

## Urban design principles of the original neighbourhood concepts

**Abstract.** *The neighbourhood concept is arguably one of the major planning landmarks that shaped the urban form of the twentieth century city in many countries. Coincidentally, both the neighbourhood idea of Clarence Stein and Henry Wright, exemplified in their plan for Radburn, and the Neighbourhood Unit idea of Clarence Perry were published in 1929. The urban design principles of Stein and Wright included the idea of a superblock of residential units grouped around a central green, the separation of vehicles and pedestrians, and a road hierarchy with culs-de-sac for local access roads. A cluster of superblocks was to form a self-contained neighbourhood. A group of neighbourhoods would then comprise the city. For Perry the physical arrangement of the elementary school, small parks and playgrounds, and local shops was the basis of his neighbourhood idea. Each neighbourhood was to be a 'unit' of the city. Briefly outlined are the deviations from the original ideas made subsequently by numerous architects, planners, developers, and bureaucrats. This article re-examines the intentions of Stein and Wright and Perry and the sources of their ideas to recover the principles of the original concepts that have become obscured over the decades.*

*Key Words: cul-de-sac, neighbourhood, Radburn, superblock, urban design*

URBAN MORPHOLOGY, 6(1), 2002, PP. 21-32.

## **Urban design principles of the original neighbourhood concepts**

The neighbourhood concept was undoubtedly one of the major landmarks in twentieth century urban planning. Two different original ideas appeared in the same year, 1929. First, there was the idea for neighbourhoods by Clarence Stein and Henry Wright (Adams, Bassett and Whitten, 1929). Secondly, there was the Neighbourhood Unit idea of Clarence Perry (Perry, 1929). As the design principles of Stein and Wright were most clearly seen in their plan for Radburn, New Jersey their concept for the neighbourhood will be referred to as the Radburn model.

The aim of this article is set out the antecedents of these neighbourhood ideas to better understand the design intentions of Stein and Wright and those of Perry. These intentions were, unfortunately, distorted in subsequent new town and post-war public housing neighbourhood developments. Criticism of the results led to the virtual abandonment of the neighbourhood concept. By re-examining the original principles underlying the ideas of Stein, Wright and Perry it is hoped to restore confidence in the use of the neighbourhood concept in contemporary urban design.

### **Antecedents**

Mumford (1961), Creese (1966), Scott (1969) and Vance (1990) are among the many scholars who have provided general appraisals of the problems facing cities towards the end of the nineteenth century and beginning of the twentieth. More specific assessments have been provided by Relph (1987), Kostof (1991), Hall (1992; 1998) and others. Relph (1987) recounts the discussion at the 1909 national planning conference held in Washington where techniques to deal with urban problems were presented. He describes in some detail the planning procedures developed between 1910 and 1945 that had a considerable effect on the appearance of cities. Notable among these were the neighbourhood unit of Perry and the Radburn principles of Stein and Wright that were contributions to the solutions for dealing with the urban problems of the time (Relph, 1987; Hall, 1998). Perry and Stein were among the handful of pioneer thinkers in urban planning from 1880 to 1945 (Hall, 1992). Kostof points out that an early formulation of the Radburn superblock idea was in the City Club of Chicago competition of 1915 (Kostof, 1991). The problems facing cities was neatly summarized by John Nolen, President of the National Conference on City Planning in 1927 (Birch, 1980). The problems he enumerated included traffic congestion, crowded living and working conditions, and an unfavourable environment. Perry considered his neighbourhood a formula for addressing these issues and others (Perry, 1939). These included the problems created by the automobile, dwellings without yards, urban isolation, the decline in property values, and the human consequences of these urban defects.

Stein studied at the Ecole des Beaux-Arts and in the early 1920s opened an office with Wright, whom he described as 'my fine associate and planning genius (and as) the greatest site planner I have known, excepting possibly Raymond Unwin' (Stein,

1958 in Parsons, 1998, p. 582). Before Wright teamed up with Stein he worked on the master plan for Yorkship Village (later renamed Fairview) in Camden, New Jersey, recognized as one of the best communities built during World War I. One of the early designs of the firm, that for Sunnyside, Long Island in New York (1924), was intended as an urban laboratory to work out better house and block plans. The theoretical basis established in this plan was later applied to other plans, particularly Radburn (Stein, 1928). The intellectual foundations of their work came from Stein's involvement in the Regional Planning Association, where the ideas of Patrick Geddes, Ebenezer Howard, the economist Thorstein Veblen, the sociologist Charles Cooley, and the philosopher John Dewey, were discussed.

An antecedent for the Radburn neighbourhood idea can be found in Howard's concept of the Garden City first published in 1898 (Howard, 1946). He divided the City into six identical wards with each ward accommodating just over 5000 people. Howard envisaged a school in an open space (the 'Grand Avenue') at the centre of each ward, roads differentiated hierarchically, and variations in the architecture of the houses. The scheme was not fully followed by the designers Raymond Unwin and Barry Parker at Letchworth, nor by Louis de Soissons at Welwyn, but appeared in the plan for Hampstead Garden Suburb by Unwin and Parker (Unwin, 1909). In 1922, Stein and Wright visited Howard in England and saw first hand the garden city of Letchworth. Stein later acknowledged that he and Wright carried on the work of Howard and Raymond Unwin but that Radburn was 'realistically planned for the Motor Age [and] not a Garden City as Howard saw it' (Stein, 1939, p. 19). Although Stein and Wright incorporated the ideas of the superblock and cul-de-sac into their design for Radburn they did not attempt to create a garden city.

The cul-de-sac street had been introduced in the garden city of Letchworth and other places for reasons of privacy. Unwin was influenced in his considerations of architectural effect by the work of Camillo Sitte but admitted that in advocating the use of curved streets perhaps he had 'not done quite justice to the advantages which attach to the straight street' (Unwin, 1909, pp. 249-52). The cul-de-sac was also able to cope with the problems of the automobile in the Radburn concept as the danger of automobiles to pedestrian safety are reduced to a minimum (Adams, Bassett and Whitten, 1929). While the English Garden City movement was a major influence in the design of Radburn, there were distinctive differences (Adams, Bassett and Whitten, 1929). Primarily the variation was in the need to serve the motor vehicle. The hierarchical road system itself was derived from Frederick Law Olmsted's separation of routes in his design for New York's Central Park (Southworth and Ben-Joseph, 1995).

Perry began work for the Russell Sage Foundation, established by Mrs. Russell Sage in 1907 for the improvement of social and living conditions in the United States of America, in 1909 and remained with them until he retired in 1937 (Perry, 1910; 1921). He first presented his concept of the neighbourhood unit in a lecture 'A community unit in city planning and development' at a joint meeting of the American Sociological Society and the National Community Centre Association in 1923, published later as 'The local community as unit in the planning of urban residential areas' (Perry, 1926).

The main elements of the community unit were included in his neighbourhood unit plan 3 years later (Perry, 1929).

Perry's residence in Forest Hills Gardens, a Russell Sage Foundation development in Queens, New York begun in 1909, played a major role in the unfolding of his concept. He lived there from 1910 onwards. Perry devoted an entire section of his published monograph on the neighbourhood unit concept to a description and analysis of Forest Hills Gardens as a neighbourhood community (Perry, 1929). Later he was to write that 'the virtues and defects of Forest Hills Gardens contributed to the neighborhood unit formula' (Perry, 1939, p. 211). Frederick Law Olmsted Jr planned the street layout and landscaping while Grosvenor Atterbury designed the buildings of Forest Hills Gardens. In part, the precedents for the design were Hampstead Garden Suburb in England, designed by Raymond Unwin and Barry Parker, and the suburbs of Llewellyn Park, Lake Forest, and Riverside in the United States (Herbert, 1963). Perry was also influenced by the plan for Mariemont, Cincinnati by the noted American planner John Nolen. It appears that in 1929 Stein and Wright's Radburn plan was published first, as Perry referred to and used illustrations of this plan in his neighbourhood unit monograph.

In his analysis of the plan of Forest Hills Gardens, Perry identified five factors that contributed to the obvious success of the development. These were clear boundaries, the character of the internal street system and the streets themselves, the types of land uses, the presence of a central area, and the provision of open space. The curved or short and intimate streets provided direct access to the shops and railway station. Residential land uses predominated - industrial and business uses were limited to definite and convenient locations. The centre consisted of a school with other community facilities. Open spaces took the form of neighbourhood parks and recreation spaces. In addition to these factors there were aesthetic restrictions to preserve a unified architectural character. Perry's purpose in carrying out the analysis was to concern himself 'with those features of physical arrangement which add to or detract from its qualities as an environment for a neighbourhood community' (Perry, 1929, p. 97). He incorporated many of these features into his neighbourhood unit concept.

### **The original neighbourhood concepts**

The design of the Radburn neighbourhood model was in essence a hierarchical one comprising four levels - enclave, block, superblock, and neighbourhood (Figures 1 and 2). The fundamental component was an enclave of twenty or so houses. These houses were arrayed in a U-formation about a short vehicular street called a 'lane,' really a cul-de-sac court with access to individual garages. While the back of each house faced this court the front of the house had a garden. Three or more of these enclaves were lined together to form a block. Enclaves within the block were separated from one another by a pedestrian pathway that ran between the front gardens of all the houses. The blocks, usually four in number, were arranged around the sides of a central parkway in such a manner so as to enclose the open green space. The clustered

blocks together with the central parkway comprised what Stein and Wright termed a superblock. Four to six superblocks commonly formed a neighbourhood that was bounded by major roads or natural features (Figure 2). At one end of the parkway there could be a small school with community rooms. Roads in the neighbourhood were to be hierarchical - major through traffic roads to border each neighbourhood, distributor roads to surround each superblock, and culs-de-sac to provide access to individual property lots. Stein emphasized that the prime goal was to design a town for the automobile age. In fact the title on the drawing of the town plan was 'A town for the motor age' (Stein, 1928).

Although Stein and Wright considered neighbourhoods as each being relatively self-contained they arranged them in an overlapping manner to support joint use of facilities such as hospitals, high schools, and theatres (Figure 3). They visualized the neighbourhood as forming the building block of the city whereas previously the lot and the city were the basis for town design. To their minds there should be a three level hierarchy consisting of neighbourhood, town, and region (Stein, 1942). They believed, following Howard (1902), that future urban development should be based on the regional city, a constellation of smaller-sized towns tied together by a parkway or open highway.

Perry identified six neighbourhood unit design principles (Figure 4). First, the unit was to be ideally a shape in which all sides were fairly equidistant from the centre, and its size was to be fixed. Secondly, a central neighbourhood or community centre was to contain various institutional sites, including a school, grouped round a central green space. Thirdly, local shops or shops and apartments were to be located at the outer corners of the neighbourhood. Fourthly, scattered small parks and open spaces, located in each quadrant of the neighbourhood, were to form 10 per cent of the total area. Fifthly, arterial streets were to bound each side of the neighbourhood while, sixthly, the layout of the internal street was to be a combination of curvilinear and diagonal roads to discourage through traffic. Vehicular and pedestrian traffic was to be segregated.

Perry's concept of the neighbourhood was as a relatively self-contained building block of the city, hence the addition of the word 'unit' to his concept. He identified four urban locations where the idea could be applied - new sites in the suburbs, vacant sites in the central area, predominantly apartment districts, and central areas that had suffered deterioration and required rebuilding (Perry, 1933). He later recognized that land assemblage in the existing built-up areas of cities to create neighbourhoods was impractical and suggested a modified process of eminent domain (government right to take private land for public benefit with just compensation through the process of condemnation) be applied in the assemblage of neighbourhood unit sites (Perry, 1939).

### **Comparison of design principles**

Stein and Wright, along with Perry, agreed that the neighbourhood was to have a limited or fixed size determined by the population needed to support an elementary school. Other similarities between their two models were defining the neighbourhood by

means of boundaries, the inclusion of a significant amount of open space, a neighbourhood centre that would include the school, and a road system that was safe for pedestrians and did not allow through traffic.

A critical distinction between the Radburn model of Stein and Wright and Perry's idea was the kind of neighbourhood boundary each envisaged. Although Perry as well as Stein and Wright used arterial streets to form the neighbourhood boundary, Stein and Wright preferred the use of natural forms where possible. Another difference between the two models was the maximum walking distances each proposed - 0.8 km in the Radburn neighbourhood and 0.4 km in the Neighbourhood Unit model. Further distinctions were the superblock with its central green, the separation of streets and pedestrian paths, and the road hierarchy of the Radburn model (Stein, 1939, p.123). Another difference was that Perry envisaged the neighbourhood as a separate urban unit. When a number of units were amalgamated they would form the city. Stein and Wright, on the other hand, conceived the Radburn neighbourhoods as overlapping one another and grouped into districts to support large-scale facilities.

### **Diffusion of the neighbourhood concept**

Applications of the neighbourhood concept followed publicity about Radburn in magazine articles and discussions at meetings of professional organizations (Birch, 1980). Acceptance of Perry's neighbourhood unit idea also spread (Dahir, 1947). After Radburn, Stein and Wright produced other ground-breaking plans, such as that for Chatham Village in Pittsburgh (1932), and their ideas for the plan of Greenbelt New Town, Maryland (1937). Baldwin Hills Village in Los Angeles (1941) is probably the best exposition of their neighbourhood design principles after Radburn.

During the 1930s endorsement by various agencies of the federal government, real estate developers, and lending institutions in the United States encouraged the application of the neighbourhood concept. Well-planned neighbourhoods were seen as essential to rational urban development (Urbanism Committee, 1939; Federal Housing Administration, 1941a, b). The national Chamber of Commerce concluded that the residential areas of American cities, whether new or redeveloped, should be divided into well defined neighbourhoods (Chamber of Commerce of the United States, 1936, 1937, 1941). Over twenty organizations, from the Urban Land Institute, the American Institute of Architects, and the American Society of Planning Officials to the National Association of Home Builders, supported some or all of the neighbourhood unit principles (Solow, Ham and Donnelly, 1969). Two influential textbooks, *The urban pattern* (Gallion, 1950) and *The city of man* (Tunnard, 1953) praised the Radburn model. New communities authorized by the Housing and Urban Development Act of 1968 also used the model (Knack, 1998). The idea of neighbourhoods and of planning for neighbourhoods in urban planning was taken for granted. In Britain the neighbourhood principle was applied in several plans including that for Wythenshawe by Barry Parker and the County of London Plan of 1943 by Abercrombie and Forshaw; a comprehensive explanation of neighbourhood theory appeared in *The size and social*

*structure of a town* by the National Council of Social Service in 1943; and influential design guidelines appeared in the Dudley Report of 1944, *The design of dwellings*, the *Housing manual 1944* by the Ministry of Town and Country Planning, and the Reith Committee's *New towns final report* of 1946 (Tetlow, 1959, pp.113-4). After World War II, the neighbourhood unit plan became a central feature in the rebuilding of existing towns and in the planning of new developments and had a great influence on residential layout (Wright, M., 1982). It was in the New Towns as a group that the most consistent examples of the application of neighbourhood theory appeared (Herbert, 1963).

Stein himself provides a starting point for differentiating between the original neighbourhood concept and morphological variations that occurred in the applications from the 1930s onward. He acknowledged that the basic conceptions of the Garden City, the Radburn Idea, and the Neighbourhood Unit were used in the American Greenbelt new towns but that the 'applications of these three conceptions varied, often with contrasting emphases' (Stein, 1939, p. 119). Whereas in American new towns it was a question of different emphases, British new towns, in contrast, differed radically from the fundamental principles set forth by Perry as revealed in the Dudley Report, the Housing Manual, and the Reith Report recommendations (Goss, 1961). First, local shops were placed in the neighbourhood centre instead of on the edge of the neighbourhood. Secondly, public open space was situated on the perimeter of the neighbourhood to act as a buffer between neighbourhoods instead of as an open space connected with the neighbourhood centre. Thirdly, and most significantly, the size of the neighbourhood was close to 10,000 people with more than one elementary school, whereas Perry clearly based the size of his neighbourhood unit on the population to be served by one elementary school, from 3000 to 9000 people.

'A physical plan of this nature will tend to produce neighbourhood organization and a local social control which are lacking in many parts of the modern city' (Birch, 1980, n.30). This statement, made at the President's Conference on Home Building and Home Ownership in 1931, was one of the earliest of many statements that the physical plan of a neighbourhood determined its social aspects. It led a number of critics during the 1960s, particularly Jane Jacobs, Catherine Bauer and Herbert Gans, to discredit the Radburn concept on the ground that it assumed that physical designs could promote social progress (Birch, 1980, 1989). They also attacked the mindless and diluted application of the neighbourhood unit principle of the superblock in American post-war public housing. In Britain studies of council housing estates showed the divergence between theory and practice. Town planners and housing authorities set up neighbourhood units so that their inhabitants could become good neighbours and friends as a result of interaction at home and at the shops. But it was found that 'such planning and ideology seeks to impose an idealized version of village life on the town dweller in council estates' (Frankenberg, 1969, p. 197). While there was widespread official and professional acceptance of the neighbourhood concept, studies showed that it had little social validity (Stewart, 1972).

The imposition of social objectives by practitioners, officials and others was a

major and significant departure from the intentions of the original neighbourhood concept (Patricios, forthcoming). The focus of Stein and Wright as well as Perry was almost entirely on the physical aspects of the concept – the superblock, the shopping centre, the road pattern, the green spaces, or the organization of houses. Social benefits were afterthoughts (Tannenbaum, 1948). Perry was concerned with convenience and with the quality of the residential area, as expressed in harmonious architecture, street layout, landscaping and building setbacks. Neither he nor Wright refer to any social objectives in their writings. Stein, similarly, was concerned with the physical issues of neighbourhood design.

### **Return to basic principles**

It is not surprising, then, that during the 1970s and 1980s the neighbourhood concept went out of favour. To restore this landmark of modern urban planning the original principles need to be re-examined for their applicability and relevance to contemporary urban design. A sign that neighbourhood design has made a comeback is evident in the work of the New Urbanists (Duany and Plater-Zyberk, 1994).

The principles of the Radburn neighbourhood model can be related to each level of the hierarchical design. At the block level the farthest house was to be within a one-minute walk of a parkway. In the superblock vehicular and pedestrian traffic was to be separated so that every child could walk to school, not more than 0.8 km, without crossing a single road. Wright saw the superblock as a way to advance city development, primarily in the middle-class ring of housing lying between the slums at the centre of the city and the suburbs at the periphery (Wright, 1935). City blocks were combined to form superblocks in which 'group housing' would save space through the elimination of narrow side yards. It was argued that superblocks would reduce the amount of land devoted to streets. This would make possible central garden courts to bring air, sunlight and green vegetation to the areas as well as a safe place for children to play. As applied to Radburn the superblock, according to Wright, reduced the cost of street improvements, provided seclusion from street noise and danger, segregated the pedestrian from vehicular traffic, and enabled a sizable internal area to serve as a sheltered park (Wright, 1935).

Neighbourhoods were to have a fixed population size. Stein and Wright did not specify a specific number but the size was to be small enough to allow each individual to play a part in neighbourhood life. Stein noted that in both London and Los Angeles the extent of the neighbourhood was largely determined by the areas of influence of the elementary and secondary schools. After Stein and Wright published their plan for Radburn, architects and planners that applied the concept seemed to settle on 5000 people as the appropriate size for the neighbourhood. Each neighbourhood in the Radburn model was to have definite boundaries, preferably as natural as possible, focussed on a tangible centre. Stores were to be located at the junction of neighbourhoods.

Perry explained the sources of his six neighbourhood design principles. First, the size of the neighbourhood was the population necessary to support one elementary

school, that is 3000-9000 people. He believed no child should have to walk more than 0.4 km distance from the farthest house to the school at the centre of the neighbourhood (Strayer and Engelhardt, 1929). Secondly, his own earlier studies led him to the view that the school was a major factor in neighbourhood development. Perry envisaged the school located in the neighbourhood centre along with churches, a little theatre, a fraternal hall, or a branch library. Perry mentioned Central Square, Hampstead Garden Suburb in London by Raymond Unwin and Barry Parker as a model for the design of the centre. Thirdly, Perry placed the local shopping centre at the intersection of the main streets that bound the neighbourhood unit. This would make the centre economically viable as it would serve two or more neighbourhoods as well as passing traffic. He was also influenced by the research that showed 'community trading areas' at the intersection of two principal business streets helped define neighbourhoods (Burgess, 1929). Fourthly, instead of concentrating open space in one or two large parks it was to be in the form of many small parks and playgrounds scattered throughout the neighbourhood so that young children should be close to a play space. Perry's fifth principle was to create a pedestrian oriented environment by restricting 'foreign traffic' to the arterial streets that bounded the neighbourhood. His sixth principle was to have an internal street layout that not only discouraged through traffic but provided residents with direct paths to their destinations. Not well known was Perry's concern for aesthetics: 'the quality of the architecture, the layout of streets, the planting along curbs and in yards, the arrangement and setback of buildings' were important attributes of the neighbourhood (Perry, 1929, p. 34). Aesthetics also concerned Stein and Wright as is evidenced in the quality of their architectural projects.

### **Future outlook**

It has been contended that the current urban malaise of placelessness can be overcome by providing individuality or identity to places, that is by creating a sense of place (see for example Relph, 1976, 1981; Tuan, 1977; Steele, 1981). Application of the principles of the neighbourhood concept can play a role in providing a sense of place. In the last two decades of the twentieth century principles of the neighborhood concept have appeared in New Urbanist, 'neo-traditional', and traditional neighborhood development (TND) projects of which well over one hundred have been built across the United States (Miller, 2001). At the U. S. Department of Housing and Urban development (HUD) several programmes have adopted the tenets of New Urbanism (Dunlop, 1997). Many of the built projects display principles related to mixed use planning, walking distances, pedestrian oriented internal road patterns, and architectural quality. Southern Village, North Carolina, for instance, has a virtual walkthrough on its website illustrating New Urbanist precepts ([www.southernvillage.com](http://www.southernvillage.com)). Other selected project examples will be cited as well in the brief presentation below as to how all the design principles of the original neighbourhood concept, except one, can still apply today.

First, the insertion of residential, open space, commercial, and civic land uses in

the Radburn and neighbourhood unit models anticipates the emphasis today on mixed-use planning. Inclusion of places of selected employment opportunities would be an addition today. Shops would be located on the periphery to be accessible by automobile and on foot from many neighbourhoods. In one of the best-known New Urbanist developments, Kentlands in Maryland stores, a school, churches, and a day care centre serve several neighbourhoods (<http://www.tndhomes.com/tour03.html>). Conveniences such as a dry cleaner and café are a stroll away in Southern Village (Padgett, 1999) as are the stores with offices above at the New Urbanist development of Orenco in Oregon (Ehrenhalt, 2000). Secondly, a neighbourhood centre, preferably within a 0.8 to 0.4 km walking distance of as many houses as possible, and having educational and recreational facilities, remains a desirable element. In Kentlands, for instance, most homes are a 5-to-10-minute walk or 0.4 to 0.8 km from the local shopping centre (Southworth, 1997). At Southern Village children are able to walk or bicycle to school. Thirdly, scattered small parks and playgrounds are still attractive features to have in modern neighbourhoods. Green spaces, particularly a greenway, have been included in the plan of Southern Village. In Kentlands public open spaces are many, small, and varied (Southworth, 1997). Probably the major concern of residents today is the traffic that cuts through their area. Thus, fourthly, a road hierarchy becomes essential to direct local and through traffic. The debate on the nature of the local street pattern, whether curved, diagonal, cul-de-sac, or grid in form (preferred by the New Urbanists) will no doubt continue. Calthorpe, who aligns himself with New Urbanism, asserts that the grid-like street patterns in his neotraditional designs reduce potential trip distances (Calthorpe, 1993). A modified grid is used for the internal street pattern in the TND projects of Harbor Town, Tennessee and Newpoint, South Carolina and not cul-de-sac or loop streets (<http://www.tndhomes.com/tours.html>). Streets are organized mainly into a warped grid pattern at Kentlands (Southworth, 1997) while curvilinear grids with culs-de-sac are used in the plan for Celebration in Florida (<http://www.celebrationfl.com>; Frantz and Collins, 1999). Southern Village has the traditional cul-de-sac internal road pattern. Fifthly, boundaries formed by natural features and major highways would identify a residential area and provide residents with a sense of identity. In Kentlands a lake, wetland preserves, greenbelts and public squares help define neighbourhoods. Similarly the use of green spaces as boundaries is clearly evident in the village map of Fairview Village, Oregon (<http://www.fairviewvillage.com/main.html>) and that of Southern Village (Padgett, 1999). Sixthly, achieving architectural quality will need the utmost attention. Although Perry did not list aesthetics as one of his design principles, he did refer in his description of the neighbourhood unit idea the importance of the residential character and quality of the neighbourhood to be achieved through harmonious architecture. Many of the New Urbanist and TND developments have codes or guidelines to assure architectural quality. Kentlands, l'On, Newpoint, and Harbor Town are some examples (<http://www.tndhomes.com/tours.html>).

Finally, the principle of fixed size would not apply today. With today's mobility neighbourhood boundaries do not have the force they did early in the twentieth century.

Fixed size is invalidated by demographic changes, by school systems where children are brought in by bus from a wide area, or driven to school by a parent, or where parents are allowed a choice of local schools, not necessarily the nearest. However, provided that no social objectives, such as 'creating community' or 'building community,' are imposed, the physical design principles of the neighbourhood concept can still be applied today to create meaningful places for people.

## References

- Adams, T., Bassett, E. M., and Whitten, R. (1929) 'The Radburn project: the planning and subdivision of land' in Adams, T., Bassett, E. M. and Whitten, R. *Problems of planning unbuilt areas* Part I Monograph 3 in Committee on Regional Plan of New York and its Environs (ed.) *Neighbourhood and community planning. Regional survey volume VII* (Committee on Regional Plan of New York and its Environs, New York) 264-9.
- Birch, E. L. (1980) 'Radburn and the American planning movement', *Journal of the American Planning Association* 46 (4), 424-39.
- Birch, E. L. (1989) 'An urban view: Catherine Bauer's five questions', *Journal of Planning Literature* 4 (3), 239-58.
- Burgess, E. W. (1929) 'Urban areas', in Smith, T. V. and White, L. D. (eds.) *Chicago – an experiment in social science research* (University of Chicago Press, Chicago) 113-38.
- Calthorpe, P. (1993) *The next American metropolis: ecology, community, and the American dream* (Princeton Architectural Press, Princeton).
- Chamber of Commerce of the United States (1936) *Revival of residential construction: committee report* (Chamber of Commerce of the United States, Washington D.C.).
- Chamber of Commerce of the United States (1937) *Balanced rebuilding of cities: a statement issued by the construction and civic development department committee* (Chamber of Commerce of the United States, Washington D.C.).
- Chamber of Commerce of the United States (1941) *City development and construction: suggestions for activities of chambers of commerce* (Chamber of Commerce of the United States, Washington D.C.).
- Creese, W. (1966) *The search for environment: the garden city before and after* (Yale University Press, New Haven).
- Dahir, J. (1947) *The neighbourhood unit plan: its spread and acceptance: a selected bibliography with interpretative comments* (Russell Sage Foundation, New York).
- Duany, A. and Plater-Zyberk, E. (1994) 'The neighbourhood, the district, and the corridor', in Katz, P. (ed) *The new urbanism: toward an architecture of community* (McGraw-Hill, New York) xvii-xx.

- Dunlop, B. (1997) 'The New Urbanists: the second generation', *Architectural Record* 185(1), 132-45.
- Ehrenhalt, A. (2000) 'Suburbs with a healthy dose of fantasy', *New York Times* 9 July, 15.
- Federal Housing Administration (FHA) (1941a) *Successful subdivisions: planned as neighborhoods for profitable investment and appeal to homeowners*. Land Planning Bulletin 1 (Superintendent of Documents, Washington D.C.).
- Federal Housing Administration (FHA) (1941b) *A handbook on urban redevelopment for cities in the United States* (Superintendent of Documents, Washington D.C.).
- Frankenberg, R. (1969) *Communities in Britain: social life in town and country* (Penguin Books, Harmondsworth).
- Frantz, D. and Collins, C. (1999) *Celebration, U.S.A.: living in Disney's brave new world* (Henry Holt, New York).
- Gallion, A. B. (1950) *The urban pattern: city planning and design* (Van Nostrand, New York).
- Goss, A. (1961) 'Neighbourhood units in British new towns', *Town Planning Review* 32, 66-82.
- Hall, P. (1992) *Urban and regional planning* (Routledge, London).
- Hall, P. (1998) *Cities of tomorrow: an intellectual history of urban planning and design in the twentieth century* (Blackwell, Oxford). Revised edition.
- Herbert, G. (1963) 'The neighbourhood unit principle and organic theory', *Sociological Review* 11, 65-213.
- Howard, E. (1946) *Garden cities of tomorrow*. (Faber, London). Originally published as *To-morrow: a peaceful path to social reform* in 1898 and with the revised title and slight revisions in 1902.
- Knack, R. (1998) 'Garden cities: Ebenezer Howard had a point', *Planning* 64 (6), 5-8.
- Kostof, S. (1991) *The city shaped: urban patterns and meanings through history* (Thames and Hudson, London).

- Miller, J. (2001) *Wise acres: America's new traditional neighbourhoods* <<http://www.tndhomes.com/under06.html>> (20 November).
- Mumford, L. (1961) *The city in history: its origins, its transformations, and its prospects* (Secker and Warburg, London).
- Padgett, T. (1999) 'Saving suburbia', *Time* 154(7), 50-1.
- Patricios, N. N. (forthcoming) 'The neighbourhood concept: a retrospective of physical design and social interaction', *Journal of Architectural and Planning Research*.
- Perry, C. A. (1910) *The wider use of the school plant* (Russell Sage Foundation, New York).
- Perry, C. A. (1921) *Ten years of the community centre movement* (Russell Sage Foundation, New York).
- Perry, C. A. (1926) 'The local community as unit in the planning of urban residential areas', in American Sociological Society (ed.) *The urban community* (University of Chicago Press, Chicago) 238-41.
- Perry, C. A. (1929) 'The neighbourhood unit', Monograph 1 in Committee on Regional Plan of New York and its Environs (ed.) *Neighbourhood and community planning. Regional survey volume VII* (Committee on Regional Plan of New York and its Environs, New York) 20-141.
- Perry, C. A. (1933) *The rebuilding of blighted areas: a study of the neighbourhood unit in replanning and plot assemblage* (New York Regional Planning Association, New York).
- Perry, C. A. (1939) *Housing in the machine age* (Russell Sage Foundation, New York).
- Relph, E. (1976) *Place and placelessness* (Pion, London).
- Relph, E. (1981) *Rational landscapes and humanistic geography* (Croom Helm, London).
- Relph, E. (1987) *The modern urban landscape* (John Hopkins University Press, Baltimore).
- Scott, M. (1969) *American city planning since 1890* (University of California Press, Berkeley).

Solow, S. S., Ham, C. E. , and Donnelly, E. O. (1969) 'The concept of neighbourhood unit: its emergence and influence on residential environmental planning and development', in Robinson, I. M. (ed.) *Final report on planning, designing, and managing the residential environment: stage one* (Graduate Program in Urban and Regional Planning, Los Angeles, University of Southern California).

Southworth, M. (1997) 'Walkable suburbs? an evaluation of neotraditional communities at the urban edge', *Journal of the American Planning Association* 63(1), 28-44.

Southworth, M. and Ben-Joseph, E. (1995) 'Street standards and the shaping of suburbia', *Journal of the American Planning Association* 61(1), 65-81.

Steele, F. (1981) *The sense of place* (CBI, Boston).

Stein, C. S. (1928) 'The Radburn plan. Notes on the new town planned for the City Housing Corporation', in Parsons, K.C. (ed.) *The writings of Clarence S. Stein: architect of the planned community* (John Hopkins University Press, Baltimore) 1998, 150-2.

Stein, C. S. (1939) *Toward new towns for America* (M.I.T. Press, Cambridge, Mass).

Stein, C. S. (1942) 'City patterns ... Past and future', *New Pencil Points* 23, 52-6.

Stein, C. S. (1958) 'Draft of a speech of acceptance: American Institute of Planners Honorary Members Award. Washington D.C.', in Parsons, K.C. (ed.) *The writings of Clarence S. Stein: architect of the planned community* (John Hopkins University Press, Baltimore) 1998, 582-3.

Stewart, M. (1972) *The city: problems of planning* (Penguin Books, Harmondsworth).

Strayer, G. D. and Engelhardt, N. L. (1929) 'Public education and school building facilities: summary preliminary report to the Regional Plan of New York', Appendix A Monograph 1 in Committee on Regional Plan of New York and its Environs (ed.) *Neighbourhood and community planning. Regional survey volume VII* (Committee on Regional Plan of New York and its Environs, New York) 130-1.

Tannenbaum, J. (1948) 'The neighbourhood: a socio-psychological analysis', *Land Economics* 24, 358-69.

Tetlow, J. D. (1959) 'Sources of the neighbourhood idea', *Journal of the Town Planning Institute* 45 (5), 113-5.

Tuan, Y.-F. (1977) *Space and place: the perspective of experience* (University of Minnesota Press, Minneapolis).

Tunnard, C. (1953) *The city of man* (Scribner, New York).

Urbanism Committee of the National Resources Committee (NRC) (1939) *Urban planning and land policies*. Supplementary report volume 2 (Superintendent of Documents, Washington D.C.).

Unwin, R. (1909) *Town planning in practice: an introduction to the art of designing cities and suburbs* (Fisher Unwin, London).

Vance, J. E. Jr (1990) *The continuing city: urban morphology in western civilization* (John Hopkins University Press, Baltimore).

Wright, H. (1935) *Rehousing urban America* (Columbia University Press, New York).

Wright, M. (1982) *Lord Leverhulme's unknown venture* (Hutchinson Benham, London).

FIGURE 1: RADBURN ENCLAVE

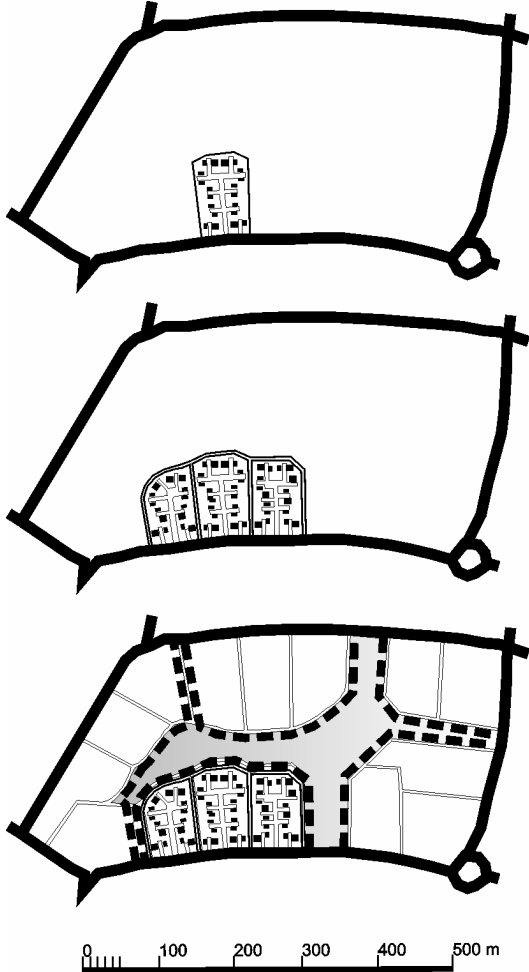


FIGURE 2: RADBURN, TYPICAL NEIGHBORHOOD



FIGURE 3: RADBURN, OVERLAPPING NEIGHBORHOODS

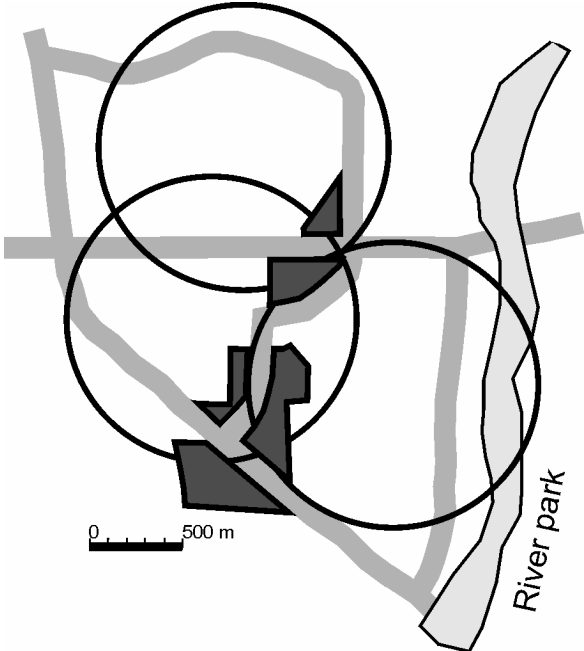


FIGURE 4: NEIGHBORHOOD UNIT OF CLARENCE PERRY

