

The peculiarity of the present situation is that in spite of the widespread criticism, by the concept and physical pattern of the system of residential units the same function, hierarchical structure and relations are meant as in the original exposition of the idea, save some slight modifications, and the proposals for abandonment or substitution of the concept have not been supported by sufficient evidence. The reason for it is threefold:

1. In spite of its great significance, the residential unit concept can be used to the full effect only in a limited field of urban planning, whereas both its advocates and opponents attribute universal significance to it. Thus for instance, during the postwar period, in England the neighbourhood unit concept was thought to solve social problems. A primarily sociological approach to the concept was attempted in Hungary, too.

2. The obvious problems occurring in urban areas developed on neighbourhood pattern seldom stem from the inefficiency of the theoretical base, and are due to a small extent only to the shortcomings of planning. They result rather from the deviations from the physical plan: some of the public facilities are missing, others are of smaller size than needed, the infrastructure is incomplete, the originally envisaged types of housing are modified, etc. The isolated position of the residential units or their groups in the urban area is none the less due to the basic concept, it rather follows from the spontaneity of actions occurring in the course of urban renewal.

3. Because the concept has not got beyond the confines of its original formulation and because its speculative character, the range of planning solutions is very limited. Physical planning of residential units can attempt to work out new layout patterns and new solutions of certain details, but in want of efficient theoretical basis, the flexibility of plans cannot be achieved, thus the plans of residential units and their systems cannot provide alternatives in terms of size, character and layout, to adjust to unforeseen changes in the process of realization. On the same ground, planning can pay even less attention to the changes and their effect likely to occur after the realization of the plan.

The attribution of the present situation of residential unit concept to the above detailed causes is at the same time a standpoint concerning the validity and use of the concept, and an outline for its reconsideration and improvement.

First of all, the area must be defined where the use of the residential unit concept can be of advantage, and thus the confines of its significance must be recognized. The basic principle should be that, from city planning point of view, the residential unit is a complex of structures developed for the population of a certain area, and its system and layout are determined by the efficiency of supply. It is not sufficient, however, to consider only the requirements of efficient supply, the principal objective of residential units, because it would lead to sterility and abstractness, as described earlier. The importance of service requirements is a central issue, but in planning residential units the consideration of other problems is equally needed, thus for instance the size and capacity of elements, their relationships determining their location and sphere of action, the physical pattern of transport flows, economic and technical requirements of public utility construction, methods of architectural composition, etc. The conformity between planning objectives and the economic and technical means of realization needs the consideration of additional problems. Side by side with the internal relationships and requirements, the external relationships must also be considered. These latter involve a set of problems, the scope and complexity of which are greater than in most areas of planning. The development of residential units being a comprehensive task, related to most city planning problems, is affected directly or indirectly by most of the features or actions influencing the city and its structure as a whole. The significance of residential unit concept, as a planning principle, should thus be assessed within its confines.

The unfavourable consequences resulting from the difference between the planned and realized conditions were mentioned as being the second cause of the present situation of residential unit concept. This involves the necessity to take the potentials and process of realization into account when the principles of residential unit planning are determined. The complexity of this problem requires its consideration in several phases. First of all, the possible ways have to be found for the development of the systems of residential units. These possibilities depend on the prevailing state of city structure, the rate and main purposes of renewal. The characteristics of the system of residential units, thus outlined, are determined by the prevailing and predictable future features of the residential area. Planning principles must be based on the careful assessment of these factors and their relationships in order to provide the fundamental conditions of residential unit development. The actual realization of the system of units will come about only if all the events that may affect the process are accounted for. The conditions of development

of the individual units are the same as those of the whole system. The complex relationships between planning objectives and their actual realization raise problems typical for urban renewal, and require special solutions in this field.

The third cause pointed out in the analysis of the present situation — that the concept does not offer efficient methods for the overall solution of practical problems in residential unit development — follows from the former. The already outlined problems require to change the speculative and abstract character of the concept, stiffly prevailing since its formulation. The way towards this change leads from the recognition of the fundamental significance of residential units, and the conditions of their development and functioning, through the selection of appropriate planning principles and methods. Several of our ideas have to be reconsidered or remodelled, if necessary, thus for instance the factors and their potential effect on the purport of units of all grades (the level and scope of service they provide, the form of service) or the space and time relations which underlie planning decisions. Upon this solid conceptual basis a survey can be made of the aspects of planning considerations, of the means to harmonize short and long term requirements and conditions, of the effect of features influencing planning decisions.

These considerations formed the basis of our research which aimed at the reconsideration of residential unit concept and the analysis of the possible ways of its use. Consequently, the forthcoming statements — although some of them are not verified in this paper — are not hypotheses but the summary of research results based on scientific evidence.

1. It is a generally accepted rule that the hierarchical structure of residential unit system is composed of two principal levels, the neighbourhood unit and residential quarter (named differently but interpreted similarly in different countries). The service which they represent is usually specified in planning regulations issued by competent authorities, taking account of and evaluating traditions, lifestyle, economic possibilities, but lacking adequate evidence, and thus based on subjective ideas. Within the limits of these specifications, the purport of each residential unit (the level and scope of and the access to the services provided by it) is determined by objective factors exerting influence in a way which can be pre-estimated by logical methods. These factors are: city size, position in the city (residential area) structure, cooperation with the other units, geographical features, relation to the main transport network, pattern of local transport, planned densities, housing composition within the unit, scheduling.

The effects of these factors on the purport of units combine to form a limited number of alternative cases. By taking the generally accepted interpretation of the two principal levels of the hierarchy (neighbourhood unit and residential quarter) as a starting point, the possible alternatives of the purport of residential units can be classified. Such a classification has been carried

out by us, on the basis of the deviation from the general level of service. Deviation can be represented either by extra services, or by lack of certain services, or else by specific ways of supply. The result of this classification is a system composed of a limited number of alternative cases, thus the uniformity of residential units can be resolved. Furthermore, if planning principles responsive to the peculiarities of alternatives are established and implemented side by side with the general methods and concepts of planning and realization, specific requirements of individual cases can be met harmoniously.

2. Residential units of different level and purport form a system characterized both by the individual features of each component and by the relationships between the units. These latter are primarily affected by the current and planned characteristics of city structure and residential area as well as by their interrelations.

The implementation of the generally accepted, contemporary principles in the renewal of city structure facilitates, by its nature, the development of the system of residential units. The effectiveness of the endeavour to form a system of units largely depends on the rate of renewal faced by the city, on the main objectives of structural development, and on the effects of prevailing features on the realization of the target. With regard to the influence of these three factors, five alternative cases may ensue:

a) There is a moderate rate of development, the growth of population and area is limited, the city structure as a whole does not face substantial changes or only certain parts of it are modified.

b) City growth is moderate, but its structure needs large-scale improvement.

c) City population is growing rapidly without involving considerable territorial expansion.

d) The city faces considerable growth in terms of both population and area, but there is no large-scale change in the structure of the existing city area.

e) The city faces large-scale growth involving both territorial expansion and structural changes.

In two of these five cases (items c and e) the division of the residential area into units does not encounter difficulties, whereas in the other three cases the interplay of circumstances may either facilitate the development of residential units, or require some other solution, possibly the development of a transitory form.

In the ambiguous cases decision making and the main features of the future system are influenced by the following characteristics of the prevailing and post-renewal state of residential area: size and shape of the area, its environment, presence and location of non-residential activities, state and location of residential structures. These factors exercise their influence one by one and

jointly, enhancing or neutralizing the effect of one another, their impact may largely differ in the different parts of the area. Therefore, the system of residential units can be conformable to the theoretical model only in the case of small cities with few unalterable features. The characteristics of the system of residential units vary in different cities, and they are not necessarily common within one city either.

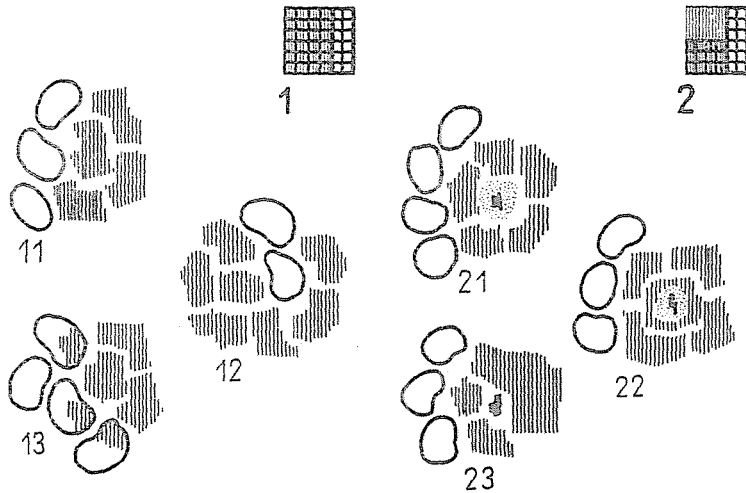


Fig. 1. Main features of the system of residential units to be developed in renewal or undeveloped areas. 1. The whole residential area is divided into units, its alternatives: 11 units developed in renewal and undeveloped areas are relatively independent, 12 side by side with an independence in operation and realization, there is a close territorial relationship, 13 relations between existing and new residential areas are relevant both within the system and in the individual units. 2. New residential area is wholly, existing area is partially divided into units, its alternative forms: 21 historical urban core is not divided into units, 22 historical urban core and its surrounding area is not divided into units, 23 only a part of the residential area is divided into units

3. The development of the system of residential units, as that of most urban activities, involves changes in space and networks. Realization is carried out gradually and piecemeal, it often happens that single units or parts of them, certain important elements or combination of elements are realized in isolated parts of the residential area which may lie far from each other. This scattered location makes the harmony of planning and realization even more necessary. Planning can facilitate the development of the system of residential units by the effort to make the most important actions of the realization of the system coincide with those taken with the aim to improve the conditions of the city as a whole. The same target can be achieved if residential renewal operations not only aim at the improvement of conditions

in the selected areas where they are carried out, but serve the development of the system of residential units as well.

4. It follows from the former that the phasing of the realization of the system of units has special significance. Its implications are significant mainly because some of the requirements raised in the planning period are modified when realization is under way. The changes of requirements occurring during the realization process are due to the change in the number and composition of population, those in housing demands (i.e. to the change of economic and technical conditions determining housing standard), to the development of construction technology, of public utilities, facilities and transport supply. Planning and realization have several means to anticipate the necessity of simultaneous revision of different objectives involved by the change of requirements, they can even reduce this necessity to the minimum. Such a means is for instance the provision, by planning methods, of a wide range of units, or that of a wide choice of services, or else the preparation at the outset for the elimination of difference between the service supplied by units of higher and lower grade if it is needed later.

The changes to be faced inevitably take concrete shape within the confines of the units. Planning methods for the accommodation of these changes without too much difficulty — like the junction of spaces and structures of

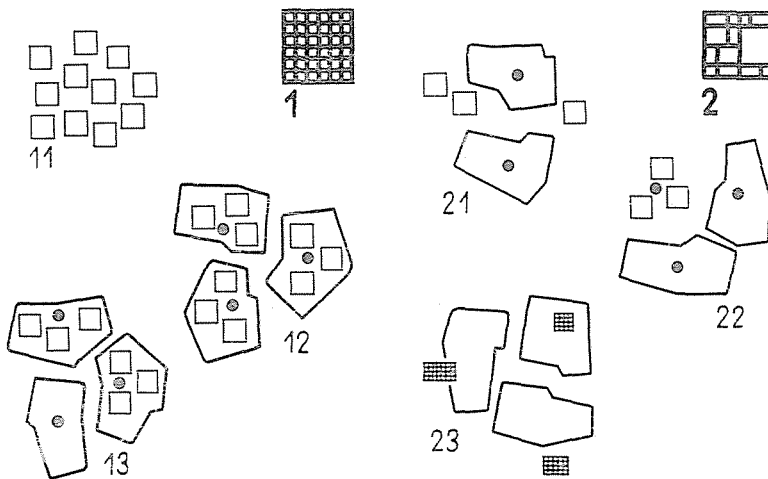


Fig. 2. Main features of the system of residential units as defined by the prevalence of the different grades of units. 1. Residential area is divided into units of the same grade, its alternative forms: 11 the whole area is divided into neighbourhood units, 12 the system is made up by residential quarters which are divided into neighbourhood units, 13 the system is made up by residential quarters, but not each residential quarter is divided into neighbourhood units. 2. The system is made up by units of unequal grade and purport, its alternative forms: 21 besides residential quarters, there are partly independent neighbourhood units, 22 the neighbourhood units outside the residential quarters co-operate in the provision of certain services, 23 the system is made up by residential units and complex units

the same function, located in neighbouring units; the shift of boundary between spaces of different function within one unit; joint location of public facilities; intensive connection between facilities and spaces of similar function, etc. — are well-known in current planning practice, but their implementation is not conscious enough, or is involved by considerations of formal design.

5. In the process of realization of the system of units, the majority of requirements prevailing in the planning period and resulting from the charac-

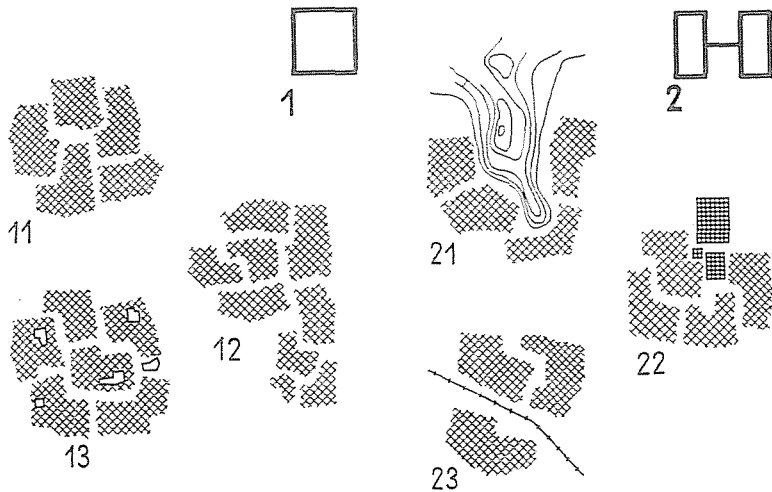


Fig. 3. Main features of the system of residential units as defined by spatial relationships. 1. The system is contiguous in space, its alternative forms: 11 the residential area has a roughly regular form, 12 the residential area stretches out in one or more directions, 13 the inner relations of the system are not broken by non-residential functions. 2. The system is spatially divided, its alternative forms: 2.1 the area is divided by geographic configurations, 2.2 the area is divided by large non-residential spaces, 2.3 the area is divided by some linear structure

teristics of the city may also undergo change. The effects of this change make their impact on the unit or units under development in the given period, and result from the prevailing and transforming conditions of the surroundings. The most frequent example for this is that the unit is surrounded by obsolete residential areas, so it is compelled to offer services for the population housed outside its confines, i.e. its facilities need extra capacities to supply the population of the surroundings. These extra capacities are released when the surrounding areas have undergone renewal, and can be used to meet yet unpredictable but later arising demands. These released capacities may increase the rate of supply, or the spare facilities or their parts can be transformed to perform some new function, spare spaces can equally be used for new purposes. Another outcome of the renewal of the surrounding area may be that the residential unit or units coming into existence on that area will be of higher

quality as compared to those planned and realized now, capable of meeting yet unknown requirements by making use of presumably better technical-economic possibilities. The need for cooperation will thus be of reversed character as compared to the present time. The basis for this perspective mutual cooperation can be provided by several planning methods, their application has functional advantages now, and will be both functionally and economically favourable in the future.

6. In planning of a residential unit both the general regulations, methods and techniques of urban planning and the implications of the residential unit concept are to be considered. Furthermore, relationships pertaining to the

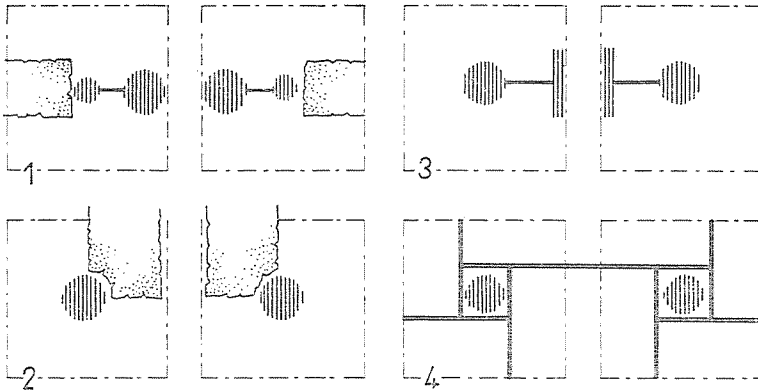


Fig. 4. Some alternative relations between elements of the same function in units of the same grade. 1. The centers have joint location. 2. Open spaces are conterminous. 3. Central facilities of the same function are connected. 4. Inner road pattern of two units forms an integrated network

city structure, especially those of the prevailing or envisaged features of the system of units, which affect the unit concerned, have to be asserted. The account of these relationships is particularly important if residential units are developed in urban renewal areas.

In planning such units, the first decision has to be made about the size and boundaries. The area of a unit is unambiguously defined by natural-geographic formations or by neighbouring non-residential areas, if the function of these latter is maintained, or, if changed, their future function will continue to be non-residential. Current views about transport routes defining the area of residential units should be revised with regard to the changes of transport requirements, and to the new interpretation of the current and future effects of road pattern. Thus, the generally known rule that neighbourhood units must not be traversed by principal roads, and residential quarters by major transit routes and urban motorways, should not be taken for absolute requirement. There are several transport planning methods at our disposal by which functional demands can be met without inconvenient division of the area.

The role of roads as unit boundaries thus reevaluated, even in renewal areas, the extension and envisaged population of units is not rigorously restricted. Nevertheless, the deviation from the optimum population estimated for each grade of residential units has to be accounted for, and it results in the overdimensioning of certain public facilities and amenities. The ensuing extra costs are, however, insignificant parts of the total costs of residential unit development, and the resulting spare capacities can be used for meeting later arising demands.

The structure of residential units to be developed in renewal areas is primarily influenced by the decision as to keep or not the existing buildings and structures, standard or substandard but suitable for updating. The future of standard buildings and, if they are maintained, their effect on the structure of the unit depend on their location — scattered or clustered — on the territory. The retention of whole blocks is undoubtedly justified in most cases, but it imposes restrictions on the structure. That of scattered buildings is justified by considerations of physical design, if the site where they are located is suitable for construction of residential blocks and clusters. Between these two cases — the retention of complete blocks and that of scattered buildings — there are several combinations of transitional forms, solutions thus cannot be unified. If existing public facilities which provide services typical for the grade of the unit concerned are to be retained, their location may decide whether service will be concentrated or decentralized. In neighbourhood units both solutions are feasible, in residential quarters concentration of public facilities is more suitable. No significant structural problems are imposed by green areas, except that they decide the location of certain facilities needing large site. Existing industries, which are to be retained, should be outside the confines of a neighbourhood unit, and form elements of the residential quarter. Industries not disturbing their surroundings, which can be located in residential areas anyway, need not be excluded from neighbourhood units either, but in these cases the structural pattern of the unit should enhance the solution of special environmental tasks. Similar problems are imposed on structural formation by high-grade public facilities serving the whole city or a region, if they are situated within the unit. The enhancement of their significance and the provision for their adequate functioning is an important task of renewal, which largely affects the formation of the structural pattern of the unit.

7. The fact that the whole area or a considerable part of residential units established in renewal process is already developed, needs special regard. The selection of planning methods to be followed depends on whether realization will be continuous, relatively simultaneous or staggered.

Continuous renewal process should be regarded as a preparation for a comprehensive redevelopment of a later period. Therefore, constructions

must take place side by side with clearance, and provision has to be made for a certain level of public facility, utility and green area supply to be maintained in the course of the renewal process. This needs careful calculations and programming in the planning period. Simultaneous and phased realization cannot always be differentiated, it depends on the size of the area and the grade of the unit concerned. Phased realization of a residential unit imposes complex tasks on planning. Provision has to be made for the adequate placement of each phase both in space — in the structure of the unit — and

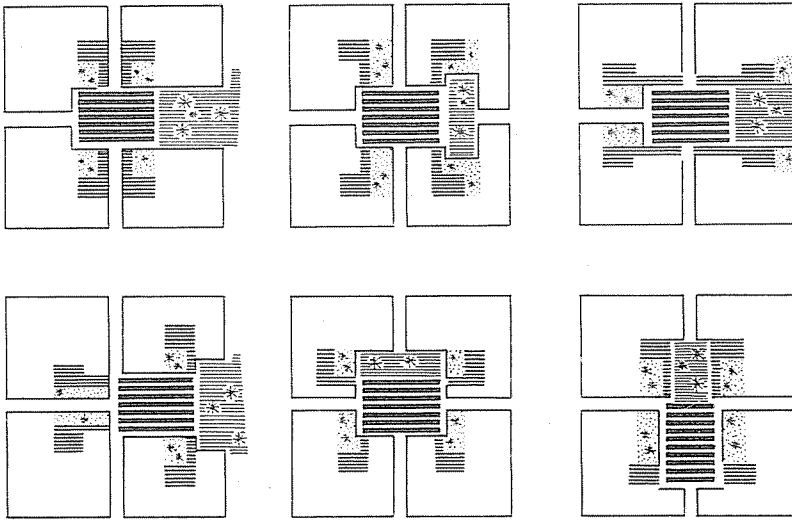


Fig. 5. Some potential relations between elements of the same function in neighbourhood units and residential quarters. Centre of residential quarter is shaded with thick lines, group of neighbourhood unit facilities is shaded with thin lines, residential quarter is shaded with continuous lines, open space of neighbourhood units is stippled

in time — in the process of realization —, and that each phase should be realized independently. A similarly important requirement is that the accomplishment of each phase should gradually contribute to the evolution of the whole unit. This can be ensured by the account of adequate economic and technological aspects as well as those of housing policy and physical design, and by the evaluation of relationships between the time of construction and location of service facilities. This latter implies several alternative cases, especially if demands ensuing from the prevailing and future conditions of the surroundings are considered side by side with those raised by the envisaged structure of the unit concerned.

The program of realization process should contain implications to the conditions evolving after the planning period. The buildings in a unit developed in renewal areas will not be equally up to date. The pre-existing and retained

buildings forming organic components of the unit will slowly become obsolete, thus being obstacles in the performance of the unit's functions. When these problems reach a certain level of complexity, a new renewal plan will be needed, which, because of obsolescence, will propose the demolition of some of the structures retained by the previous renewal. Planning and its up-to-date realization are efficient only if they contribute to the accomplishment of this later renewal, and if the current advantages resulting from the unequal obsolescence of new and retained developments are made use of.

Summary

Residential unit concept has become a debated issue during the last ten years. Its efficient implementation needs the evolution of the concept, which can be attained by defining the area where it is of advantage, as well as the purpose it serves; co-ordinating planning principles with the process which realization is likely to follow; and by the elimination of the abstract and dogmatic character of planning principles and practice. A long research work carried out with the above outlined aims has produced the following results: classification of residential units according to their purport; survey of interrelations between urban structure, renewal objectives and residential unit development; that of alternative space and time relations of realization; proposal of means by which the change of conditions prevailing in the planning period can be anticipated and accommodated; indication of specific problems of residential units designed for renewal areas as well as of the significance and effects of unequal obsolescence of pre-existing and new buildings.

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