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Neo-traditional Neighborhood Design: Transit and Walking Friendly Land Development Approach

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Abstract

One of the hottest topics discussed in the transportation planning field today is the concept of neo-traditional neighborhood design, which calls for the creation of new communities that look and function like towns of past times. The neo-traditionalist's approach to the automobile and the community is to design new concept the of more environmentally friendly form of transportation, particularly walking and mass transit. This transportation emphasise entirely the scale at which development occurs and the arrangement of land uses. The neo-traditionalists seek to integrate all of the components currently found in the suburbs and rearrange them into real towns rather than isolated developments. The principal integrating factors for realizing these new towns are the pedestrian and mass transit. Neo-traditional neighborhood design has attracted the attention of transit professionals because it offers a significantly higher transit-oriented land use pattern than the typical suburban developments of recent decades. The key components of increased transit accessibility are more concentrated activity centers, interconnected street systems that avoid circuitous paths and cul-de-sacs, and increased pedestrian accessibility. Whether the neo-traditionalists can accomplish their intents within the framework of present society and economy remains to be seen. However, it is equally true that transit and land development can and should work together. In the long run, a city based on both transit and auto use will indeed work more efficiently than one based solely on automobiles because the two modes will complement each other.

Keywords: Neo-traditional neighborhood, transit friendly, walking friendly, land development

1. INTRODUCTION

Neo-traditional neighborhood design (NTND) has gained increasing attention from professional, academic and other popular circles during the past fifteen years. Two urban designers, Peter Calthorpe and Andres Duany were largely pioneers who originated the NTND movement. Although their approaches are often described using different language ("transit-oriented development" and "neo-traditional neighborhood design", respectively), the content of the underlying concepts is similar. This concept can be generalized as an attempt to reorient the subdivision development toward patterns reminiscent of the United States' pre-World War II traditional communities. These patterns are based on mixed land uses, a highly interconnected street network (often in the form of gridiron) and street design that accommodate the pedestrians and bicyclists as equally well as the automobiles. Neo-

traditionalists are generally concerned with issues like the degraded quality of life in the suburbs, a lack of conveniently assembled land uses and the domination of automobile travel.

This paper is intended to describe the historical background of neo-traditional neighborhood design. In this paper, principal design trends of subdivision of the past century in the United States are described briefly with their implications to neo-traditional neighborhood design. A literature review on planning and transportation engineering concerning neo-traditional neighborhood design is also presented. This paper also seeks to see where the transit stands in this type of subdivision design.

2. PRINCIPLE SUBDIVISION DESIGN TRENDS OF THE PAST CENTURY

Literature [1] reveals that by far, there have been five principal trends in subdivision design and regulation in the U.S. Table 1 lists the dates and design trend corresponding to each period.

Table 1. Trends in suburban subdivision design [1]

Period	Design Tend
Pre 1928	Traditional Gridiron
1928 - 1945	Garden City
1945 - 1960	Build Out
1960 -1980	Planned-Unit Development, Cluster Development
1980 - present	Neo-traditional Neighborhood Design

2.1 Traditional Gridiron (Pre 1928)

This period in subdivision history is notorious for the absence of regulations and expansion of land speculation. It was during the early years of this century that land came to be viewed simply as a commodity to be bought and sold for profit [2]. The lack of subdivision regulation, combined with this new understanding of profits to be made from land sales, resulted in rapid and widespread development with little regard for the social and environmental repercussions. No regulations existed to ensure that there would be proper road access, street lighting, plumbing, schools or any other municipal services. Massive subdivision was also a common and unhealthy occurrence during this time.

In Florida, there was enough land for subdivision to house the entire current U.S. population [1]. This kind of premature subdivision inevitably became a fiscal burden for banks and local and state governments, which explains why busts often occurred after periods of booming speculations. The design of most early subdivisions was based on the gridiron street pattern (Figure 1). The gridiron was the dominant design pattern during this period, primarily because it was convenient for surveying and recording deeds, which enabled the land owners to create and own as many lots as possible from a tract. However, eventually, the gridiron acquired a reputation as an almost cruel form of development, which forced suburban dwellers to succumb to a monotonous, lifeless environment.

For decades after this period in subdivision design, planners and others responsible for urban development took up the battle against the gridiron [1]. In-depth investigations, however, showed that the characteristics of the gridiron were not the sole reason, which created deplorable suburban conditions during this period. The most likely reason for the unfortunate subdivisions of this period was a total lack of amenities, including infrastructure, public places, schools and civic buildings. The gridiron was believed to provide a coherent pattern, which could grow indefinitely without losing shape or threatening the "organic unity" of the city [3]. It was thought to offer a sense of order and clarity and provide for efficient usage of land. Neo-traditionalists are now attempting to reexamine these positive aspects of the gridiron because they believe these respond to certain shortcomings currently experienced in subdivision design [1].

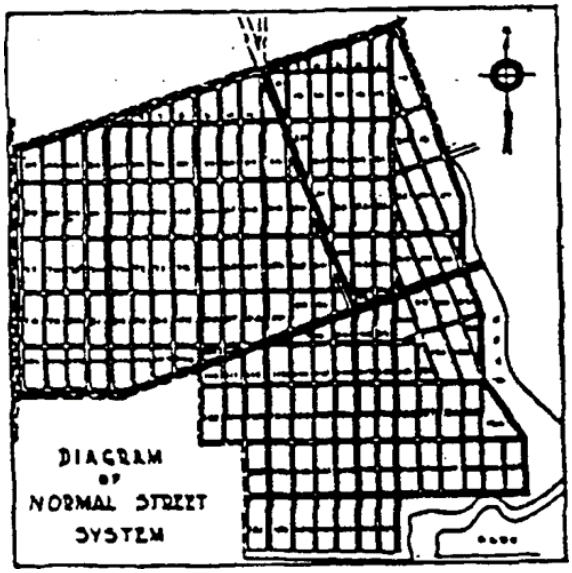

Figure 2. An example of gridiron design [1]

2.2 Garden City (1928-1945)

The next period in the history of subdivision design can be viewed as a direct reaction to the former period of uncontrolled speculation and land consumption. Upon becoming aware of the ruinous effects of uncontrolled land development, the planning professionals began lobbying for planning laws that would, among other things, harness the suburban development. A landmark federal law, the Standard City Planning Enabling Act, was commenced in 1928. This law was written to grant states the right to establish their own subdivision regulations. The Act included provisions for the arrangement of streets in relation to other existing or planned streets and to the master plan, for adequate and convenient open spaces for traffic, utilities, access of firefighting apparatus, recreation, light, air, and for avoidance of congestion of population, including minimum width and area of lots [4]. The planners at this time were less grounded in politics and tended to express their views through design and architecture. They provided the thought and theory behind good design and community wellbeing rather than focusing on the legislative thrust toward accomplishing change. Two of the trends at this time that are still prevalent in today's subdivision design are decentralization of land development and the rearrangement of the transportation system to accommodate both the automobiles and the pedestrians in residential areas [1].

One of the major design aspects that the neo-traditional period has rediscovered from the Garden City period is the distinct emphasis on designing a coherent neighborhood unit. A key aspect of the American problem that these two design concepts attempted to address is the automobiles. The major difference, however, is in their respective approaches to this problem. The Garden City designers wanted to separate the automobiles from the human environment by providing distinct right-of-ways for vehicular and non-vehicular travel and by reorienting houses away from streets (see Figure 2). Neo-traditionalists advocate the exact opposite approach. They would like to return the automobile to the common area but redesign the street system so that it functions for the lowest common denominator (namely, the pedestrian). The neo-traditionalists seek to include automobiles but to de-emphasize and discourage its use.

2.3 Build Out (1945-1960)

This period in subdivision history is not characterized by the emergence of a new design concept; it is characterized rather by a quantitative shift in land development. A major transition occurred in the speed and magnitude of development, subsequently affecting the country's regional landscape. This post-World war II transition in land development practices resulted primarily from the influence of four newly funded federal programs: (1) public housing; (2) urban renewal; (3) home mortgage insurance; and (4) highway construction [5]. The combined effect of these programs created a situation in which widespread suburban development was fiscally, politically and technologically possible. Among these four, the national highway system drastically changed the fact of suburban development as builders were able to reach farther away from urban centers in search for cheaper land. Thus, the decentralization which began during the previous period as a search for better living environment continued with increased force during the post-World War II period.

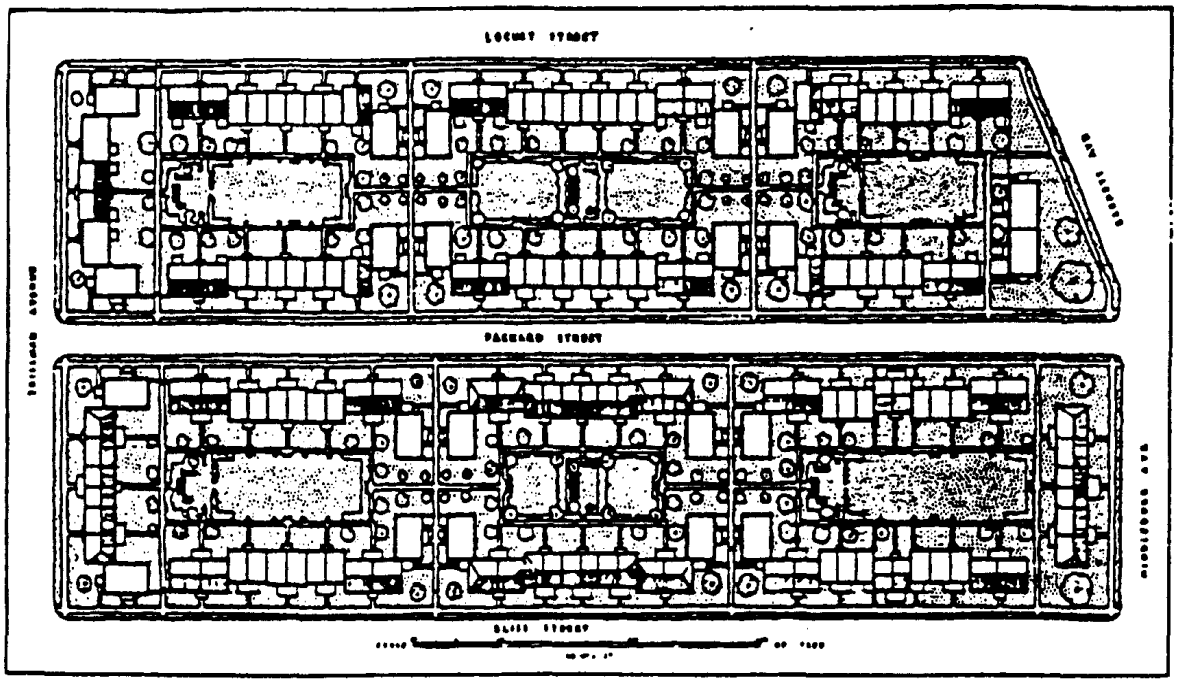

Figure 2. An example of Garden City development [2]

2.4 Planned-Unit and Cluster Developments (1960-1980)

The build-out between 1945 to 1960 resulted in planners becoming extremely aware of the deficiencies in subdivision regulation and land use controls. The period from 1960 to 1980 saw a dramatic increase in the number of municipalities that had subdivision regulations [1]. Regulations were becoming an acceptable form of control over the deleterious side effects of land development. The predominant subdivision designs produced during this period can be referred to as the planned-unit development (PUD) and cluster development. Both design models depict a higher level of regulation and planning than had ever been seen before. Instead of subdividing and selling parcels of land to be built by an individual land owner, a single owner or corporation was encouraged to develop an entire community, and to sell not only the lot but also a built house. Within the single development, all of the amenities for comfortable residential living would be provided, including churches, schools, shopping malls, and public parks.

The planned-unit development and the cluster development represent two important points of concern for the neo-traditionalist. The first point involves the complete sophistication of designing communities to accommodate traffic and automobiles. The street network of the typical planned-unit development and cluster development is entirely designed for ensuring efficient and safe movement of vehicles and for the reduction of cut-through traffic in residential neighborhoods (Figure 3). Although these design approaches have many positive aspects associated with them, the neo-traditionalists have reacted against them. Neo-traditionalists maintain that the irregular and disconnected street patterns of the planned-unit and cluster developments unnecessarily force people to rely on their automobiles for trip making. They claim that the dominance of the automobile would destroy the community well being, which planned-unit developments initially sought to provide. Neo-traditionalists view that within the planned-unit development, pedestrians have no place.

The second point of concern for the neo-traditionalists is what they describe as the over-preoccupation with the natural habitat and not with the human habitat. This is particularly applicable to the cluster development concept, which arose almost entirely out of concern for the natural environment and inefficient land consumption. Although neo-traditionalists recognize the importance of this issue, they feel that the quality of the human environment is also crucial and has been unfortunately disregarded by the planned-unit and cluster development concepts [1].

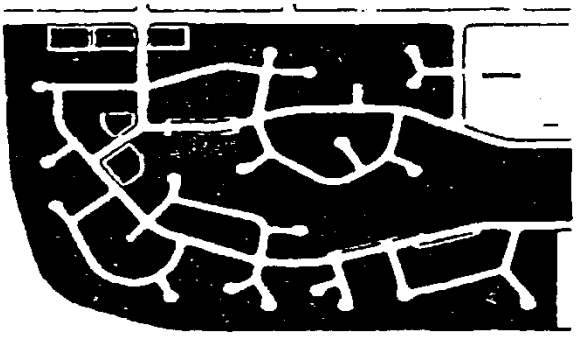

Figure 3. Curvilinear design of street networks in PUD [1]

2.5 Neo-traditional Neighborhood Design (1980-present)

As with each historical period having been reviewed so far, the period of subdivision design which began in 1980 can in large part be explained as a reaction to the concepts dictated by the planned-unit development and cluster development. The planned-unit development represents the climax of the success of the automobile-oriented suburb. The problem facing suburban designers for the last 21 years, however, have been an ever-deepening uncertainty as to whether it will be possible to continue the pattern typically offered by the planned-unit development.

The characteristics of this "new suburb" design have primarily risen out of the planner's recognition that extensive auto dependence should no longer be promoted. The concept of new suburb is known by several different names, depending on the specific master planner. The terms traditional neighborhood development, neo-traditional neighborhood design, pedestrian pocket, and transit-oriented developments are all used to refer to the same “new suburb” general concept.

Neo-traditional neighborhood design (see Figure 4) can be defined by five interrelated characteristics as follows [6]:

1. A mixed-use core from which most residents live within "walking distance" or not more than a quarter to a half mile away.
2. Inclusion of employment centers, so that the residents have the opportunity to both live and work within the development.
3. Creation of a sense of community (public spaces and civic centers are often the focal points of the projects).
4. Generation of street life by creating pedestrian friendly environments, with narrower streets, wider walkways, and more street trees.
5. Establishment of a sense of tradition, despite their newness. Front porches, detached and setback garages, and "granny" flats, for instance, are typical design requirements.

In another research publication, Berman [7] wrote 11 main aspects of Neo-Traditional Neighborhood Development as follows:

1. Mixed-use core within walking distance for residents.
2. Local employment and civic centers.
3. A range of housing types for different income levels.
4. Higher housing densities and smaller lots than those found in suburbs.
5. District architecture based on the vernacular architecture.
6. Creation of a sense of community.
7. Creation of a sense of tradition.
8. Common open spaces.
9. Streets that function as social spaces as well as a transport facility.
10. Narrow streets with sidewalks and alleys running behind homes.
11. Grid street patterns that provide multiple paths for drivers and pedestrians.

3. PAST STUDIES RELATED TO NEOTRADITIONAL NEIGHBOORHOOD DESIGN

According to Morris [8], Neo-traditional Development is perceived by many parties (planners, designers, developers, business groups, politicians, transport engineers, environmentalist and residents) as a conceivable solution and thus offers a common ground to discuss issues and common substitutes. In this paper, the literature on neo-traditional neighborhood design is divided into two general subject areas. The first area consists of works related to the introduction and discussion of this new planning concept. The second area is

comprised of works produced mainly by the transportation profession, in which transportation benefits and problems are addressed. The following section provides a review on these subject areas.

3.1 Urban planning Literature

Christoforidis [9] categorized the following 5 urban forms as the most well-known NTND approaches: (1) Traditional Neighborhood Development (TND) or the New Urbanism; (2) Transit Oriented Development (TOD); (3) Hamlets; (4) Metropolitan purlieus; and (5) Revitalization of the existing traditional towns. The following few sections summarize the writings of the founding planners and architects, and present a broad, sociological discussion on the rationale for reorienting suburban development toward neo-traditional design.

Peter Calthorpe [10], who is usually attributed with developing the transit-oriented development concept, discusses his basic approach in the Pedestrian Pocket Book. The book accomplishes two significant goals: (a) explaining the social and environmental forces behind the pedestrian pocket concept, and (b) defining the components of a pedestrian pocket. The pedestrian pocket is defined as a balanced, mixed-use area within a quarter mile walking radius of a transit station.

In the book, Calthorpe offers a thorough discussion on pedestrian pocket features in a set of guidelines prepared for Sacramento County, California. The guidelines include how to identify possible locations for new and infill transit oriented sites, optimal site characteristics and relationships to surrounding land uses, proportion and types of mixed land uses, ideal residential and commercial densities, building design and orientation, street and circulation systems and parking requirements.

Duany and Plater-Zyberk [11] discussed neo-traditional neighborhood design and the motivations behind this planning movement. The authors cited the antigrowth movement as an indication that Americans are displeased with suburban development. Their solution to this problem is to seek an alternative suburban pattern, a pattern which is based on and retains the traditional American town. Many of the components of their concept are similar to Calthop's approach. The authors describe the principal attributes of a neo-traditional development as containing neighborhoods of finite size and definite character where people can easily traverse on foot. Residential areas are seamlessly connected to the rest of the town, and they are not even exclusively residential. They also boast corner stores, attorney's offices, coffee shops, and other small establishments.

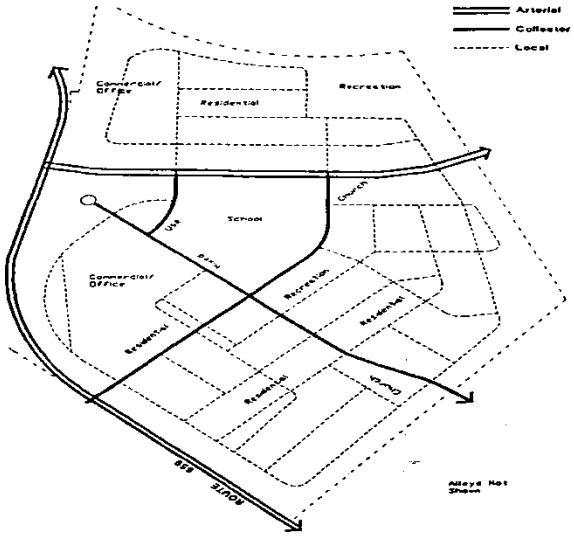

Figure 4. Neo-traditional neighborhood design, Belmont Forests project, VA [1]

Jabareen [12] also emphasized on neo-traditional development. In addition, the authors compared such development with other sustainable urban forms: compact cities, eco-city, and urban containment, and concluded that there are many overlaps among them in their ideas and concepts. The ideal sustainable urban form according to the design concepts of sustainable urban form is the one which has a high density and adequate diversity, compact with mixed landuses, and its design is based on sustainable transportation, greening, and passive solar energy. According to the author, sustainable urban forms aim to achieve different objectives. The most prominent among them are reduction in energy use, reduction of waste and pollution, reduction of automobile use, preservation of open space and sensitive ecosystems, and also livable and community-oriented human environments.

3.2 Transportation Literature

The transportation profession has perhaps had the most vocal response to neo-traditional neighborhood design. Spielberg [13] defined the major conflicts

between the current traffic engineering practice and the demand being made by neo-traditional subdivision design. The major points of conflict identified are street width, on-street parking, curb radii, street layout and intersection spacing.

This discussion was expanded upon by Lerner-Lam et al. [14], who presented a comprehensive list of potential traffic engineering problems. Lerner-Lam et al. attempted to alert the traffic engineering profession that neo-traditional neighborhood design is inevitable due to its popularity among planning boards and other policy makers, and that the profession's concern should not be whether this concept is implemented but how it will be implemented safely and responsibly.

Perhaps the most comprehensive discussion yet of neo-traditional neighborhood design and its implications for the traffic engineering can be found in the synthesis report prepared by the Institute of Transportation Engineers (ITE 1992) [15]. The primary intention of this report is to educate the traffic engineering profession about the specific elements of neo-traditional neighborhood design and to enhance their preparedness for dealing with new land use designs.

All of the major works dealing with the transportation planning aspects of neo-traditional neighborhood design argue that positive transportation impacts will result in the form of reduced automobile dependence, increased public transit accessibility and reduced travel distances and travel times.

Gordon and Peers [16] suggested that neo-traditional neighborhood design could be instrumental in the area of transportation demand management. Their analysis showed that the Laguna west NTND project in Sacramento County, California resulted in a 20% to 25% reduction in vehicle miles traveled. The authors attributed this reduced traffic to (a) trips being internalized within the community; (b) a reduction in the percent of trips made by car; and (c) residents working closer to home.

The study by Friedman et al. [17] shows how neo-traditional neighborhood design could affect trip generation and mode splits. Their approach was to use existing data from a regional travel survey of the San Francisco Bay Area to compare existing mode splits and trip generation for traditional design and standard suburban neighborhoods. Although they stated that the results of this approach cannot necessarily be directly applied to neo-traditional developments, their work provides some basis for planners to consider measuring the impacts of different land use patterns on trip generation and modal splits. The findings indicated that for a traditional community, there are 18% fewer total daily trips generated than for a suburban community and 38% fewer auto trips. Similarly, in a traditional community, they found that 54% of total daily trips are auto trips, and 68% are auto trips in the suburban community (representing a 21% reduction in auto-driver mode share). Moreover, they found that the transit share is 3% in the suburban communities compared to the probable 17% in the traditional communities (see Figure 5).

Masoumi [18] studied on the capabilities of neo-traditional urban forms. The author adopted a theoretical approach and illustrated that the strengthening of neighborhoods and Neighborhood Unit Centers can promote sustainable transportation, namely pedestrian travels. Consequently, the urban travels will be shortened and localized. The author also suggested that the contemporary view of automobile oriented planning needs to be replaced by a more humanist strategy, such as neighborhood-oriented planning. This ideology uses the neighborhoods to enhance sustainable mobility. To test this hypothesis, micro-scale and city-scale quantitative and empirical observations are suggested to prove the capacities of neighborhoods and their centrality in making the city-level travels more sustainable and decreasing traffic congestion. In another study, Crane and Crepeau [19] asserted that “many times, the above transportation benefits have been advertised as facts rather than hypotheses, and have even been utilized or at least recommended as tools for decreasing the negative environmental impacts associated with car travel.” Thorne [20] argued that “integrated transport and urbanism—despite the many barriers that must be overcome—is likely to prevail as America’s dominant paradigm of community-building in the twenty-first century.” In addition, he claimed that we still have a lot to learn about how the designs of neighborhoods, communities, and regions shape travel behavior.

While most neo-traditional neighborhood design proposals focus on planning at the local level, it should be noted that regional planning must be considered as well [21]. Regional planning is necessary if these communities are expected to succeed. Calthorpe's concept, for example, depends on the development of a regional transit system, preferably light rail. This system must link each new community to other parts of the region, where residents can access services that cannot be provided locally. Another standard criticism of neo-traditional schemes is that most people do not like and do not want to live in compact, high-density development. Audirac, Shermen & Smith stated in their (1990) APA article that people prefer low density settlement and are willing to commute in order to be able to live in not-so isolated but serene condition.

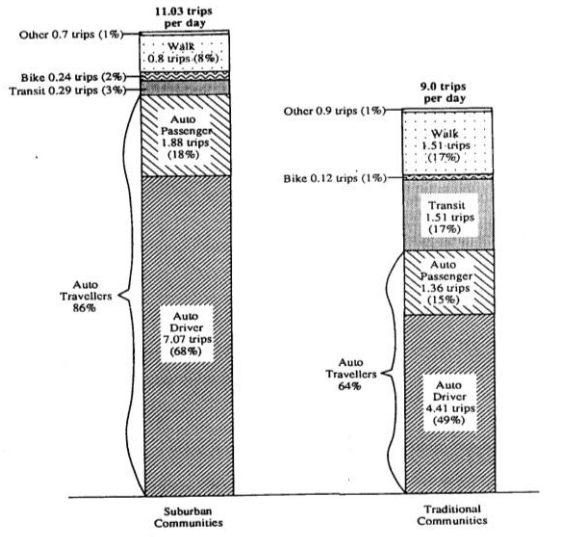

Figure 5. Mode choice comparison for all trip types in San Francisco Bay area [16]

4. CONCLUSION

The history of land subdivisions has been briefly summarized in this paper, with implications of different time periods to neo-traditional neighborhood design. The neo-traditional neighborhood movement draws on several elements from earlier design periods, including mixed land uses, distinct neighborhood centers and interconnected street network such as that provided by the gridiron. Neo-traditionalists' approach is to adapt the older principles to new settings in a way that is functional for the contemporary society.

The neotraditionalist's approach to the automobile and the community is to design more environmentally friendly form of transportation, particularly walking and mass transit. This transportation emphasis entirely changes the scale at which development occurs and the arrangement of land uses. The neo-traditionalists seek to integrate all of the components currently found in the suburbs and rearrange them into real towns rather than isolated developments. The principal integrating factors in realizing these new towns are the pedestrian and mass-transit. Proponents claim that the integration can lead to increased walking and decreased driving.

Neo-traditional neighborhood design has attracted the attention of transit professionals because it offers a significantly higher transit-oriented land use pattern than the typical suburban developments of recent decades. The key components of increased transit accessibility are more concentrated activity centers, interconnected street systems that avoid circuitous paths and cul-de-sacs and increased pedestrian accessibility.

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