

**MOBILIZATION OF SOCIAL NETWORKS IN THE CONTEMPORARY
CITY: AN APPROACH TO TRANSIT-ORIENTED DEVELOPMENT**

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**Date of submission : 06 May 2011
Date of defence examination: 07 June 2011**

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JUNE 2011

İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

**MODERNLEŞEN KENT YAPISINDA ORTAYA ÇIKAN DAĞINIK SOSYAL
AĞLARIN MOBİLİZASYONU: "ULAŞIM ODAKLI KENT GELİŞİMİ"
YAKLAŞIMININ İRDELENMESİ**

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HAZİRAN 2011

FOREWORD

First of all, I would like to thank my home university, Istanbul Technical University, and my instructors for giving me the opportunity to study in Kungliga Tekniska Högskolan in Stockholm as an exchange Erasmus student. I would also like to thank Turkish National Agency, which is a part of the Prime Ministry State Organisation of Turkish Republic for their economical support during my stay in Stockholm.

I would also like thank to my teachers in my home university who spent precious time to do a great job of teaching me and my classmates. I would like to present my kindest regards to both my supervisors Asst. Prof. A. Senem Deviren, in Istanbul, and Senior Researcher Bosse Bergman, in Stockholm, who never deprived their help solving problems about my research. In addition I would like to thank KTH for all the facilities that I used during my research process. Of course I am very thankful to my family which has always supported me during my entire exchange studies in Stockholm from some thousands kilometres away.

Last but not least, I would like to express my gratitude to all of my friends in Stockholm who made my time during these studies memorable with their friendship.

June 2011

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MOBILIZATION OF SOCIAL NETWORKS IN THE CONTEMPORARY CITY:AN APPROACH TO TRANSIT-ORIENTED DEVELOPMENT

SUMMARY

The social networking process in the cities is becoming sparse gradually because of the modernisations of technologies and globalisation of the world. The cities are getting larger and larger everyday and thus, the bonds between individuals are getting extended. The decentralisation of cities also affects the social networks in negative ways and the possibility of interaction of individuals with each other is decreased in the cities although there is still a huge demand for this.

These problems lead sociologists and urban planners to co-operate with each other to find solutions about the issue. Improving transportation facilities and infrastructure is one of the solutions to obtain the required urban mobility option for connecting individuals in every scale from a neighbourhood to a region. Another solution is improving the transportation nodes in the city centre and the sub-centres in the city. The aim of this is to increase the possibility of casual encounters and scheduled meetings within these nodes while individuals are on the move.

When these solutions come together a new strategy for city planning: transit-oriented development came into consideration. The main aims of this strategy is connecting the sub-centres with the improved transport infrastructure and creating more livable communities where there are more societal spaces are designed. The transit-oriented development will lead individuals to connect with each other more easily by offering many opportunities for interaction.

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ÖZET

Günümüzün modernleşen teknolojisinin ve her geçen gün globalleşerek gelişimine devam eden dünyamızın son yıllarda yarattığı en büyük problemlerden birisi sosyal ağların ve bağlantıların her geçen gün birbirinden biraz daha fazla kopması bilimsel araştırmacılar tarafından dile getirilmeye başlamıştır. Şehirlerin her gün daha fazla büyümesi ve gelişmesiyle sosyal ağlar arasındaki bağların arası giderek açılmaktadır. Ayrıca kentlerin giderek çok merkezli hale gelmesi ve sabit bir merkezinin olmaması da sosyal ağları olumsuz yönde etkilemekte, kişilerin kent içerisinde bir araya gelme ihtimallerini azaltmaktadır. Oysa buna duyulan ihtiyaç dünyanın neresinde olursak olalım oldukça fazladır.

Bu durumun yarattığı problemlerin günümüzde daha da artması, sosyologları ve kent plancılarını doğru çözümler bulunması adına birlikte çalışmaya yöneltmiştir. Mahalle ölçeğinden, bölge ölçeğine kadar bireylerin bağlantısını sağlayarak, kent mobilizasyonunu en yüksek düzeye çıkarmak adına öncelikli çözümlerden bir tanesi ulaşım sistemlerinin ve altyapılarının geliştirilmesi olarak öngörülmektedir. Bu anlamda yapılması amaçlanan bir diğer çözüm ise kent içindeki ve banliyölerdeki ulaşım merkezlerinin geliştirilmesi olarak açıklanmaktadır. Bunun amacı ise hareket halindeyken dahi günlük tesadüfen gerçekleşecek sosyal bağlantıların ihtimallerini arttırmak ve bu anlarda gerçekleşen planlanmış buluşmaların ise karşılıklı olarak kolaylığını sağlamaktır.

Tüm bu çözüm önerileri bir araya getirildiğinde ise kentlerin gelişimi için yeni bir strateji ortaya çıkmıştır ve bu ulaşım odaklı kent gelişimi (transit-oriented development) olarak adlandırılmıştır. Bu çözüm önerisinin ana hedefleri kent içinde gelişen alt merkezlerin daha gelişmiş bir ulaşım ağı ile birbirlerine bağlanması ve içerisinde daha fazla sosyal bölgelerin olduğu daha yaşanabilir topluluklar yaratması olarak sıralanabilir. Ulaşım odaklı kent gelişimi bireylerin birbirleri ile karşılaşması için çok daha fazla fırsat sunacaktır ve böylece kişilerin daha kolay bağlanmaları sağlanacak.

1. INTRODUCTION

The place where individuals or members of networks interact can be defined as “societal space” in an urban environment. Spatial planning and urban design are the fields which are dealing with creating the societal space. According to the modern planning and political decisions, the improvements in mobility structures can result “splintering urbanism” in the cities of today which will produce huge amounts of moving people, goods and so on. The transformation of modern institutions and organisations into networks and decentralised structures and the rise of a complex ‘world city network’ is inextricably connected with multiple mobilities (Weert, 2008). Thus, it can be concluded that the designers should consider creating more societal spaces within the cities, as the growing distances between individuals letting them to find new places for meeting and interacting with others.

1.1 Statement of Topic

Creating livable urban communities is a complex attempt. Many of the 20th Century planners and engineers believed that modern and rational decision making would create successful cities. Today, political leaders across the globe are considering ways to promote sustainable development and the concepts of New Urbanism are making their way from the drawing board to the ground (linking urban design to sustainability). Although there are always new approaches for city planning, the idea of designing livable and prosperous streets or neighbourhoods is an issue which is never altered since 1960s.

The second half of the 20th century has witnessed steady growth in car traffic in the industrialised world. This has been coupled with growth in house hold, ownership of cars, the expansion of road infrastructure, and the decentralisation of economic activity along with the separation of housing and working (Loukopoulos and Scholz, 2004). However, in recent years, governments are realising that the “quality of life” in neighbourhood scale or in city scale is rapidly decreasing because of growing cities and increase in number of motor vehicles. Because of these problems, the

concern for the environmental and societal costs of traffic, such as congestion, noise, air pollution, and energy depletion is increasing constantly (Greene, 1997).

While rethinking structures of new urban mobility and producing solutions to these problems, one other topic comes up, the social sustainability. Although social sustainability is only a part of sustainable urban development, it is also one of the core elements of sustainability and is directly related to the urban mobility solutions in some ways. Some may argue differently, but essentially sustainability is about creating and maintaining quality of life for people. The need of communities to see each other in long or short distances affects the importance and design criteria of urban mobility structures. Because as being a part of social sustainability, the mobility infrastructure of a city or a country has to be developed for demands of communities and it has to provide the best options for users.

“Ordinary” people in prosperous societies are increasingly on the move and communicating more to connect with absent others. There seems to be a shift from ‘little boxes’ of spatially dense and socially overlapping networks to networks where connections are spatially dispersed and membership of one network does not necessarily overlap with that of others. Social networks are spreading beyond cities, regions and countries because of the easy availability of cars, trains, planes or communication technologies. These mobility structures are a solution for reconnecting people at-a distance, which make meetings and visits much easier affordable and frequent. The migration, travelling or living at-a distance does not exclude people from being connected with friends and family members at home or elsewhere. So, increasingly, people who are near ‘emotionally’ may be ‘geographically’ far apart; yet they are only a journey, email or a phone call away. This is the reason why developments in mobility structures not only service or connect people but also they rearrange social networks by both disconnecting and reconnecting them (Larsen, et al., 2006).

The improvements in urban mobility technologies and the increase in number of distant social networks, lead urban designers to find solutions about connecting social ties in a city or region. The spatially dispersed cities are the most known city types which are dealing with this problem. These cities are considered as decentralised cities and they have different nodes in different places. Urban nodes are discrete areas that have compact, mixed-used development; they serve the

surrounding areas and are often accessible by high order transit and good road networks. As the nodes drift apart from each other the possibility of social interactions also decreases. One of the solutions that is tried to be applied by the urban planners for the cities is the mobility based approach Transit-Oriented Development (TOD)(Calthorpe, 1993).

As defined before; nodes are the most important interaction points of a city as socially, economically, residentially and so on. Being accessible and transit a node increases its value towards individuals and communities. The aim of transit-oriented development is to connect the nodes in a city and connect the individuals at those points as possible as it can be. And as increasing the features and activities in a node, social interaction will be increased and more social environments can be achieved. The nodes will be preferred by individuals for socialising. The transit is in the meaning of accessible and transporting individuals from one node to another as easy as possible.

Transit Oriented Development is a city planning strategy which is related with Smart Growth, New Urbanism and Location Efficient Development. It can do more than simply shift some car trips to transit: it also increases accessibility and transportation options through land use clustering and mix, and non-motorised transportation improvements. This reduces the distance required for car trips, allows a greater portion of trips to be made by walking and cycling, and allows some households to reduce their car ownership, which together can result in large reductions in vehicle travel. This reduces total transportation costs and helps create more livable communities (VTPI, 2010).

1.2 Area of Study

This research will be about the interrelation between the urban mobility and social sustainability and how they affect the sustainable urban design and development. Today it is obvious that the social networks are mobile because of the technology, developing and growing cities, and decentralisation of cities, work, leisure and many other reasons. And also this is one of the reasons why people are socially dispersed from each other. While searching on the contemporary technologies and practises of transport I will examine how people connect with places and each other, how they socialise with and relate to friends, workmates and family members, and how they

make new contacts often at a distance. The key point is when people are socialising with each other, what sustainable mobility structures can be developed in long and short distances. Individuals should be connected and the need for face to face interactions leads individuals to mobility solutions. People should travel in order to hold the ties between them strong.

The researchers are trying to find better solutions everyday and transit-oriented development is one of them. TOD is a solution which can affect social networks by positive ways. I will describe these positive ways while searching for the better urban structure that can be implemented to a city. Transportation of individuals and the correct design of urban structures will provide better social neighbourhoods or cities as well as socially networked regions if the significance of transportation nodes as a societal space can be reflected and implemented in the transportation design of the cities.

1.3 Objectives

- To better comprehend the importance of weak ties and strong ties in the social networks
- Finding an urban form and structure in which social networks can easily be in contact with each other when they need.
- To test transit-oriented development (TOD) as an urban structure model to improve the relation between mobility and social networking.
- To discover the significance of transportation nodes as a societal space in the newly developed urban structures.

1.4 Questions

1. Why do people travel when social networks are more mobile and dispersed?
2. Why are there still increasing amounts of physical travel although it is pretty easy to communicate with each other today?
3. What is it about face-to-face meetings that make people spend considerable money and time on the road and in the air to be physically present with other people?

4. Do transit-oriented development strategies for city planning have an influence on connecting socio-mobile individuals?
5. What is the significance of transportation nodes in the modern transit cities?
6. What should be done to promote the societal space in the transportation nodes?
7. Are there any negative effects of "increased socialization"?

1.5 Definition of Terms

- Smart Growth: is an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices.
- New Urbanism: is an urban design movement, which promotes walkable neighborhoods that contain a range of housing and job types. It arose in the United States in the early 1980s and continues to reform many aspects of real estate development and urban planning. It is strongly influenced by urban design standards prominent before the rise of the automobile and encompasses principles such as traditional neighborhood design and transit-oriented development.
- Location Efficient Development: consists of residential and commercial development located and designed to maximize Accessibility and overall Affordability. This usually means that it is close to good transit service and public services, has good walking and cycling conditions and other features that reduce Automobile Dependency.
- Societal space: the spatial framework within which groups live; groups whose social structure and organization have been conditioned by ecological and cultural factors. The term societal space identifies relationships between groups or other social phenomena chosen as points of reference. The density of societal space reflects the complementarity and consequently the degree of interaction between individuals.
- Sustainable transport: Sustainable transport (or green transport) refers to any means of transport with low impact on the environment, and includes walking

and cycling, transit oriented development, green vehicles, and building or protecting urban transport systems that are fuel-efficient, space-saving and promote healthy lifestyles. Sustainable transport systems make a positive contribution to the environmental, social and economic sustainability of the communities they serve.

- **Quality of life:** The term quality of life is used to evaluate the general well-being of individuals and societies. Standard indicators of the quality of life include not only wealth and employment, but also the built environment, physical and mental health, education, recreation and leisure time, and social belonging.
- **Social networks:** A social network is a social structure made of individuals (or organizations) called "nodes," which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, common interest, financial exchange, dislike, sexual relationships, or relationships of beliefs, knowledge or prestige.
- **Mobilised:** To make something capable of being moved.
- **Urban Mobility:** Bringing close together the measures to encourage the provision of good quality, environmentally-friendly (fuel- efficient, low-emissions, quiet) collective transport, and to encourage walking and cycling as viable alternatives to private vehicles. Increasing transport efficiency and thus reducing traffic volumes and reducing emissions from the urban delivery fleet should be the main aims of urban mobility.
- **Accessibility:** is a general term used to describe the degree to which a product, device, service, or environment is accessible by as many people as possible. In transportation, accessibility refers to the ease of reaching destinations. People who are in places that are highly accessible can reach many other activities or destinations quickly, people in inaccessible places can reach many fewer places in the same amount of time.
- **Community:**Traditionally a "community" has been defined as a group of interacting people living in a common location. The word is often used to refer to a group that is organized around common values and is attributed with social cohesion within a shared geographical location, generally in social units larger than a household. The word can also refer to the national community or global community.

2. METHODOLOGY AND STRUCTURE

The main subject of the research is finding an urban form and structure in which social networks can easily be in contact with each other when they need. The sociological research which has done before about social networks and their behaviours for interacting each other in modern cities will be the key and starting point of this research. .

The mostly used methodology for the entire thesis work will be reviewing the literature about the issue. Theoretical framework and the use of practical oriented literature will be the main approach for obtaining the conclusions. Instead of a case-study, a discussion of the subject will be done at the end of the report because I will examine and combine the theories about both social concerns and the changes in the urban structure which is a hard topic to find examples and relate to. The sociological approaches will guide the report to the spatial approaches. The sociological analysis are generally based on theoretical researches so that would be better if the thesis also based on the theories.

In the first part, social networks will broadly be presented. The need for interactions, the importance of face-to-face meetings, characteristics of social networks, the significance of Granovetter's weak ties and some different approaches in the area of social networks will be discussed. The aim in this part is to understand the importance for interaction of individuals in their networks. J. Clyde Mitchell, Mark Granovetter, John Urry, Peter Hall, Colin Ward and Robert Putnam will be the main authors and researchers in this section. Some related articles will also be used as references.

In the second section of the thesis, as John Urry defined it, "mobilities" will be discussed. This section will briefly explain the reasons of being mobile, the importance of proximity in mobile communities, the mobility environments and networked cities. The types of mobilities in the modern world will also be discussed but the physical or corporeal travel will come into prominence. John Urry's approaches with some other researchers like Jonas Larsen and Kay Axhausen will be

the key authors of the section. Stephen Graham and Simon Marvin's point of view about splintering urbanism will also direct the subject towards mobility.

The third part will mostly be about modern urban form and structure which is designed for mobile communities. First of all, the reasons of creating cities for travel will be discussed. Then, how neighbourhood quality affects urban design and what is the demand of communities from city planners will be briefly explained. The strategies for transportation and importance of transit planning of cities will be discussed by taking into consideration the mobile communities, today. Later on transit-oriented development (TOD) will be introduced. Peter Calthorpe, who is the founder of TOD, will be the main author of this section. Luca Bertollini's articles about the subjects will also be used as reference. Marlon Boarnet's approach for designing cities for travel is also a key reference for this section.

Final section will be the conclusion part of the thesis. The social networking in a city, which is designed with transit-oriented development strategies, will be discussed. The point in this part is to find and explain the connection between mobile individuals of social networks and the transit-oriented development. The question to be replied here is: Does this strategy really a convenient solution for cities to have connected networks within the city or a region?

3. ANALYSING SOCIAL NETWORKS

In recent years, “network studies” became the one of the most important topics within the field of sociology. Internet, as being a large network, of course directly related with these researches. The researchers nowadays try to find solutions and try to formulate ideas on network structures to help social networks. The aim of these studies is to obtain a social network in which ties are connected to each other. The main reason for these studies is the drifting apart of individuals from each other in a community or in a network, depending on the conditions of today’s world (Evelien, 2002).

3.1 Introduction to Social Network Studies

Most broadly, social network analysis conceptualises social structure as a network with ties connecting members and channelling resources, focuses on the characteristics of ties rather than on the characteristics of the individual members, and views communities as ‘personal communities’, that is, as networks of individual relations that people maintain and use in the course of their daily lives (Wetherell, et al., 1994).

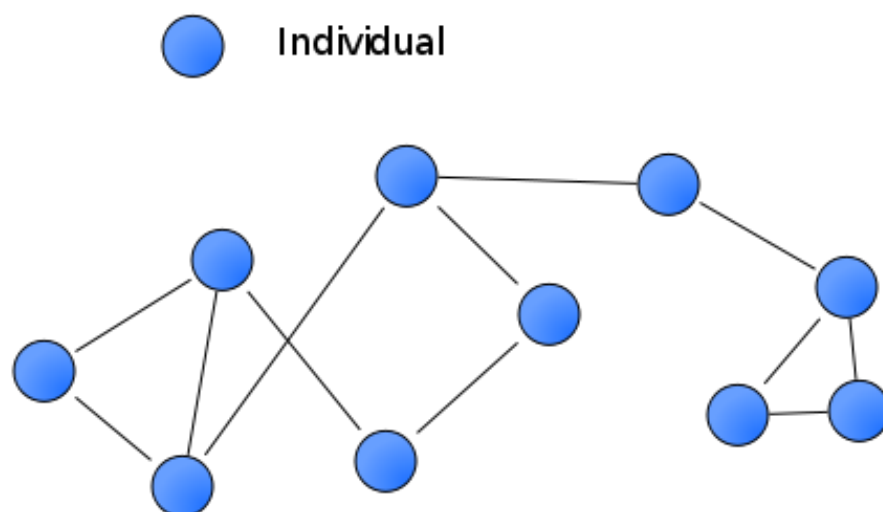


Figure 3.1 : Network of social relations, adapted from Url -1.

The image of “network of social relations” to represent a complex set of inter-relationship in a social system has had a long history. This use of “network”, however, is purely metaphorical and is very different from notion of social networks as a specific set of linkages among a defined set of persons, with the additional property that characteristics of these linkages as a whole may be used to interpret social behaviours of the persons involved. But, developing the metaphorical meaning of network to an analytical definition, the importance of social networking can be more deductive and specific. The important point here is to define the networks as real bonds between individuals.

Today, it is obvious that the networking systems are spilling over cities and regions. The linkages between individuals are weaker with the consistence of relatively far-flung networks. But people are trying to find a solution to this problem. Every individual is trying to be “there” somehow even they are at-a distance. There are various results for this situation. First there is increasingly “connected presence” where small gestures or signs of attention are significant in indicating that others are there but at a distance. Second, family and friendship becomes networked rather like much economic life; network membership becomes crucial. Indeed the apparently different domains of work, family and social life becoming more networked, more similar to each other, more self-organised and more interdependent. And third, these networks generate small world effects (Watts, 1971). Weak ties connect people to the outside world, providing a bridge other than that provided by the densely knit clump of people’s close friends and family. Bridges between such clumps are formed from weak rather than strong ties (Urry, 2007).

Bell and Newby distinguish three concepts of community in 1976, to obtain an analytical framework of social networks. First, there is community based upon close geographical propinquity, but where there is no implication of the quality or even presence of the social relationships found in such settlements of co-presence. Second, there is the sense of community as the local social system in which there is a relatively bounded set of systemic interrelationships of social groups and local institutions. Third, there is communion, human association characterised by close personal ties, belongingness, and a strong sense of duty and obligation between its members. Bell and Newby concluded in their work that the communion is not produced by a specific layout. The communion between individuals can be achieved

even they are not living in close physical proximity. The local social systems also are not formed according to the geographical propinquity and localness does not necessarily produce communion. It is possible to have communities without close-knit as well as interaction of social networks with each other by moving across specific locations. However, social sciences still working on geographically close communities in which there are more or less face-to-face social interactions (Larsen, et al., 2006).

3.2 Mathematical Graph Theory

As mentioned before, in sociological researches, the idea of social networks is considered only metaphorically. But the definition of the idea should also be defined precisely, based upon some reliable facts. The “mathematical graph theory” is a theory in which a finite set of points linked, or partly linked, by a set of lines (called arcs) is called a net, there is no restriction on the number or direction of those lines linking any pair of points. A relation is a restricted sort of net in which there can only be one line linking one point to another in the same direction.

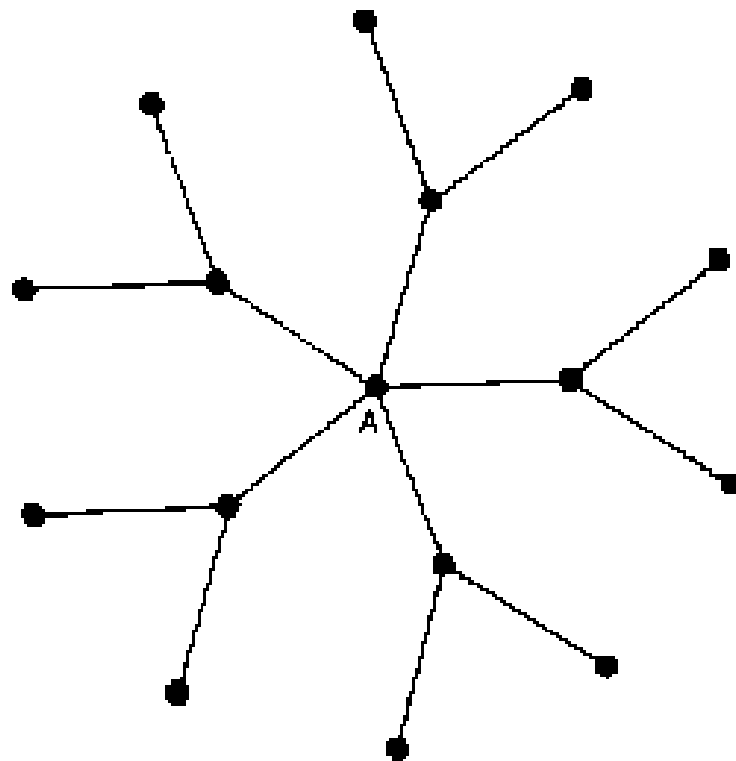


Figure 3.2 : The “mathematical graph theory” is a theory in which a finite set of points linked, or partly linked, by a set of lines (called arcs) is called a net (Source: Scott, 1991).

In a topological approach, the social field is seen as comprising 'points' connected by 'paths'(see Fig.2). The points represent individual persons, their goals, or their actions, and the paths represent the interactional or causal sequences which connect them. The field model, therefore, describes causal and interactional interdependencies in social configurations. The paths which run between points tie them together, and the pattern of paths divides a field into a number of discrete 'regions'. Each region is separated from the others by the absence of paths between them: paths run within but not between the regions. The opportunities which individuals have to move about in their social world are determined by the boundaries between the different regions of the field in which they are located. The constraints imposed by these boundaries are the 'forces' which determine group behaviour. The total social field, therefore, is a field of forces acting on group members and shaping their actions and experiences (Scott, 1991).

The movement of individuals through paths starting from one initial point to through intermediate steps to some final point is called the mobility of the individuals. The gap between the points, determines the probability of interaction between individuals or of transition of passing from one point to another. This is related with the graph theory definition of a network (Beshers and Laumann, 1967).

3.3 Knowing Social Networks

Network clusters have different implications for how, when and where people are “known”. First, there is the line or chain network where many nodes are spread out in more or less linear fashion. The end-to-end exchanges (information, contraband, etc.) must travel back and forth between intermediary nodes. Some work-related and friendship networks are linear with relatively few connections that go out of line. Second, there are star or hub networks where important relationships move through a central hub or a very small number of hubs. Different individuals are tied to a central (though not necessarily hierarchical) node, and all communication travels through that central node. In this case being in or near the hub is highly valued. Third, there are all-channel or distributed networks in which communications proceed simultaneously in more or less all directions. Every individual actor is able to communicate fully with all other nodes in the network (Urry, 2003).

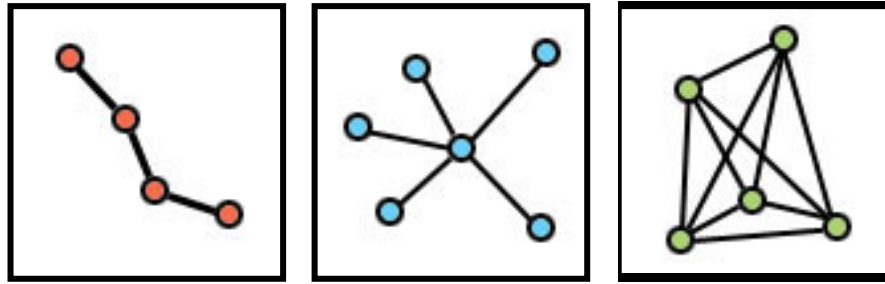


Figure 3.3 : Linear networks (left), Star or Hub networks (middle), All-channel networks(right), adapted from Url - 8.

There are also variations in whether network relationships are tight, with most nodes connected to most others, or loose as is more typical these days. It is obvious that according to the connection or interaction types of network members, being one-way or all-way, the network clusters have different features. The types of connections and network clusters affect individuals' decisions about the place to meet up, the timing, the length of meetings and especially who gets to be invited.

3.4 Characteristics of Social Networks

The social networks analysts and the researchers of social networks found it necessary to distinguish some features or characteristics of these networks. The analysis of actions and behaviours of individuals in a social network identify these characteristics. The most important feature of social networks is the nature of links between people in the networks. However, there are not any accepted set of criteria to differentiate the characteristics of one type of network from another. The reason for this situation is the difficulty to understand and interpret the human behaviours in the networks, on which many sociologists are still working.

From the work that has already been done on the social networks, however, there appear to be several morphological and several interactional characteristics which are likely to be suitable in any attempt to describe social behaviour adequately. The morphological characteristics of a network refer to the relationship or patterning of the links in the network in respect to one another. They are anchorage, density, reachability and range. The interactional criteria on the other hand refer to the nature of the links themselves and are content, directedness, durability, intensity and frequency of the interaction in the links (Mitchell, 1969).

3.4.1 Morphological Criteria

'Anchorage' is the point of some initial starting point of a person. Networks must be traced from an initial starting point and it must anchor on a reference point. The point of anchorage of networks is usually taken to be some specified individual who is being observed by the analysts. Personal mobilities in a network can be observed with this characteristic.

'Reachability' is the degree to which a person's behaviour is influenced by his relationships with others often turns on the extent to which he can use these relationships to contact people who are important to him or alternatively, the extent to which people, who are important to him, can contact him through these relationships. As defined in the mathematical graph theory before, the interaction of an individual with someone else somehow affects people in his network that they are also considered as contacted the person. The number of the steps to contact the first person with others is the key point because the less number of steps make the network more compact. Compact networks are close tied networks and they need less transportation structures to contact with each other which make them less mobile networks.

'Density' is also a similar characteristic to reachability. The importance of this feature is the meaning of connectedness, which are the lines of communication between those whom the individual knows and who know him, and know one other. With this definition density can be said to be as the degree of connectedness. There are different interpretations about the relation between density and social interaction. Some researchers believe that high density increases the possibility of social interaction; on the other hand some believe that overcrowding may have negative effects for social interaction. In cities, high density areas are considered as favourable areas for community life and social interaction. Although the relationship of social interaction and density is not understood, theoretical hypothesis suggest that higher density have more positive effects on social interaction. In a dense network, in which large amount of people know each other, the network as a whole is considered as a compact network, where a few links between individuals should be enough to reach the majority.

'Range' here is in the meaning of direct contacts but of course it can also refer to second or any order of contact if necessary. The key point of the characteristic is the possibility of meeting other people who are also anchored in other networks. The number of order depends on the number of interaction with others to reach the other networks' anchorage point. The classification of range changes from small range networks to large range networks. A person in contact with thirty others of widely differing social networks would have a wider range network than a person in contact with thirty people of the same social network.

3.4.2 Interactional Criteria

'Content' is the most interactional aspect of the links in a person's network and it concerns the meanings which the persons in the network attribute to their relationships. The content is the reason why people interact each other. It can be economic assistance, kinship obligation, religious cooperation or simply friendship but there is always a purpose to interact with other people. Network links which contain only one focus of interaction are called uniplex or single-stranded relationships and those which contain at least two contents on the other hand are called multiplex or many-stranded relationships. The multiplex relations are considered to be strong relations and they result in individuals to be more mobilised for support than an individual who has only uniplex relations with another one.

'Directedness' of a social network is the direction of the relationship. The relationship between people in the network should be considered either as oriented from one to the other or reciprocal. In reciprocal relations like kinship, friendship or neighbourliness the directionality is not very important. But in directional relationships like employer – employee relationships, the person's influence will differ according to the direction of interaction. The reciprocal relations are much likely to come together. They mobilise each other to be in contact with each other.

'Durability' is the existence of a network on the recognition by people of sets of obligations and rights in respect of certain other identified people. The relationships can be gathered together for a specific content like funerals or weddings. These are the opportunities for creating links, communicating and interacting but it may come into being for a specific object and disappear again when the object is done. The

objects generally are the reasons of mobilisation in a network. Different links are mobilised to perform the activity. And durability is the duration of the mobilisation.

'Intensity' is the strength of ties in a person's network. It refers to the degree to which individuals are prepared to honour obligations or feel free to exercise the rights implied in their link to some other person. For example the intensity of a person's relationship with a close kinsman is likely to be greater than that with a neighbour. Intensity is another reason for mobilising people in a network. It is a kind of need that an individual contacts with his strong ties. Today, with migrations all over the world, there is compulsorily an infrequent communication between an individual and the people who are in his network, the intensity of the relationship may be sufficient to make the people important elements in the individual's network.

'Frequency' is the amount and regularity of interaction between an individual and the other people in his network. A high frequency of contact, however, does not necessarily imply high intensity in social relationships. Contacts with workmates may be both regular and frequent but the influence of a close kinsman over the behaviour of an individual may be more than his friends', even individual meets his kinsman infrequently.

If the general sociological characteristics of social networks are summerized. In this case these features are considered as the reasons of why people need to be in touch with each other. And therefore the people in a network need to be mobilised. The characteristics show that an individual has many connections in his network and the need for interactions depends on these characteristics. As a result of these features people are mobilising themselves to have better social lives.

3.5 'Weak Ties' Hypothesis

Weak social ties, as it is argued, are responsible for the majority of the embeddedness and structure of social networks in society as well as the transmission of information through these networks. More novel information flows to individuals through weak rather than strong ties. Because our close friends tend to move in the same circles that we do, the information they receive overlaps considerably with what we already know. Acquaintances, by contrast, know people that we do not and thus receive more novel information (Granovetter, 2004). The "weak tie hypothesis"

argues, using a combination of probability and mathematics, as originally stated by Anatol Rapoport in 1957 (see Fig.4), that if A is linked to both B and C, then there is a greater-than-chance probability that B and C are linked to each other: That is, if we consider any two randomly selected individuals, such as A and B, from the set $S = A, B, C, D, E, \dots$, of all persons with ties to either or both of them, then, for example, if A is strongly tied to both B and C, then according to probability arguments, the B-C tie is always present.

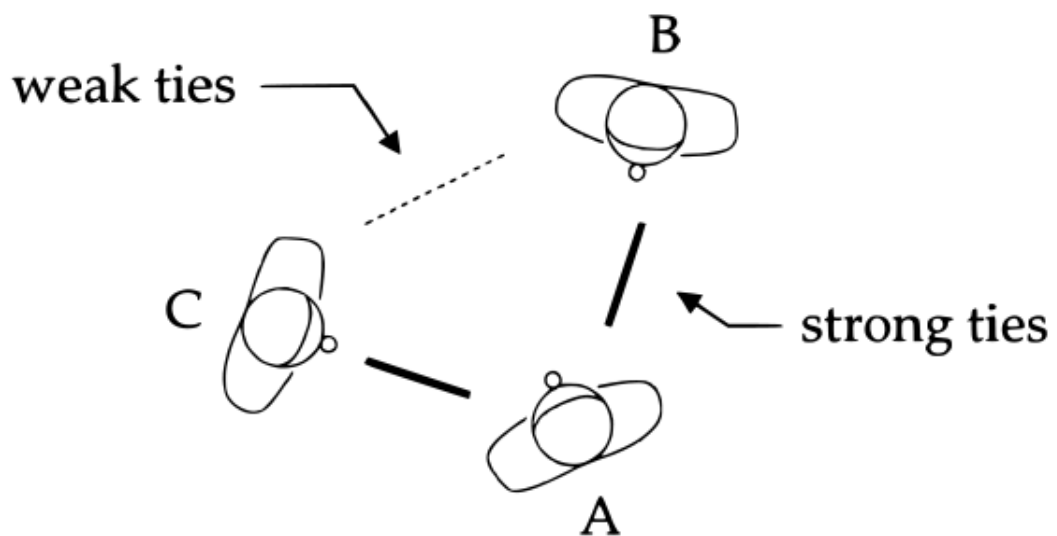


Figure 3.4 : The links between “strong ties” and “weak ties”, adapted from Uri-7.

Granovetter's (1973) pioneering work on the "strength of weak ties" showed the significance of social networks for mobility. Unlike the strong ties which easily connect the networks and individuals and carry already known information between individuals, weak ties are sources of new information as they bridge local unknown groups of individuals. Therefore, the more weak ties an individual has in his/her network, the more valuable the network is as a source of information. Burt argues that, focusing on the relationships among the people to whom the individual is tied would be more useful. He argues that individuals may have more unique information from weak ties in their networks. Burt uses the term “structural hole” to indicate the absence of connections among weak ties in the network, arguing that the more structural holes are surrounding the individual, the more promoting individual's network to mobility (Granovetter, 1973).

3.6 Small Words Approach

Furthermore, these intersecting mobility systems permit connections between people at a distance, forming so-called ‘small worlds’ (Watts 1971, Urry 2004). Watts argues that the relationship between individuals and social networks are neither perfectly ordered nor fully random, they all are in a connected and networked small world (see Fig.5). It is small world that everyone on the planet, whatever their socio-spatial location, is separated by only six degrees of separation. This is only a theory but if it is count to be true statement then, as Watts described, “even when two people do not have a friend in common they are separated by only a short chain of intermediaries” (Watts, 1971).

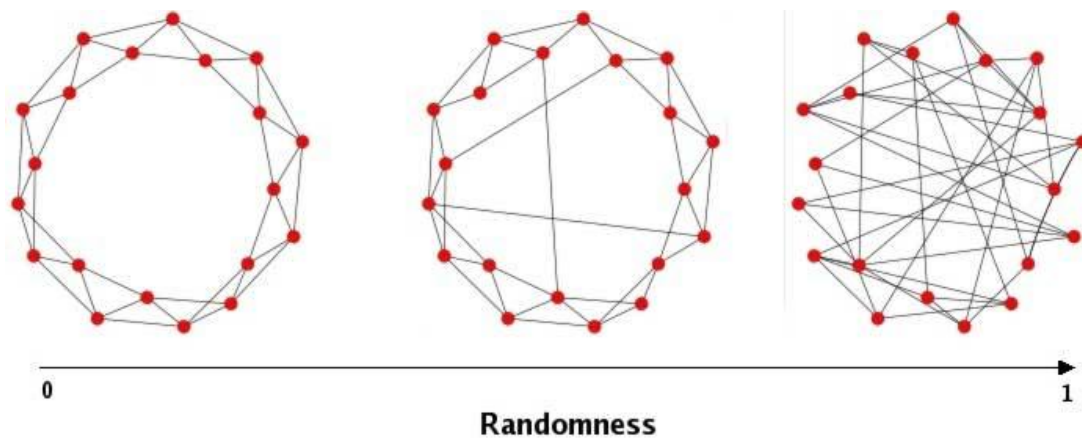


Figure 3.5 : Progressive transition between regular and random graphs, adapted from Watts (1971).

Networks are the combination of tight groups of individuals with a few random long-term connections. The reason of this statement is the strength of ‘weak ties’. These weak ties, based on intermittent corporeal travel, connect people to the outside world and provide a bridge other than densely knit relationships of close friends and family. These comprehensive weak ties generate social networks that are neither perfectly ordered nor fully random like in Watts small worlds approach. Occasional interactions and communications hold these social networks in a strong tie. The number of these kinds of social structures is increasing everyday across the globe; therefore they need multiple mobility solutions for their functioning.

So far the main commentator on small worlds who deals with these issues is Michael Batty. He notes that: “the small worlds research has tended to discuss spatial dimension as being too hard to handle but it is now clear that it must be treated in

terms of growth of networks ... small worlds always exists but, as the network grows, technologies have to be in place that enable long-distance ties across its span to be realised” (Batty, 2001). From Batty’s notion it can be said that: to not lose small worlds type connections, improvements in mobility structures, like transportation and communication is compulsory.

Travel and communication practises of people widen the weak ties within and across the networks. Meetings are costly in terms of time, money and effort but they may result in network enlargement, reinforcement and the pleasures of co-presence. Networks also depend upon material infrastructures especially to do with changing technologies of travel and communications that afford potential movement or motility and connections across distance (Kaufmann, 2002).

3.7 Social Science Approaches

It is hard to understand and answer questions by combining both social sciences and transport researches at the same time. The movement of individuals for work, friendship and family, leisure and pleasure is ignored by many social researchers. It is hard for sociologists to predict how social life presupposes both the actual and the imagined movement of people from place to place, person to person, event to event. And yet migration, pilgrimages, war, trade, expeditions and colonisation have linked most countries in complex travel connections. From early time’s servants, settlers, missionaries, soldiers, sailors, traders, scientists and many others travelled and formed extensive links across the world (Urry, 2000).

Some social scientists regard mobility as it produces a lack of connections, commitment, trust and emotional nearness. Putnam (1993) argues that mobility structures are destroying the communities and “social capital”. Even, some geographers are arguing that the sense of place is lost by mobility and “placeless” sites are appeared because of need for speed (Larsen, et al., 2006). As Yi-Fu Tuan says: ‘modern man might be so mobile that he can never establish roots and his experience of place may be all too superficial’.

George Simmel argued that, if individuals want to be socialised, they have to distance themselves from the mobile crowds because of the increased number of strangers around them in the cities of today. Simmel adopted the figure of the

stranger to illustrate the modern metropolis's unique geographies of proximity and distance: here people are close in a spatial sense, yet remote in a social sense (Simmel, 1997). As a result, his idea showed that strangers are indeed physically nearby while friends and families are at-a distance but close socially.

Eventually, everyday face-to-face proximity and interactions are the main subjects of social sciences. The proximate social structures consist of direct and permanent interactions of individuals and social networks so that social sciences centre up on this issue. Travel or movement of people is the most preferable process which connects individuals in their economic, social and political life. In other words, social science argues that it is the communication and mobility structures that provide face-to-face interaction in the physical space (Larsen, et al., 2006).

3.8 Social Capital

In recent years, sociologists, who are dealing with “social capital”, accepted the importance of social networks and extended their researches about the issue. Putnam (1993), as being one of the most important sociologists, defined social capital as “features of social organisation such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit”. There are also some other conducive definitions of social capital in which people prepared to use mobilisation resources to exist in their membership of networks as individuals. Both meanings can be used at the same time and both of them are to connect individuals or networks with each other. Putnam's extensive research, in 2000, on the USA reported in “Bowling Alone” shows that social inclusion depends upon complex, rich and multi-layered forms of social capital. As seen from Putnam's definitions that the higher social capital, the denser the networks are. In which reciprocal social relations, well-developed sets of mutual obligations, generalised reciprocity, high levels of trust in one's neighbours, overlapping conversational groupings, and bond that bridge across conventional social divides take place.

As the early concerns about communities in the modern cities continue to increase, urban planners and designers started focus on the relation between social capital and space in the city, although most sociologists yet, have not focused on the spatiality of social capital. Social capital seems to travel down a similar road: if within a spatially bounded area people seem to be deprived, and where little support among neighbours

can be measured, the 'neighbourhood' is said to lack social capital (Savage and Blokland, 2008)

In reflecting on how best to explore these spatial aspects of social capital, we need to avoid seeing space in terms of it being a 'container' that can be filled with 'more' or 'less' social capital. With reference to this theory, many urban sociologists and planners completely give up on the idea seeing space as a container of smaller spaces and connected them with boundaries where people socialise and interact with each other. Lefebvre's (1990) arguments show that social relations are produced in and through the organisation of space are now familiar within social theory. As these theories come up in the social capital literature, the claims about globalisation, which argue about splitting of social relationships or overriding the cultural importance because of the expanded boundaries, are mostly neglected by urban researchers.

4. URBAN MOBILITY

As told in the previous chapter, the demand for transportation and communication for keeping the social ties together is increasing every day. Therefore, obviously, mobilities are becoming one of the most important issues within the social sciences. Modern societies in the cosmopolitan world have to exchange relations between individuals, organisations, companies or social networks. The transportation of people, objects, images, information and ideas should be provided virtually or physically to respond to the demand of meeting them. So, the social networks can be kept alive. Societies of the ‘second modernity’ are networked societies (Castells, et al., 2006).

4.1 Mobilities: An Introduction

People in prosperous industrialised societies are both increasingly on the move and communicating more to reach and connect with absent others. Today, with the improvements in the mobility technologies, the transport or communication services not only connect or gather individuals but also identify the structure of social networks by disconnecting and reconnecting them. The social networks are extended beyond city border, regions and even nations. The main reason for this situation is the easy and cheap availability of cars, train, planes and communication technologies of today which help individuals to afford frequent visits, meetings and interactions at-a distance. Societies are built up of different socialities that necessitate often extensive forms of mobility. And because of the important need for co-presence, corporeal travel is essential for constituting social and economic life and is not an optional add-on (Urry, 2002).

4.2 Definition of Mobility

With respect to the new factors like being a society on the move, the definitions of mobility often fall short (Urry, 2002). The most common one considers mobility as movement in real or ‘virtual’ spaces of people and objects (Kaufmann 2002). But,

mobility does not only consist of movements, it also has goals, strategies and choices which constitute the potential characteristics of mobilities. This circumstance of mobility makes the concept challenging and exciting. The meaning of “space” in the definition also is not convincing, at all. Because in the definition the space is considered as geographical space, but being mobile in the “social space” also is a significant issue for social networking as people need newly developed places to meet and interact with each other while they are on the move. In another definition, mobility can be defined as a change of condition by targeting three dimensional conditions(see Fig 4.1): movements, networks and motility (Canzler, 2008).

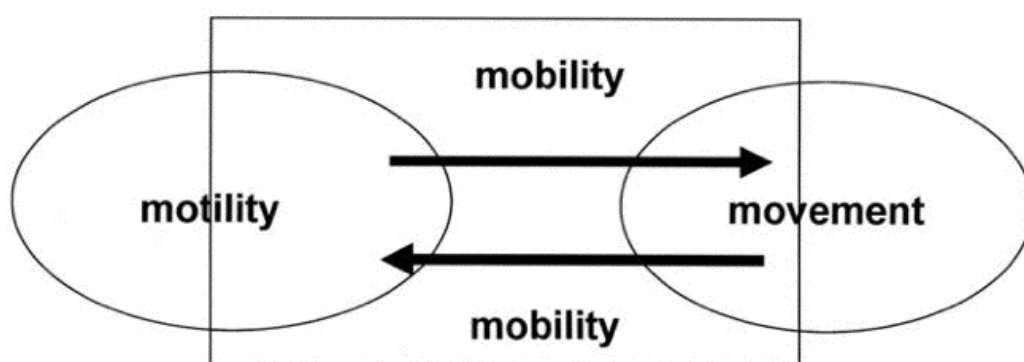


Figure 4.1 : Three dimensional conditions of “mobility”, Adapted from Canzler (2008).

Movements refer to strictly a geographic dimension. Movements are the physical displacements of people, information and goods from an origin to a destination. They can be shown on a map and vary according to forms of flow. But, of course, movements should not be considered only as transportation. Messaging or telephoning are also kind of virtual movements from an origin to a destination.

The equipments or structures which compose the movements can be defined as networks. In other words the quality of infrastructures, services and access conditions provide movements determine the characteristics of technical networks like transportation, telecommunications, mailing and so on. Social networks can be defined as group of people in a community or a society, who frequently interact with each other as a need to be socialised more.

The capacity of an individual to move socially and spatially is called the motility. This is significant because both networks and movements, or it can be said both socially and technologically, form the motility together. Motility can be defined as

all forms of access obtainable (both technologically and socially), the skills possessed to take advantage of this access, and their appropriation (or what the actor does with this access and these skills). Shortly, motility is the using methods of movement possibilities by individuals or groups.

4.3 Mobilities Paradigm

The new mobilities paradigm is developing by many different sociologists and urban researchers. The first element of the paradigm involves seeing all social relationships as necessitating diverse ‘connections’ that are more or less ‘at a distance’, more or less fast, more or less intense and more or less involving physical movement. There has not been a fixed or a located place for social relations but they are used to be generated by various circulations of individuals. Latour (1999) called these individuals as “circulating entities” in his works. They can be defined as individuals or groups, who cause the realisation of relationships within and between societies at multiple and varied distances. But many connections with peoples and social groupings are not based upon propinquity. “Imagined presence” is also another kind of interaction occurring through objects, people, information and images travelling, carrying connections across, and into, multiple other social spaces. The processes of movement for being present with others (at work, home, leisure and so on) and being distant from other at the same time are a part of the social life. The improved technologies to move objects, people, ideas and images across varying distances, which can also be considered as mobilities, affect all social life, of work, family, education and politics by providing intermittent presence and modes of absence (Canzler, 2008).

Second, these processes stem from five interdependent ‘mobilities’ that produce social life organised across distance and which form (and re-form) its contours. These mobilities are (Urry, 2007) :

- The corporeal travel of people for work, leisure, family life, pleasure, migration, and escape. Individuals’ need for physical presence in the social space or at a particular event with their workmates workmates, business colleagues, friends, partner or family can only be satisfied with travel options. Travel results in physical proximity for individuals who are on the move.

- The physical movement of objects to producers, consumers and retailers. This transports faraway objects and goods to where people live and/or work. It especially results from how the world is placed on display and then consumed within local supermarkets, restaurants, shopping malls and so on.
- The imaginative travel elsewhere through memories, texts, images, TV and films. This kind of travel will be used for replacing physical transport, as analysed in de Botton's *The Art of Travel* (2002). As an example, TV enables people to attend live events without leaving their places physically. Over the last two years there has been a decline in the number of football supporters that travel to see their team play away while there has been a noticeable increase in supporters that attend away games at the local bar (Url-3). In another point of view, imaginative travel produces a positive effect on physical travel to tourist destinations. Films, advertisements and promotions make individuals curious about new locations to be discovered (Larsen, 2004).
- Virtual travel often is in real time on the internet, so transcending geographical and social distance. With the interactive developments, people can get into global networks of information very easily and without the need for physical travel. Individuals can access their bank accounts from all over the world, with the networked computer they can easily share information or they can shop on internet even without moving their bodies. It is still an argument that, virtual travel affects physical social networking in a negative manner. Maybe that is the reason why the significance of physical travel is increasing rapidly.
- The communicative travel is through person-to-person messages via letters, postcards, birthday and Christmas cards, telegrams, telephones, faxes, emails, instant messages and video conferences. Social network members with internet access are but an email away and members with mobile phones stay connected even when they are on the move. With the use of internet, digital transport of documents and information can be done easily, instead of using postal services. Especially sending an e-mail became the easiest information sharing service as they travel long distances as fast as short ones; they travel equally fast and equally cheaply to multiple destinations ('lists') as to single ones.

The third paradigm of mobility is an argument of Simmel (1997) which is about some special or specific conditions in which face-to-face interaction becomes a

compulsory situation and physical movement of individuals become necessary. Thus, the need for face-to-face interaction has to be explained and Urry (2007) stated five processes that generate face-to-face meetings. These are legal, economic and familial obligations to attend a relatively formal meeting; social obligations to meet and to converse, often involving strong expectations of presence and attention of the participants; obligations to be co-present with others to sign contracts, to work on or with objects, written or visual texts; obligations to be in and experience a place 'directly'; and obligations to experience a 'live' event that happens at a specific moment and place. The need for travelling at a specific time interval and along a particular route for face-to-face interactions can be expressed with these obligations. It can be said that, to conduct social life at-a distance, the necessity of face-to-face interaction is significant and at the centre of the analysis of social sciences.

Fourth, the focus upon objects combining with humans into various coupled relationships also implies the significance of systems that distribute people, activities, information, images and objects in and through time-space and that are key points in the metabolic relationship of human societies with nature. Today, one of the most dynamic and mostly used mobility systems is the "auto-mobility", the other mobile systems include the cycle-system, the pedestrian-system, the rail-system, aero-mobility and so on. These mobility systems are all connected to each other in some way and they have a co-operating relationship between each other. This results mobile systems to expand and multiply in terms of their ranges and impacts. The environment is also provided by such systems in which each system operates with other (Canzler, 2008).

Fifth, mobility-systems are organised around the processes that circulate people, objects and information at various spatial ranges and speeds. In any society there will tend to be a dominant process of circulation. The circulation of people, objects, images, activities and information through "structured route-ways" is main key point of the issue here, not the movement or mobility structures. These include the networks of bridleways, of footpaths, of cycle tracks, of railways, of telephone lines, of public roads, of networked computers, of hub airports (Graham and Marvin, 2001). Different systems of circulation and mobility-capital are required for successful route-ways. If a society or a city can be organised around the value of circulation, then the significance and range of mobilities within a society and a city

will increase. Moreover, the range, complexity and choices between route-ways generate the potential for movement or motility. High motility provides opportunities for circulation, enhancing the mobility capital for those with high motility and worsening it for others (Kaufmann, 2002). Figure 4.2 illustrates the principle of a mobility chain. This could be the daily spatial activity pattern for an individual who engages in only one activity per day. The structure of such a chain is generally pre-transport/main transport/post-transport. The individual is confronted with different physical urban systems of different orders. It is important to the individuals's time budget that the interchange points are efficiently sited and organised. If the main transport involves a collective transport mode, intensive feeder systems are desirable at each end to ensure its quality (Klassen, 2004).

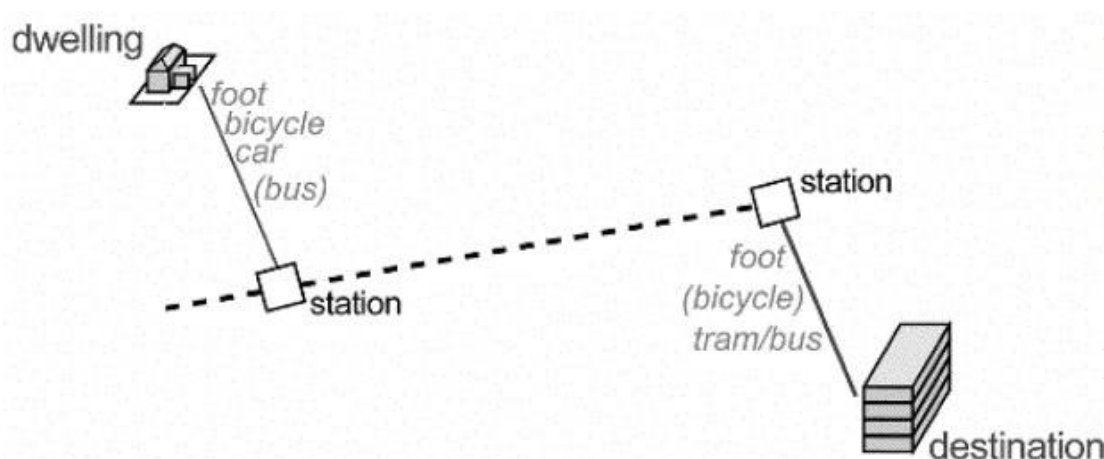


Figure 4.2 : The principle of a mobility chain. This example shows the daily spatial activity pattern back and forth for an individual who engages in only one activity per day, adapted from Klassen (2004).

Finally, as the sixth paradigm, interdependent systems of ‘immobile’ material worlds, and especially exceptionally immobile platforms (transmitters, roads, garages, stations, aerals, airports, docks) structure mobility experiences. The complex character of such systems stems from the multiple fixities or moorings, often on a substantial physical scale. Thus ‘mobile machines’, such as mobile phones, cars, aircraft, trains and computer connections, all presume overlapping and varied time-space immobilities (Graham and Marvin, 2001).

4.4 The Importance of Co-presence

Boden and Molotch (1994) maintain that since ‘co-present interaction’ is fundamental to social intercourse, virtual travel will not significantly replace physical travel. The modern world produces no reduction in the degree to which co-present interaction is preferred and necessary across a wide range of tasks. It is obvious that rich and multi-layered conversations are results of intensive co-presence. The access to eyes makes co-presence an indispensable issue in social networks. It enables individuals to understand the intimacy and the trust of the opposition, as well as fear, power and control. Simmel (1997) argues that looking one another directly effects the interaction of individuals, as the eye contact being a unique “sociological achievement”.

The location of co-presence is within the time and space. To meet up at a specific location individuals travel to somewhere, the duration of their interaction is generally determined before and they arrange the timing of their speech and silence to make their appropriate conversations. The mutual attention at the situation is expected by both sides and these kinds of conditions composed of focused interactions are known as the “meetings”.

The significance of co-presence “limits the degree and kind of organisational, temporal, and spatial reshaping that the new technologies can induce”(Boden and Molotch, 1994). As an example, researches show that, many young single people prefer living close to city centres instead of living in the suburban areas of where they believe they can socialise more within public spaces, bars, leisure clubs, restaurants and nightclubs. So to sustain the co-presence of ‘tight social worlds’ within city centres the distance between work and home should be reduced if possible by the urban designers (Boden and Molotch, 1994).

4.5 Scale of Travel

In 2004 there were a record 760 million legal international passenger arrivals all over the world by any means of transportation. This compares with 25 million in 1950, 700 million in 2002, with a predicted 1 billion by 2010 and more than 1.5 billion in 2020. Travel and tourism is the largest industry in the world, accounting for 11.7 per cent of world GDP, 8 per cent of world exports and 8 per cent of employment. Side-

by-side with global tourists and travellers are 31 million refugees and 100 million international migrants worldwide. Such mobilities are mainly tourists, workers, students, migrants, asylum seekers, scientists, scholars, family members, business people and soldiers. They still travel under different circumstances, so we should differentiate between different forms of physical travel and understand how they are caught in various power geometries of everyday life (Larsen, et al., 2006).



Figure 4.3 : Percentage of driving in New Zealand, adapted from Url-2.

According to the UK Innovation and Performance Unit, everyday journeys generally take place within a radius of eight or nine miles, which shows that daily physical travel is local and it is not a very long distance to travel but it is still impossible for most of the individuals to cover that distance by foot or even using bicycles requires fit cyclists or at least good physical structures(bicycle paths etc.). As a result of this situation, individuals use their private vehicles if they do not have a mass transportation options. Considering the report of Ministry of Transport in New Zealand (see Fig 4.3), the local transportation to work, school and shop are the main reasons of private transportaion which can be generalised to many countries in the world. Thus, urban designers agree on developing well serviced public transport system for many cities in the world. So that the need for car use, at least for local physical travel, will be reduced.

According to some other UK based researches (Department for Transport, 2004), they proved that people mostly drive to see friends and family members for around 40 miles per week. This kind of travel can be considered as a “social travel”. Similar German research (Deutsches Institut für Wirtschaftsforschung, 2003), indicates the

main reason for people to travel is to meet friends and relatives and leisure and holidays are the most important trips with respect to miles travelled. So it can be said that, while most people make short trips daily, they actually have long leisure travels to socialise with others at-a distance in their mind.

4.6 Reasons for Travelling

It is evident that people undertake long-distance travel for many reasons and under different circumstances: attending business meetings, conferences and job interviews; commuting to work; going abroad to study; migrating; escaping poverty, war and torture; visiting friends and family members; embarking on pilgrimages; going on holiday and so on. The increase in number of such activities and networks show that travel is essential for social life. Besides, the connections between workmates, leisure groups, crime networks, professional associations, voluntary associations, family or friends lead individuals to travel more. As Shove (2002) mentioned that there are various social obligations and responsibility of apparently free mobility.

First, travel occurs for legal, economic and family obligations. These formal obligations include travel to go to work; to attend a family event such as a wedding, christening, or funeral, Christmas, Easter and so on; to meet a legal obligation by visiting a lawyer or court; to have to visit a school, hospital, university or public office; or to attend a job interview.

Second, there are social obligations that individuals are expected to be present in the situation and pay their attentions. These are less formal obligations in which mutual presence enables each to read what the other seems to be really thinking, to observe their body language, to hear 'first hand' what they have to say, to sense directly their overall response, to undertake some emotional work.

Third, there are object obligations. The physical co-presence of the individual is needed for some reason like signing a contract, working or seeing technologies or written texts. These kinds of obligations take place in a specific kind of environment in which there are particular kinds of design, security, comfort and ambiance.

Fourth, there are obligations to place, to sense of place or a certain kind of place. Individuals need to see different places to be experienced directly. Meeting at a

specific place, visiting a restaurant, walking along a certain river to take photographs or feeling the surface of a rock are just some of these experiences. This is the way that an individual really knows about what places like.

Fifth, there are event obligations. These can be any live event, like political rallies, concerts, plays, matches, celebrations, film premieres, festivals and so on, which are scheduled to happen at a specific time and place. The co-presence of individual is essential for these obligations but the most important point is adjusting the time for the event to be present.

Travel occurs of course for many reasons and there are many types of travel. However, considering the reasons and the types of travel there is only one satisfying fact that corporeal travel is the mostly required type of mobility. This also shows the significance of co-presence at an obligation with various others like work-mates, colleagues, friends, partner or family. In other words, physical proximity to people, places or events are obtained by the help of travel.

4.7 Elements of Network Capital

The movement of individuals has always been a significant issue within the social sciences as mentioned before. This can be summarised in a concept called the “network capital” (Wellman, 2001). Wellman describes network capital as the form of social capital that makes resources available through interpersonal ties. It is argued that network capital can cause social injustice problems in communities like income, political power or social status. To avoid this from happening, the developments in modern cities are done by considering the essential elements of network capital.

These elements will determine the future of mobile societies in which people make or remake their social networks. There are six elements that network capital is formed. These elements should be considered when designing town or neighbourhoods (Larsen, et al., 2006):

- Movement competences: to walk distances within different environments, to board different means of mobility, to carry or move baggage, to read timetabled information, to access computerised information, to arrange and rearrange connections and meetings, the ability to use mobile phones, text messaging, email, the internet, skype, etc.

- Location-free information and contact points: sites where information and communications can arrive, be stored and retrieved (includes real/electronic diaries, address books, secretary, office, answering service, email, websites, mobile phones).
- Communication devices: to make and remake arrangements especially on the move and in conjunction with others also on the move. Email accounts and mobile phones are of particular significance here.
- Appropriate, safe and secure meeting-places: both en route and at the destination(s), including office, club space, hotel, public spaces, street corner, café, inter-spaces.
- Physical and financial access to an email account, the internet, free phone calls at work, car, road-space, fuel, lifts, aircraft, trains, ships, taxis, buses, trams, minibuses and so on.
- Time/money/resources to manage and coordinate the others: especially when there is system failure, as will intermittently happen.
- Friends and family members at-a-distance that offer their hospitality so that places can be visited cheaply and distant social networks can be maintained through intermittent visit.

5. DESIGNING SOCIO-MOBILE CITIES: TOD

The design concept of urban planning has begun to change between the years of 1980s and 1990s, which is then called as the “New Urbanism” movement. The main idea of this concept was the reconsideration of relationships among form, scale and movement in the modern urban environment.

5.1 Travel By Design

The most significant architects who defended the idea were the Miami team of Andres Duany and Elizabeth Plater-Zyberk (1991, 1992), best known for their work on the community of Seaside, Florida— cast as the fictional town of Sea Harbor in the 1998 film *The Truman Show*— and Calthorpe (1993), who is based in San Francisco and is the coauthor of the "pedestrian pocket" concept. Although these architects had different proposals and projects there was one common idea on establishing the “sense of community” which was a considerable problem for the newly developed cities. They tried to design communities by mixing land use policies and getting people out of their cars. They argued that intensive car usage monopolised the “public space” of the street where “social fabric” was built on (Lynch, 1981).

Before the late 1960s, huge highways and street networks were designed without considering any urban distortion by town planners. But later that period, more planned highways begun to be completed in many cities and the social costs of transportation also started to be taken into consideration, at the same time. Automobile emissions have one of the most effects on air pollution, traffic congestions became a major problem for most cities and many neighbourhoods were quickly destroyed by highway projects. After appearing of all these problems, scholar and policy analyst now ask whether transportation resources are fairly distributed across different segments of society and how transportation access is linked to labour market success. As a result of this approach, social implications of transport projects became the key issue for transportation planning.

The goal of the new urban designs is to build cities in ways that manage the social costs of the automobile while enhancing transportation access for persons who cannot or choose not to travel by car. Air quality improvements, congestion reduction, creating more livable neighbourhoods and more socially connected communities will all be achieved depending on this issues (Boarnet, et al., 2001).

5.2 Livability Benefits of Modern Urban Design

The three main benefits of the modern urban design process are improved air quality, reduced traffic congestion, and more livable and connected communities. These benefits surely have the potential to connect urban design with the transport planning policies. There are also a broad range of benefits of land-use and transport planning which are not related to either air quality or traffic congestions. Focusing on “sense of place” issues, modern urban planners are trying to improve the pedestrian traffic and public interaction which will lead to create lively and diverse neighbourhoods. Besides transportation planning projects, architectural developments and use of public spaces are also a part of the work to create more tied and more social communities. Anyway, the increase in need for community interactions, the use of public transit structures, and the demand for mixed-used commercial development still make transportation one of the most important topics in the new urban design process (Calthorpe, 1993).

The benefits of modern design on air pollution and traffic congestions have a rich policy and there are many theories about them till now. But the theories about livability are more recent and they have to be developed more. Nevertheless, it can be concluded that, community interactions and sense of place benefits should be defined, quantified and considered more to be successfully used in development of modern cities.

5.3 Neighbourhood Quality of Life

Urban designers and governments are focusing on understanding the connection between transportation policies and the general characteristics of neighbourhoods. They are emphasising on creating “livable communities” where a coordinated development of rail transit stations are planned. There are many goals of this model

such as providing transport options to decrease automobile dependency, increasing the variety of architectural work, offering more public and social spaces for civic interaction in the mixed-use neighbourhoods and providing low cost housing connected to alternative modes of transportation.

Neighbourhood quality of life is inherently a local concept, focusing as it does on local involvement, community control, and a "sense of place" at a scale often far smaller than a city. Changing existing built environments and political structures is a hard problem to solve by the designers but many of the quality-of-life initiatives linked to urban design were pioneered in the context of new, master-planned communities. The later goal will be connecting these communities inside the city or the region. That's why transportation strategies are very important today (Boarnet, et al., 2001).

Individual lives take the most important role in the improvements and developments of neighbourhood characteristics and should be considered carefully. Transportation, as being an effective factor in the neighbourhood quality of life, should be evaluated well by reconsideration of travel behaviours of individuals. It is for sure that urban design is directly affected by transportation related benefits but urban design also affects the way people travel.

5.4 Improving Community Life : Transportation

For improving the neighbourhoods and downtowns to reshape them as more livable and sustainable places, a potent tool come on the scene, one that is an important but still largely unrecognised catalyst for improving community life. That tool is public transportation. Transportation facilities and networks are natural focal points for the kinds of activities that help restore a positive sense of community. This expanded role for transportation started with transit and has now spread to traffic planning (Transportation Research Board Executive Committee, 1997).

Livability concern in the communities is the most common problem in daily life for many people. Having difficulty about crossing the streets, feeling threatened by automobile traffic, changing of local structures in their community are some of the factors that directly affect livability negatively. Researches show that people are looking for parks to sit and complaining about the lack of scenic vistas, in their

communities. It is obvious that there is a huge demand for centres which can be considered as nodes where people gather and take activities like shopping, eating, catching a train or bus, visiting the library, or meeting friends. The neighbourhoods with these concerns become isolated and erosion of community life can be seen in those places. The result is more and more people are feeling a loss of community as well as a lack of control over and connection to their changing local environment (Transportation Research Board Executive Committee, 1997).

The proper application of public transportation facilities is one the most effective ways to reduce the livability concern in the communities where the use of car can be reduced. People are realising that the automobile dependency in cities or in the suburbs cause unimproved and decreased “quality of life” conditions. As told before, the roads, which split neighbourhoods from each other, also created barriers between communities and destroyed their chance of physical and social cohesion. At the same time, public transportation options are often viewed as inadequate alternatives. As a result, for improving quality of life standards and reaching the sense of community, many strategies are produced by co-operations of urban designers, urban sociologists and transport planners. The community needs, the structure of cities and the transportation conditions are discussed altogether.

5.5 Strategies for Transportation

Apparently, transportation has one of the most important significances in daily lives of individuals. It is not important for only movements that individuals make from place to place, but also it affects their daily choices of what to do and how they are going to carry out their daily routines. Individuals make decisions about their daily activities like getting to work, school, or appointments, running errands, shopping, socialising and recreational pursuits according to the availability of transportation services. These decisions of daily practises are affected by the location of transportation facilities, design of streets and sidewalks and placements of on-street parking, for sure.

It can be said that, most of the livability concerns of communities is directly related with transportation strategies, as being one of the most significant issues of our lives. For example, when train stations, bus stops, transfer facilities and parking areas are centrally situated, easy to reach, with convenient connections, they make it simple to

get where we're going, without having to drive. The presence of safe-to-cross streets and wider sidewalks give individuals opportunities to walk, bicycle or stroll to their destinations, and at the same time, to look around and take part in all kinds of other activities, like shopping, eating, and entertainment. Thus, transportation strategies must become more integrated to community life and the issue of "sense of place" must be considered accurately to play an effective role in improving livability conditions of social life.

In the case of transit facilities, this idea extends beyond system operations. It includes serving passengers' preferences and needs and focusing on how transit facilities can act as catalysts for regenerating surrounding communities as well as on how they can serve as centres of community life. This translates into transit facilities that are conveniently located in downtowns rather than on the outskirts of town. It also has resulted in stations and transfer centres that look inviting, are easily accessible on foot, provide amenities, and encourage local businesses to supply on-premise services, or to take part in local activities (Transportation Research Board Executive Committee, 1997).

The development of comprehensive transit strategies which connects individuals to their jobs, finds solutions environmental problems and improves accessibility in the modern city is essential to the health and vitality of every urban community. According to the TCRP Report (1997), these strategies fall into three basic categories: design-oriented strategies, service-oriented strategies and "traffic-calming" strategies. Although they can be discussed separately, they very often work together.

5.5.1 Design – Oriented Strategies

Bus, light rail, heavy rail, and subway stops have the potential to be centres of community life. These strategies have a positive impact on the surrounding area like providing comfort and ease of access to the transit individuals. If a variation of activities and uses like retail, community services, and special events can be designed properly at a transit station, then the sense of security will considerably increase and it also provide job opportunities for the local community. Acting as a stimulus for commercial redevelopment and neighbourhood renewal, the stop or station can contribute toward the livability of an entire neighbourhood area.

5.5.2 Service –Oriented Strategies

Service-oriented strategies are essentially transit services that increase mobility within a neighbourhood area. The focus is on services that are currently available to the general public (including these special user groups) to improve livability through better mobility and access. Service-oriented strategies include transit shuttles and connectors, which link residential neighbourhoods with commuter rail and rapid transit stations; circulators and trolleys, which enable shoppers, visitors and office workers to move more freely about the central business district; and neighbourhood-based transportation services. In metropolitan areas served by rail transit or regional bus services, small vans shuttle neighbourhood residents to the nearest stations, providing convenient access to economic, educational, cultural, and recreational opportunities offered by the region.

5.5.3 Traffic – Calming Strategies

The impact of both design- and service-oriented kinds of transit improvements will be reduced, however, unless streets or roads also support community character and needs. Streets and roads can knit communities together and enhance the character and identity of the places where they pass. They can become symbols of pride for a community, have a considerable economic impact on local businesses and help create strong and viable community centres. In other words, improving the livability of streets is not just a pedestrian, vehicle traffic, bicycle, or transit issue—all must be considered together. It is important to balance all of the functions on a street so that they serve users. This balanced approach to the use of streets has come to be known as “traffic calming.”

5.6 General Principles and Role of Transit

If the centres within a city are developed with wide range community activities and if they are supported with transportation facilities then the creation of public spaces, streets and buildings will be more convenient for social life. Because transit brings people to a location, it influences the use and activity of these spaces and, indeed, transit is instrumental in making them work effectively. Transit can be considered as an improvement for community places where the transit facilities support the existing space and provide new activities and services. So it can be said that transit stations or

regions are not only for transportation but also they are a setting for community interaction and a gathering point for people in a community. The main aim in transit cities is to change the state of being just a bust stop, bus terminal or a train station to more than just a place for transportation which can be considered as the nodal gathering points for individuals.

Livable communities are communities where people socialise and come together, which reinforce a sense of common purpose and establish centres for public life. Transit facilities are themselves activity focal points. The transition from bus stop to public space involves linking together activities that already take place or could take place in most communities.

5.7 Transit- Oriented Development

Researchers are broadly studying on the continuing decentralisation of cities. The studies mostly result on economic efficiency of the cities but the environmental and social sustainability of this pattern of urban development remain unresolved issues. The reason for this situation is that, decentralisation of cities directly related with high rates of consumption of non-renewable resources, high levels of spatial segregation and other social costs. To solve the problems of urban decentralisation at the scale of urban region, researchers like Breheny and Rookwood (1993), Calthorpe (1993), Owens (1992) and more recently by Hall and Ward (1998) generated a new promising approach called transit-oriented development. The concept has been or is being at least partially implemented in the Portland area in the USA, in the Swiss cantons of Basel and Zurich, or in the Stockholm area, in Sweden. Current plans for the development of the Thames Gateway in the UK also trying to apply this urbanisation model (Hall and Ward, 1998). Most broadly, for more environmentally sustainable and more sociable cities, which also contribute both economic development and quality of life standards, transit-oriented development can be the focal point of the urban development models. The goal of this project is to bring transit-oriented development up to scale not just in name but in terms of the impact it can have on cities, the environment, communities, and individual lives (Bertolini, 1999).

Shortly, it is said to be that transit-oriented development is the organisation of dense and mixed-use activity nodes which are connected with public transportation

facilities. The supporters of this model believe that the design characteristics of TOD will reduce traffic density and will take effect in improving the air quality. The design characteristics include improved street connectivity, public amenities, a concentration of residences and work places which are situated in proximity to transit station and commercial areas. Also the improved pedestrian environment will increase the possibility of casual interaction of “weak ties” within the neighbourhoods which also will enhance the sense of community.

5.7.1 Structure of Transit-Oriented Development

In 1993, Calthorpe explained the transit-oriented development concept in a detailed manner. He defines a TOD as a centre with a mix of high-density residential, retail, office, public, and open space uses. Retail shops and services are in a commercial core within an easy walk of homes (600 meters or about ten minutes). A transit station is at the centre of the core. Uses in the core are “vertically integrated”—apartments and offices rise above ground-floor stores. Secondary areas for lower intensity uses surround the core to a distance of 1,600 meters. These areas might be locations for single-family housing in a range of sizes, small parks, schools, and light industry. Housing design emphasises “neotraditional” features: front porches, shallow setbacks from the street, and alley access to off-street parking. Streets largely conform to a grid pattern and provide direct walking and biking access to the core. Calthorpe explains that the number and mix of commercial establishments in each TOD would vary depending on the size, location, and overall function of each centre, whether servicing nearby residents or an entire community. Solving parking problems in the nodes of transportation and activities is another structure of TOD where individuals can leave their car and take the public transportation facilities. It is not only a transport and activity system but also a place in which private vehicles are both used and reduced at the same time (Nelson, et al., 2000).

Calthorpe distinguishes two types of TODs, for the communities at urban and neighbourhood scale, depending on their articulation with the transit system and the intensity of their development (see Fig. 5.1). Urban TODs are located at stations on a trunk line of the regional system, which could be light rail, heavy rail, or express bus. Their locations are determined by station spacing, and are typically 0.8 to 1.6 kilometres apart. Urban TODs have high commercial intensities, employment

clusters, and moderate to high residential densities. Neighbourhood TODs are located on a local or feeder bus line within three miles (no more than ten minutes) of a trunk line transit station. They are developed at moderate residential densities and provide for retail, service, entertainment, recreation, and civic uses. Neighbourhood TODs can be closely spaced to form a "corridor" of activity nodes (Url - 9).

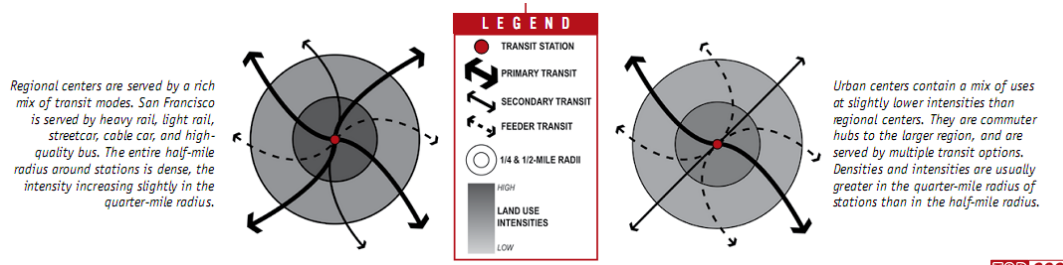


Figure 5.1 : Structure of Transit-Oriented Development, adapted from Url-9

Transit-oriented development is one of the most important issues within the urban design subject as being a particular part of smart growth, new urbanism and location efficient development movements. Other than shifting car trips to transit, it increases accessibility and number of transportation options by mixing and clustering land-use and improving the non-motorised transportation facilities. This allows individuals to make trips by walking or cycling, reduces the need of private vehicle usage with decrease in distances of local trips which will also affect the reduction of vehicle travel and increase the land use impact on transport. As a result the total transportation costs will be reduced and more livable communities will be designed.

5.7.2 Public Transportation Nodes and the City

Today with the metropolitanization of the world, to find possibilities to direct urban development towards public transportation nodes is a serious concern among many urban designers. However there are many fundamental questions that are not answered yet. Such as: do public transportation nodes as such have a specific urban (re)development potential? And what makes the task of (re)developing one node different from that of another?

The distinction between places and nodes is the key point and the mostly challenging part of transit-oriented development. It is obvious that, unlike other forms of development strategies, the transit oriented development strategies should perform a dual function as being a functional node within a regional or metropolitan scale and a good place in its own right. Station areas must provide access to transportation

services and in many cases function as regional trip destinations, but the same areas must also serve as trip origins and, ideally, as coherent neighbourhoods that do more than simply serve the station (Belzer and Autler, 2002).

The idea of the designing nodes in a network leads researchers to think of the space, both as locations or territories and as people. It is obvious that every individual in economic and social networks are on the move temporally and spatially in and out of the nodes in the networks. A node is a spatial and temporal cluster of interactions and common experiences, and it occurs wherever people meet together to work, buy and sell, study, talk, receive health care, cheer for a champion that represents them, or enjoy or fear the natural environment (National Research Council Committee, 2002).

At different scales, an individual can be linked to many different nodes or places such as being in the home, neighbourhood, town or city, metropolitan area, state, country, and anywhere on earth. The home as a node can be considered as micro scaled place where the individual cares about one small place where there are several numbers of daily interactions take place in a small area, otherwise, in macro scaled nodes, like a nation or perhaps even a continent, there is a large space to deal with only a few number of interactions each month in a large territory.

It is hard to say that, individuals interact with each other at the public transportation nodes while they are on the move and passing through them. However, the movement of individuals create the potential of various human interactions. By designing the nodes with the required conditions, the social and economic activities in which physical proximity is needed can be improved in these areas. The idea of places as clusters of nodes is similar to that of Doreen Massey, who stated, “Instead, then, of thinking of places as areas with boundaries around, they can be imagined as articulated moments in networks of social relations and understandings . . . a sense of place . . . includes a consciousness of its links with the wider world . . .” (Massey, 1991). There appears to be, however, an important prerequisite: that the transportation node not be considered separately from its urban surroundings or the place of activities. On this principle is based the node-place model should be discussed.

5.7.3 A Node-Place Model

As told before, the one of the most significant social strategies of transit-oriented development is to bring out the potential for physical interactions of individuals at and around public transportation nodes. Beyond controversy, the primary principle to achieve this strategy is to provide an improved and utilised accessibility options at the areas. In parallel to this principle, accessibility can be defined as not only a feature of transportation node ('how many destinations, within which time and with which ease can be reached from an area?'), but also a place of activities ('how many, and how diverse are the activities that can be performed in an area?'). The third important component of accessibility is the individuals, or the question "by whom?". In this wider connotation an accessible area is a place where many, different people can come, but also a place where many, different people can do many different things: it is an accessible node, but also an accessible place (Bertolini and Dust, 2003).

There are many alternative locations that can be considered in a region, city or town which are all integrated and affected by each other such as nodes, places as public transportation nodes and their surrounding areas. But the most important one of these, as being a connection between the others, are the transportation nodes which belong to a particular transportation network. In the diagram(See Fig. 5.2), the y value corresponds to the node-content of an area, or to the accessibility of the node, and thus to its potential for physical human interaction (following the reasoning: the more people can get there, the more interaction is possible). The x value corresponds to the place-content of an area, or to the intensity and diversity of activities there and thus to the degree of actual realisation of the potential for physical human interaction (according to the idea: the more activities are there, the more interaction is actually happening) (Bertolini, 1999).

In this situation, four different conditions can be obtained. The strength of the node and the place is approximately equal on the diagonal line at the middle. At the high edge of the diagonal line the area is considered as "under stress", where both high amounts of transportation flows and urban activities are taking place. The potential of physical human interaction is very high which makes the area a strong node and a place. But at the same time, the high amount of flows and activities causes great chance of conflicts between multiple options in a limited space. The property

development ideal of maximal intensity of land use and the transport development idea of maximal flexibility for infrastructure adaptation and expansion have to find here a difficult synthesis. At the low edge of the diagonal line, the situation is represented by the “dependent areas”. In this situation there is no concern about the space but there is a very low demand for both transportation facilities from residents, workers and other users of the area and the urban activities from travellers where accessibility lose its significance for the attraction of individuals. There are also two “unbalanced” situations can be identified from the graph. The “unsustained nodes” are at the top left of the diagram where transportation infrastructures are more improved than urban activities. At the bottom right of the diagram there are the “unsustained places”, where urban activities are developed much more than transportation facilities.

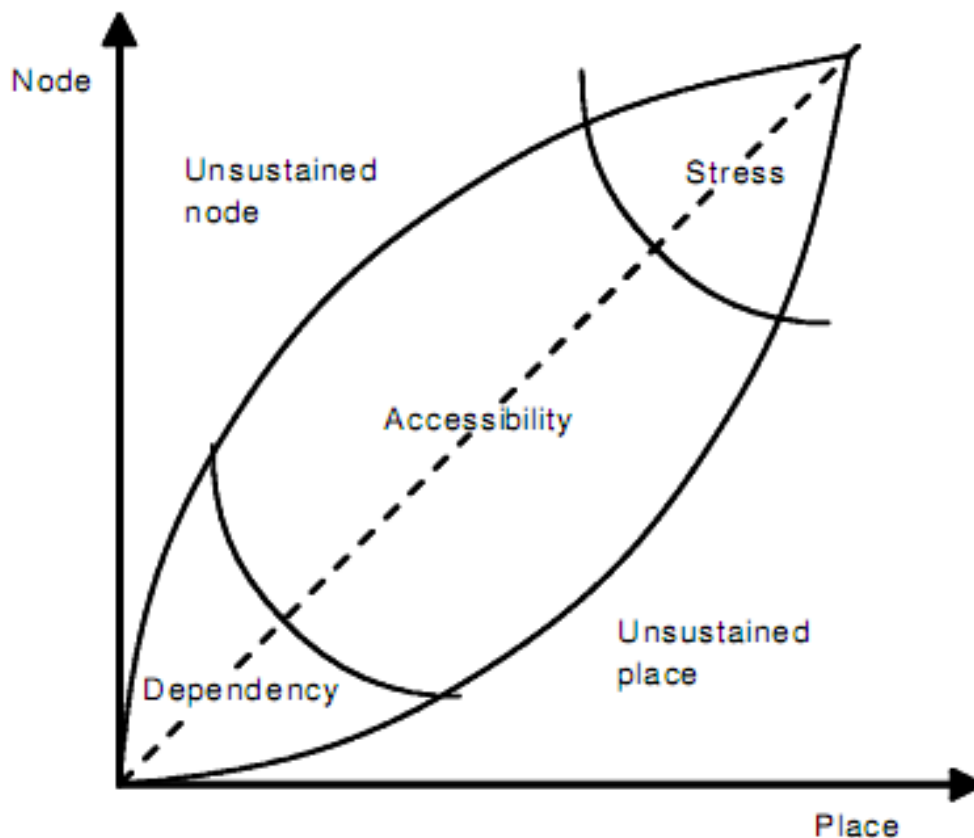


Figure 5.2 : A node-place model, adapted from Bertolini (1999).

This theoretical model has been put in to practise by Zweedijk (1997) and Serlie (1998). They used a node and a place index to identify the dimensions of the concept. The node-index measures the accessibility feature of a node and the amount of the transport facilities is the main criteria. The index combines accessibility by train

(number of directions served, daily frequency of services, amount of stations within 45 minutes of travel), by bus, tram and underground (number of directions, daily frequency), by car (distance from the closest motorway access, parking capacity) and by bicycle (number of free- standing bicycle paths, parking capacity). The place index, on the other hand, shows the amount and variety of urban activities in the area. For this purpose, the area has been defined as the surface included within a 'walkable radius' of 700 metres from the main pedestrian entrance to the public transportation node. The variables are the number of residents in the area, the number of workers per each of four economic clusters (retail/hotel and catering, education/health/culture, administration and services, industry and distribution) and the degree of functional mix (Serlie, 1998).

Surely, there is a significant process to measure the demand and supply mechanisms in the transit cities and the key point is to find the balance between the demand for transportation services from the activity place and the demand for activities from the transportation node. If this "equilibrium" in the situation can be obtained for long term, then the definition of accessibility will be more significant, the reason is that an accessible node (a location that 'can be reached' in a certain degree) needs an equally accessible place (a location where 'something can be done' in a corresponding degree), or the vice versa. When the proportionally organised and concentrated urban activities satisfy the individuals' needs, then the potential for human interaction in the transit station area will be realised.

An 'unsustained node' can either move to the right by strengthening of the place or fall down by weakening of the node. As an example, if the transportation services are reduced in a station then the node becomes weaker. This situation can also be alternatively considered for the unsustainable places, by making investments in the node, the location will move up on the diagram, or disinvestment in the place will cause the location to move to the left. As a result, the combination of these movements will change of location of the station area towards the middle line on the diagram. The important point is to obtain the perfect coordination of weakening or strengthening the station to have more slant movement (Bertolini, 1999).

The contrasting movements across the diagram sketched above do not only have implications for each station area separately, but also for entire systems of areas. The nodes in a city or a region has to be considered as clusters and the location of the

nodes of an urban region on the diagram should be close to each other, being at the top, at the bottom or around the middle line. In many cities, the most important problem is that the growth of the city cannot be distributed to all nodes equally with the difficulty of connecting public transport network to them. Thus, designing alternative station areas with sufficient transport capacity and urban activities is important when developing transit-oriented cities.

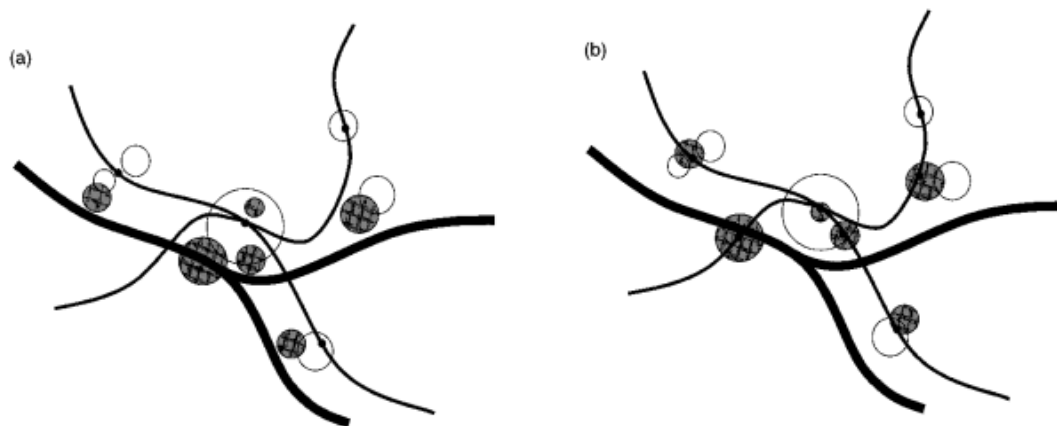


Figure 5.3 : Compact city policy (a): build in or next to the existing city, PublicTransport-Oriented development (b): build with in walking/cycling distance of station. Empty circles are existing urban area, dark circles are future urban areas while lines represent the railway and motorways, adapted from Bertolini (1999).

However these development strategies are not the only solution for designing a transit-oriented city. There are many other issues that should also be considered when developing transit strategies. One of the most important challenges is the hegemony of the private motorised transport which is not only the main source of pollution and energy consumption, but also the major problem for the social life increasing the possibilities of spatial segregation and social inequality patterns (Bertolini, 2003).

As a result, if coordination between urban activities and public transportation can be provided, the accessibility options can be considered more in the city development and the variations of proximity features and compactness can be offered within the city, then it is possible to say that a spatial development pattern with environmentally and socially friendly transportation modes is achieved. And the name of this spatial development is called as the transit-oriented development. Verroen, explains the situation: “Urbanisation as close as possible to or between existing urban areas and

with a good connection to high-quality public transport lead to the most favourable effects on mobility”(Verroen, 1996).

5.7.4 Design Features of Transit Oriented Development

Transit Oriented Development (TOD) refers to residential and commercial centres designed to maximise access by transit and non-motorised transportation, and with other features to encourage transit ridership. A typical TOD has a rail or bus station at its centre, surrounded by relatively high-density development, with progressively lower-density spreading outwards one-quarter to one-half mile, which represents pedestrian scale distances. It includes these design features (Morris, 1996):

- The neighbourhood is designed for cycling and walking, with adequate facilities and attractive street conditions.
- Streets have good connectivity and traffic calming features to control vehicle traffic speeds.
- Mixed-use development that includes shops, schools and other public services, and a variety of housing types and prices, within each neighbourhood.
- Parking management to reduce the amount of land devoted to parking compared with conventional development, and to take advantage of the parking cost savings associated with reduced automobile use.
- Transit stops and stations that are convenient, comfortable and secure, with features such as comfortable waiting areas, vendors selling refreshments and periodicals, washrooms, way-finding and multi-modal navigation tools.

Strategically planned station areas help promote the economic, social, and environmental well-being of a city by:

- Highlighting transportation alternatives and increasing transit ridership
- Taking advantage of non-peak direction transit capacity
- Decreasing auto dependency and exhaust emissions
- Using serviced land efficiently to help create a more compact urban form
- Making better connections between jobs and housing
- Revitalising commercial corridors and older communities
- Providing market housing in a variety of forms and price ranges
- Creating opportunities for affordable housing

- Providing increased neighbourhood and travel options for those not owning cars
- Making identifiable and walkable neighbourhoods
- Creating more street activity and a safer station environment
- Acting as a catalyst for private investment and development
- Increasing assessment values of vacant and underused land

5.7.5 Tools for Effective TOD

Wolf and Symington (2009) lists the following tools for effective Transit Oriented Development:

1. Accommodate Pedestrians. Reflect a pedestrian-orientation in built environments. Every transit trip begins and ends on foot, dictating a pedestrian emphasis.
2. Improve Access from Transit to Jobs and Residences. Locate new development in proximity to transit opportunities to leverage the public's investment in transit capital and operating budgets.
3. Move from Node to Place. Create places for people, not cars. A place-making orientation should take precedence over creating a node for commuters and drivers.
4. Resolve Fiscal Challenges and Barriers. Continue diligent attention to resolution of public and private fiscal barriers. The public sector is handicapped by limited financing mechanisms for needed infrastructure.
5. Depoliticize Transit Service. More fully fund transit operations and focus new service in areas with the greatest demand for transit service.
6. Integrate Views Among Actors. Approach urban centers and TODs in an interdisciplinary fashion. To reach its potential, TOD should benefit from integrated goals, resources and policies.
7. Enhance Leadership and Vision. Continue leadership and articulation of a regional vision, consistent with GMA goals and objectives for development of urban centers and TODs.
8. Enhance Transportation Demand Management (TDM) and Related Tools. Governments should continue to moderate auto use through TDM, balanced parking requirements, emphasis on traffic calming approaches and expanded social-cost pricing mechanisms.

9. Implement Proactive Zoning and Land Use Regulations. Seek graceful growth and quality living environments through proactive planning. Zoning and development regulations should reflect comprehensive planning objectives and integrate with transit agency planning and implementation.
10. Acknowledge Political Opposition to Growth and Density Imposition. Offset resistance to density by corresponding investments in services and amenities. Public outreach should better anticipate “NIMBY” backlash and instill a sense of ownership in projects and plans.

5.7.6 Benefits and Costs of TOD

Transit-oriented development is one of the best concepts to achieve the objectives of transportation demand management (TDM) such as reducing transportation costs, increasing variations of travel options, increasing urban activities within the nodes and creating more sociable neighbourhoods. The increase in the efficiency of transit facilities results in improved performance and cost effectiveness. Another significant goal of TOD is making the neighbourhoods physically and socially desirable places to live which will lead to have livable communities within the city. The researchers proved that, TOD reduces the parking requirements approximately by 20% and households in Transit-Oriented Developments drive 45% less than residents of automobile-dependent neighbourhoods, saving an average of 512 gallons of fuel and \$1,400 in fuel expenses annually (Bailey, 2007).

On the other hand, TOD can provide a catalyst for urban redevelopment, and help create more accessible communities, where people can obtain the things they need with less physical movement (Voith, 1998). These indirect impacts can be significant. Average vehicle ownership, vehicle travel, and vehicle expenditures per household are declined with increasing residential densities, proximity to public transit, and the portion of regional travel by rail transit (Holtzclaw, 1994)

Table 5.1 : Travel Impact Summary

Travel Impact	Rating	Comments
Reduces total traffic.	3	Reduces per capita vehicle travel.
Reduces peak period traffic.	2	“
Shifts peak to off-peak periods.	0	
Shifts automobile travel to alternative modes.	3	Encourages transit and nonmotorized travel.
Improves access, reduces the need for travel.	3	Increases density and land use mix.
Increased ridesharing.	0	
Increased public transit.	3	
Increased cycling.	2	
Increased walking.	3	
Increased Telework.	0	
Reduced freight traffic.	0	
Rating from 3 (very beneficial) to –3 (very harmful). A 0 indicates no impact or mixed impacts.		

Table 5.2 : Rail Station Proximity Impacts on Property Values. This table summarizes how property values are affected by proximity to rail stations in various cities. (Hass-Klau, Crampton and Benjari, 2004)

City	Factor	Difference
Newcastle upon Tyne	House prices	+20%
Greater Manchester	Not stated	+10%
Portland	House prices	+10%
Portland Gresham	Residential rent	>5%
Strasbourg	Residential rent	+7%
Strasbourg	Office rent	+10-15%
Rouen	Rent and houses	+10%
Hannover	Residential rent	+5%
Freiburg	Residential rent	+3%
Freiburg	Office rent	+15-20%
Montpellier	Property values	Positive, no figure given
Orléans	Apartment rents	None-initially negative due to noise
Nantes	Not stated	Small increase
Nantes	Commercial property	Higher values
Saarbrücken	Not stated	None-initially negative due to noise
Bremen	Office rents	+50% in most cases

Table 5.3 : Benefit Summary

Objective	Rating	Comments
Congestion Reduction	2	Reduces total automobile trips, although congestion may increase within the TOD due to high densities.
Road & Parking Savings	2	Reduces automobile use.
Consumer Savings	2	Provides affordable mobility.
Transport Choice	3	Increases access and transport choices.
Road Safety	2	Reduces automobile use. Also provides health benefits.
Environmental Protection	2	Reduces automobile use.
Efficient Land Use	3	Reduces automobile use. Encourages higher-density development.
Community Livability	3	Reduces automobile use and increases local access.
Rating from 3 (very beneficial) to –3 (very harmful). A 0 indicates no impact or mixed impacts.		

5.7.7 Challenges to Transit Oriented Development

While TOD has gained popularity over the last decade, it is still not commonly practiced. For example, New Urban News reported that, for every one dollar spent in TOD, over \$1,400 is invested in conventional suburban development. With so many benefits believed to be associated with TOD, why hasn't it become a more common form of development? A review of the literature and contact with local planning and transit agencies identified several challenges faced (Belzer, et al., 2002).

Financial Risk To Developer: Although TOD is gradually gaining more acceptance in the development community, it is still often hard to convince developers and financiers that TOD can be profitable. Many developers and investors believe that TOD involves higher risks and costs than other types of development. Some conservative lending institutions require the facilities they invest in to have

automobile oriented design features because they believe it will ensure a higher financial return.

High Initial Public Investment Costs: It is widely viewed that TOD can lower infrastructure costs in the long run but the initial TOD infrastructure needs can be considerable and can require extensive public investment. There is no single source of funds for TOD; instead, a number of funding sources are needed. Other municipal infrastructure development often competes with TOD for the same funding sources.

Unsupportive Regulatory Framework: One of the biggest challenges is that the regulatory framework of most municipalities is not supportive of TOD. It is common for cities to have zoning ordinances and land development codes designed for automobile oriented, single-purpose, suburban-scale development. The physical requirements of zoning ordinances often restrict the necessary development density for TOD, through such provisions as maximums on floor area ratio (building floor area divided by lot area), height limitations, minimum front setback of buildings, landscaping requirements, lot coverage maximums, and minimum parking requirements. An incentive to use transit is removed when high minimum parking requirements create conditions where parking is plentiful. Many zoning districts require one stall per 200-250 square feet of commercial space and 1.5-2 stalls per housing unit. Land use restrictions in established suburban communities commonly segregate land use into single use districts, preventing the mix of land uses integral to TOD. In many cases, the segregation of land uses also prohibits offering a full range of housing types, such as apartments and townhouses, in addition to detached single-family units. All of these provisions prevent or discourage TOD and have contributed to the existing land use patterns that are not transit friendly.

Community Resistance: Resistance from the local neighborhood can pose a challenge to the implementation of TOD. Such resistance comes from residents of existing neighborhoods that may be targeted for transit improvements. Residents often have concerns that TOD will take away from the character of the neighborhood, create localized traffic congestion or lower property values. The resistance also comes from new residents, as expressed by choices made to buy homes in the suburbs rather than in TOD. Belzer and Autler's performance criteria described above outline a host of expected benefits that TOD must aspire to provide homebuyers in order to be successful. These include greater mobility and housing

choices, greater household savings, better livability and quality of life. Why, then, aren't homebuyers clamoring to buy property within a TOD? The performance criteria recognize abstract societal benefits to homebuyers collectively (which transportation professionals appreciate), rather than the practical benefits that each individual homebuyer will carefully calculate for himself before he makes a home down payment and takes out a mortgage. Conceptually, a homebuyer in a TOD should experience less traffic congestion and a shorter commute. For example, large numbers of people moving into TOD might reduce regional traffic congestion and improve air quality but might practically amount to some small increment of travel time savings for the individual homebuyer. The individual monetary savings to a suburban homebuyer might be several thousand dollars per year. Are these benefits worth the perceived trade-offs? What may initially be a shorter commute may not stay that way the next time the homebuyer changes jobs. The several thousand dollars may seem like pocket change, considering the anticipation of waiting daily for a bus that may be running late. Can the homebuyer afford to be late for work? While TOD might provide a host of benefits experienced by the community as a whole, each person will make the homebuying decision based upon the specific benefits he or she will individually attain. The homebuyer's personal circumstances may reflect much more complicated considerations that are not captured by the generalized benefits of "reduced traffic congestion" and "increased mobility choices."

The lack of transportation choice is truly a problem for lower-income persons. This group has the most to gain individually from transit oriented development, especially if it results in more effective transit service. For middle class persons with the affluence to own cars and afford suburban living, a desire for mobility choices may be less valued, considering that the transportation system serves single-occupant vehicle traffic quite well. Private auto travel allows access to the vast assortment of retail services (including goods, services, restaurants, and recreation) available, moving from one destination to another using any route at any time desired. This is not so with transit. The customer must conform shopping plans to what the transit route and schedule allows. If someone already has purchased a car, he or she will be less likely to consider a second mode unless private auto travel cannot reach the desired destination. Middle class persons who have bought a home in suburbia have

already chosen their preferred transportation mode. Suburbanites generally do not perceive lack of transportation options as a problem.

Suburbia is where many of today's homebuyers grew up. Homebuyers seek the separateness and space that low density development affords, where neighbors are close by but not "too close." For TOD to compete with suburbanization, it must appeal to the individual homebuyer. Yet living in a TOD is nothing less than a major change of lifestyle.

6. SAMPLE PRACTICE : MELBOURNE, AUSTRALIA

Planners and activists who support transit orientated development are enthusiastic promoters because of its social and environmental benefits. Yet changes to people's hometowns create great passions and can face substantial opposition. If the range of views of the TOD users outlined from strongly supportive to determinedly against, that people have about transit orientated development; and explore some of the underlying reasons as to why people hold these views. These reasons range from sheer dislike of change, through fear of enormous developments surrounded by traffic chaos, to cultural attachment to wide open spaces and wide open roads. The studies will conclude by proposing some ways forward to build community support for TOD.

6.1 Transit Oriented Development in Melbourne, Australia

The term TOD in this research have been broadly used before , but if the meaning has to be stated again with an example of implemented system it can be defined as, higher density development which is associated with public transport nodes.

Transit oriented development is at the core of the plan for the development of metropolitan Melbourne, Melbourne 2030. This plans for a more compact city, better management of metropolitan growth and better transport links. The Victorian government states that Melbourne 2030 will deliver high quality activity centres that are easy to reach and serve the whole community; more community services in and around shopping centres, and more new housing close to services and public transport. 'New fringe development will be confined to specified growth areas that are well-served by public transport and where community services are carefully planned and staged. These activity centres are identified as neighbourhood activity centres, major activity centres and principle activity centres in ascending order. There are 25 Principal Activity Centres (see Fig 6.1). Nine of the principal activity centres are identified as transit cities (Rice, 2005).

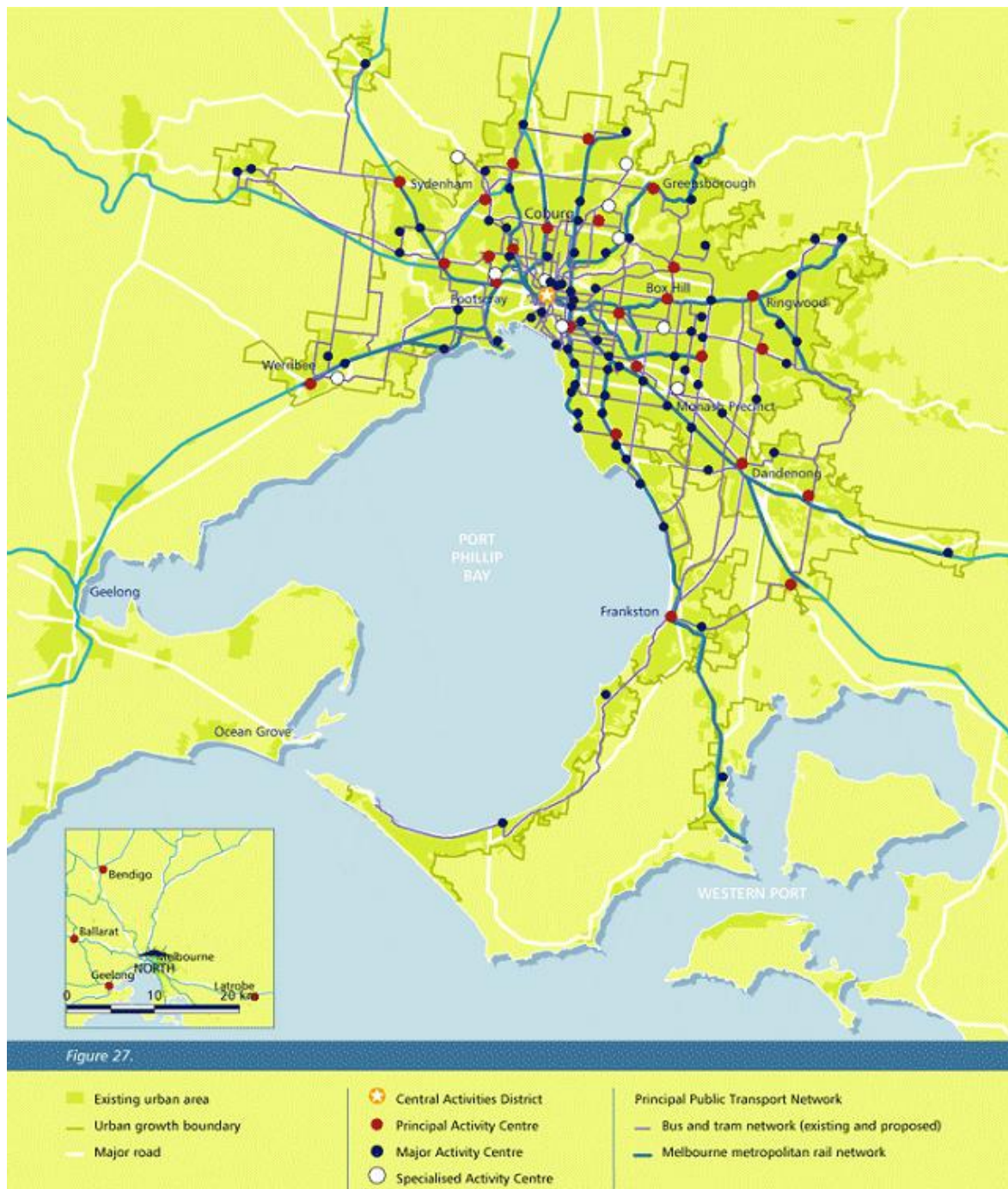


Figure 6.1 : Principal Activity Centres in Melbourne, Australia, adapted from Rice (2005).

The state government's policy commitments for transit orientated development include;

- \$10 million over the next four years to facilitate developments under the Transit Cities program at Dandenong, Frankston, Ringwood, Sydenham and Footscray.
- The possible upgrading of transport services to big stand-alone centres including better bus interchanges, new stations or extending tram services

- identifying opportunities for redevelopment of stations, use of airspace over rail tracks and more productive use of associated railway land.
- Focusing a substantial proportion of development at activity centres that have good access to the Principal Public Transport Network to help to reduce car trips and decrease the share of trips that need to be made by car.

6.1.1 Example One: Footscray, Melbourne- Positive Approach

Footscray is 6km west of Melbourne. It was originally closely settled and working class, with a strong sense of community and belonging. People looked after each other when times were tough which they often were. It has been home to wave after wave of migrants from the Greeks, Italians, Slavic communities of post World War 2, Vietnamese refugees and migrants through the '70's and '80's and ongoing, to refugees and settlers from Ethiopia, Eritrea and Sudan over the last decade. Today almost half the population speak a language other than English at home. There are relatively high levels of public housing.



Figure 6.2 : Transit Connection Map of Melbourne, adapted from Rice (2005)

Footscray was a centre of manufacturing and heavy and some noxious industries, and as such has never been a desirable address. Although only 6km from the city it missed out on the gentrification of the 70's and 80's of the rest of inner city Melbourne largely because it is separated from the city by the Port, railway yards and port related transport industry. Residents have also struggled with a range of social problems including illicit drug use and drug dealing, gambling addiction and mental illness.

In general the people that choose to live in Footscray are not people that value what is desirable and smart – they are people that value the community, the diversity, the good value of life here, the public transport, and accessibility. They know they are living in an inner city 'edgy' environment, and know that life around them will often be interesting (Rice, 2005).



Figure 6.3 : a tram station at Footscray, connection to inner city.

It is now experiencing significant gentrification, as real estate prices reflect the desirability of living close to the city. However people who aspire to live somewhere 'nice' still largely prefer to live elsewhere.

Footscray is at the junction of three rail lines and has a tram line and 13 bus routes servicing it – a very rich public transport infrastructure. Public transport use is relatively high compared to Melbourne averages and 25% of households not owning a car.



Figure 6.4 : Main shopping district and the bus connections at Footscray.

The Footscray shopping centre is large, spread beyond a core of 4 streets. Its size reflects its past as the regional shopping centre for the western suburbs of Melbourne – prior to car based shopping malls – particularly Highpoint Shopping Centre.

Highpoint is the second largest shopping mall in Melbourne – It was established in the mid '70's, it's huge and still growing, has thousands of car parks surrounding it, and is 4km from Footscray. It was only in the early '90's that the value of retail trade from Highpoint surpassed that of Footscray. It has continued to grow and Footscray has continued to decline despite its multicultural vibrancy with African businesses joining a thriving Asian shopping hub.

So as a site for Transit orientated development, Footscray pretty much has everything going for it. It has:

Belief: Significant numbers of people who believe that you can reduce car use and still maintain a high quality of life. Footscray already has a rich public transport infrastructure and substantial numbers of people who don't rely on cars, so there is a significant proportion of the population who know that reduced reliance on cars is possible. The environment in which they live is already closely settled, and so the increasing density of TOD is also more likely to be acceptable – it isn't such a big change. People want it to be well designed, high quality and environmentally sustainable however.

Environment and society: Significant number so people who are concerned about the quality of life of others, and significant numbers of people in the community who are more disadvantaged and don't have access to private cars

Community: There is already a lively diverse community and people value that. People are largely not fearful of new different people coming in and disturbing an ordered way of life • **Economic development:** Footscray is struggling economically. It needs an injection of resources. It has the land available – as the shopping centre is too big for its current use and so there is a lot of opportunity for residential development



Figure 6.5 : A shopping street view at Footscray.

Progress and newness: This is also acceptable, but moderated somewhat. Footscray has significant heritage that there is strong commitment to maintain. However there are also large areas of rundown and poor quality building stock that no-one is going to miss, and large areas of railway owned land around the station that is currently used for vast expanses of car parking. Critically there is acceptance of change – most people think that the physical environment could well benefit from an injection of new development



Figure 6.6 : Transit train station: connection to neighbourhoods and inner city.

There have been two 5 storey apartment building developments in Footscray which have gone ahead with no fuss. A ten storey apartment tower is under construction – there was more concern about its height, largely because of its impact on neighbouring residential properties. Three more developments each of five to eight stories are currently at pre-construction stage, and a fourth is planned to begin construction mid next year. Over \$100 million worth of development has been given planning approval by Council over the last 5 years. Currently Council has a study out for public comment which will result in a heights policy across the business district – based on what we already know about people’s attitudes to heights and increasing density there is general acceptance that as long as development respect the heritage features of the centre, maintains the human scale of the streetscape, and doesn’t

impact on neighbouring low rise residential properties then most people don't have problems with it. (Rice, Cr Janet.2005)

What is desperately needed is for the state government to put some investment behind its policies, particularly in the station precinct. It is all done with the strategic planning. All needed is some government commitment to kick-start it.

As part of this in particular there is a strong demand to the state government to improve the public transport infrastructure – the run down station environments, sub-standard footbridges, building the bus and tram interchanges at the stations, improvements of bus signage and services – particularly on weekends and at night, and to improve rail service to nearby areas. It's all very well having a transit city at Footscray but if you want people who live two stations away in Yarraville to catch the train to Footscray then you need to provide a better service than every 20 minutes during peak and every 40 minutes out of peak.

6.1.2 Example Two: Camberwell- Negative Approach

A classic keep the status quo. The people of Camberwell like things to stay the same. They like their leafy upper middle class neighbourhood, they like their shopping centre at Camberwell Junction, they like their big blocks of land with their nice houses on them surrounded by gardens. They have fought strongly, ardently, professionally, through the courts where necessary, with money and influential people behind them over many years to ward off change.

Yes there were problems with lack of consultation initially. Yes the first development proposed possibly wasn't the best design and probably wasn't as sympathetic as it could have been to the heritage listed station next door.

Traffic impacts may be an issue. Camberwell residents like their cars and their 4WD's. However Camberwell is identified as a transit city for good reason however, with trains more frequently every 5 minutes in peak and every 15 minutes out of peak, a tram service with a 10 minute frequency and a cross-suburban bus service – (but that's a classic Melbourne bus service – it runs every half hour during peak, every hour out of peak, finishes running at 6pm and they wonder why only the unemployed and students catch it) (Rice, 2005).

But the site is a car park. Who could object to a well designed quality transit oriented development going up here? According to articles in The Age over the last year: Barry Humphries said "I like Melbourne the way it is. Why spoil it?" "Camberwell is my spiritual resting place".

Geoffrey Rush, who lives near the station, dubbed the likely impact of VicTrack's development proposal "Godzilla's footprint", with all the character and charm of mid-1960s "box" architecture. Rush feels that 2030, is "a little driven by the crassness of developers' ideas" and "will fundamentally alter the tone and character of Melbourne in a way that I don't believe people are quite aware of". He fears the death of "that hidden, quiet, beautiful city aesthetic". He stated that high-rise living was not "Melbourne's tone" and "not very Camberwell".

Mary Drost, the vice-president of the Boroondara Residents' Action Group, said the site was not suitable for residential development. She said a five-storey building would block city views, dominate the historic station and result in a loss of open space. "The huge thing would absolutely swamp the poor little station down there," Ms Drost said. "We are so opposed to it, it's just unbelievable."

Mayor Jack Wegman, a member of the working group, said "I think it would detract from the heritage qualities of the area,"

Bev and Ray Leggoe, who have lived in Camberwell all their lives, said they joined the protest because they did not want their streets to become congested. "But it's the ambience of the area, that's the main thing," Mrs Leggoe said.

6.2 Who likes Transit Oriented Development and Why?

There is a range of support that TOD gets, from a range of different people. In summary TOD is supported because it:

- Reduces reliance on cars by facilitating development that is well served by public transport. You don't need a car or a second car to live there and access services. Reducing reliance on cars is supported for the whole range of environmental, social and economic benefits this brings.
- Improves the viability of public transport and so enables a better public transport service to be provided

- Enables a more compact city. TOD provides housing and development opportunities without adding to city sprawl. This has many benefits including more efficient provision of other infrastructure such as power and water, and less pressure on natural environments and farmland for residential and industrial development
- Enables more affordable housing. A basic apartment in an activity centre generally takes up less land and can be provide more economically than an outer suburban green fields development
- Creates more activity and vibrancy and community life in a centre by having more people living closer together, who are walking, cycling, catching public transport and generally interacting with each other much more than if they lived further apart in isolated houses to which they travel by car.
- Improves the economic viability of businesses in the centre by creating a bigger market with easy access for their products
- Is seen as a key means of revitalising older centres that have struggled to compete with car based shopping malls
- Is perceived as progress
- Is desired because it brings new ‘showcase’ development to replace areas which are perceived as being old and rundown
- Allows for more intensive development that would otherwise be considered as inappropriate. This is general will increase the property value.

The people who support TOD for these reasons are motivated by a range of views. These motivations can be summarised as being of four types:

- Belief in the value of public transport: Fundamentally people who support TOD believe that it is not necessary for cities and personal mobility to be dominated by cars. They believe that it is possible to plan and create neighbourhoods and transport systems which result in reduced car use, and that TOD will do this.
- Environment and society: the big picture, concern about sustainable lifestyles, the future and others. Concerned about social justice and equity issues –the young, elderly, poor and disabled are better able to access services where services are clustered together and served by efficient public transport. Desire to live in environments that are not dominated by cars and which have destinations

within walking and cycling distance. Wanting to protect the environment and reduce resource use.

- Community: the desire to be part of a diverse lively, interactive community. Happy to interact with a wide cross section of community – embracing diversity, including multicultural and socio-economic. Not threatened by people different to themselves. Happy to live in places that have a rawer edges to them than the often homogenous car based residential and commercial developments
- economic development
- progress and newness: with a belief that progress or economic development is good in itself. To support TOD you also need to be convinced that the places in question either have adequate levels of public transport or you trust that public transport will be improved to make it competitive with the car. These motivations can come together in some communities to create very strong levels of support for TOD.

6.3 Who doesn't like Transit Oriented Development and Why?

You may have given more thought to those who have expressed their concerns about transit oriented development! Like those who support it their motivations are many, depending upon circumstance and locality specific issues. The concerns people have about TOD include:

- Dislike of change – the closer to home, the greater the ownership that people have, and the stronger the passion. Living in an apartment isn't what they aspire to – TOD is palpably different – either apartments are flats lived in by lesser people, poor people, students and the like or at the other extreme are million dollar penthouses which will attract hordes of cashed up yuppies
- Loss of place and heritage and neighbourhood character – changes to things they like, value, find comforting, a connection with the past. Fear of an aesthetic they like and have grown used to being replaced with one they find challenging and alien
- Concern about the development of natural environments, or in the case of 'brownfields' sites places that could be rehabilitated to have natural, recreational or open space value.
- Fear of impact on their amenity, their lives, their neighbours

- scepticism that TOD will bring anything positive
- Fear of traffic and parking chaos – either because they don't believe that the public transport improvements will happen or because even if they do they don't believe people will use the service – they are likely to be implicitly multiplying their own car use and desire for car space by thousands of new residents.
- Lack of understanding of TOD
- Low value and lack of importance placed on the improvements and benefits that go along with TOD.
- Cynicism that TOD is just about developers making a lot of money at their community's expense
- Psychological attachment to low density – having a big house on a big block in big space and Psychological and cultural attachment to cars, and a belief that mobility equals a car.
- This can go along with anger if their expectations of what they have bought into aren't being met. If people think they have bought into their aspiration of low density, outer suburban big house on big block with open space and wide open roads then TOD doesn't fit – it's an unwanted intrusion!
- There is an allied lack of understanding that not everyone feels the same way, and a lack of belief that people can live lives where cars are not central to ones identity and being
- Cynicism that the public transport improvements needed to support TOD will actually happen

In summary they are people who are likely to value one or more of:

Keeping the status quo of place and people. They like where they live and don't want to see change. They appreciate the heritage and history of the existing built environment and feel change will threaten that.

Protecting their home from challenging impacts, including new different people, or living closer together than is desirable, and not being too close to their neighbours or interacting with them any more than desired. More likely to be comfortable with living near other people who are like them. A more inward looking, self contained way of life, rather than one with strong community interactions.

Protecting spaces – open spaces, natural environments and low density spaces

Car culture, particularly the individual freedom travelling by car and allied scepticism of the value of public transport.

Or they may see TOD as a Trojan horse –They may well be people who would otherwise value TOD and like living in such urban environments, but they don't believe that that's what they are going to get. They don't believe the improvements in public transport services are going to be sufficient to get people to substantially reduce their car use and so TOD is just an excuse for higher density development that otherwise wouldn't have been permitted to occur.

You don't usually need all or most of these to create quite an aversion to TOD – usually one on its own is quite sufficient.

6.4 Building Community Support for TOD

So what can be done to increase community support for TOD? How do we reinforce the values and reasons and support for TOD and overcome the opposition? We can propose 4 main ways:

1. Make sure it really is transit orientated development. In most cases, that means there is a huge need for real improvements in public transport as part of the development . Yes these are expensive in the short term and in the narrow economic sense, but incredibly good value when looked at from a perspective that includes the social, health and environmental benefits. The worst outcome, and what inhabitants fear the most is where we get the development but the public transport service is still pathetic
2. Overcome the fears of traffic chaos and parking by challenging the car culture. That means not just good public transport but actively discriminating against cars in TOD zones. There are many examples around the world where good public transport is provided but the car culture remains. If there's abundant free parking, roads designed to be 'efficient' for cars and a wider culture of executives driving their company cars each day, then the traffic and parking chaos associated with the development are likely to build to be a reality
3. Choose your site well. Start with the sites where there is a good chance of success. Once you've got some successes under your belt then it's much easier to sell the concept to other places.

4. Excellent community involvement

- Best practice: And that means quite a lot more than having a draft master plan out for public comment for a month. There are some excellent practitioners in community involvement around the country – use their expertise – don't do it yourself on the cheap – unless you have that expertise. It will take time and will cost money – but not much money compared to the associated with the development, and not much money compared to what you may spend or forego in fighting against the community over many years. For example in Footscray it was an \$80 million plan, what's a couple of hundred thousand over a couple of years to have a supportive community working with you, not against you, and most likely a better development given you have taken their wisdom into account.
- Long lead time to give people time to get used to the idea, and to allow thorough extensive community involvement in the final design.
- excellent information and education about why transit oriented development is a good thing. This community education needs to be sophisticated, in the knowledge of the cultural change and behaviour change that is being asked for. Just producing a brochure and sending it out to the 'usual suspects' isn't going to be enough.
- Be upfront about what is being proposed which means don't give the impression that you are hiding anything. It is for sure that, in that case the planners will strike a bugger of a problem when the residents find out.
- Negotiate with the community, you may end up with a development that is more modest than advocates would want, but if it's supported by most of the community that's a pretty good place to be.
- Don't push things through regardless – it may work in the immediate circumstances but builds resentment and cynicism towards TOD in the future.
- Be genuine in your community engagement. It is people's homes and lives that are being planned. Respect their views – everyone is entitled to their views and shouldn't have them ridden roughshod over. Resist the temptation to label all people who don't agree as troublemakers who are the opposition and need to be beaten – rather engage, understand, discuss, negotiate. Not everyone is likely to

agree in the end, but if you have the majority in support you've done well, and built a good platform for further development in the future.

6.5 Analysis and discussions

The transportation nodes, designed in the neighbourhoods and the cities, are the most important function of the transit-oriented development as told before. The link between social networks, mobility and urban design can be achieved in the nodal points of a city. The transportation nodes are the mostly used social spaces by the mobile individuals where people gather, have fun, shop, meet each other and so on. Shortly, the individuals somehow become more social in these points.

When designing the nodes in the city, to obtain the most effective urban mobility for individuals, they should be well-connected to each other. Every individual pass through these nodes for any reason and in every scale (from neighbourhood to region) different types of social networking take place. As mentioned earlier, 3 types of social networks could be of consideration in this point. In the neighbourhood scale, there can mostly be the line or chain networks formed. Because as being a small scale, individuals will meet the people they already know. The flow of information will only occur within the same line where people only meet each other from their neighbourhoods. In contrast to this situation as the scale gets larger, the possibility of meeting people from outside will increase. Star or all-channel networks can be formed by meeting friends at-a distance. The both sides have to be mobile to achieve these kinds of networks, coming from their own node to a central node where they meet. Thus, the urban mobility should be improved and connected to every node. Creating only one node would not affect the city at all. It will only create the sense of community in one neighbourhood which is not enough for having a transit city. The important point is to spread out the sense of community into the city or even the country to have more mobile and socialized life.

Another important point for social networks with the scale of the development of nodes in transit-oriented development is the possibility to meet weak and strong ties. The weak-ties can be considered as continuous random interactions of individuals. The weak-tie can be a neighbour, the salesman in the market or anybody that the individual casually meet every day while he or she is on the move. Individuals need to have weak-ties in their lives to get the information that they do not obtain from

their friends, as mentioned before. The possibility of meeting these people in neighbourhood scale is more than that of meeting them in a larger scale. The reason for this is that, in transit oriented-development, the neighbourhoods are designed to lead individuals to transportation nodes without the use of car. While people are on the move towards the nodes, with the improved neighbourhood quality, the increased mixed use options and the developed transportation nodes the individuals will surely meet more casual encounters. On the other hand, when we are talking about the larger scales or central city nodes, it is impossible to have slight acquaintanceship to others for being a weak-tie. Individuals only interact with the people already know who can be considered as the strong ties. They can be friends, family member or work-mates but they are not casual encounters for the individuals.

A number of studies provide best practices recommendations for TOD development and design, including Dittmar and Ohland (2004), FTA (2008), Reconnecting America (2009), NYSMPO (2009), and Wolf and Symington (2009).

Best practices should include:

- Creating a vision for an attractive community.
- Integrating transit and land use planning.
- Providing high quality pedestrian and cycling facilities around transit stations, based on Universal Design.
- Managing Parking to minimize the amount of land devoted to vehicle parking around stations.
- Encouraging Carsharing to reduce the need to own automobiles.
- Creating compact, mixed-used communities. Transit-Oriented Development generally requires at least 6 dwelling units or 25 employees per acre, and more if possible.
- Creating complete communities, with shops, schools and other services within convenient walking distances within the TOD neighborhoods.
- Structuring property taxes, development fees and utility rates to reflect the lower public service costs of clustered, infill development.
- Understanding and expanding the market for Transit Oriented Development. Identifying the types of households and businesses that are most amenable to TODs. Educate public officials, planners, developers, residents and business

managers concerning the potential benefits of locating in a Transit Oriented Development.

- Encouraging commercial development around transit stations (Kolko, 2011)
- Finally when we compare the communities in the process of the modernisation of the cities they have an obvious transition with the decentralisation of the world. Formerly, the communities were considered only in the neighbourhood units where people gather together and socialise, but now with the improved transportation infrastructures they are spread out inside the cities, countries and regions. Although this situation seems like a negative effect, the transportation developments make communities come together at the same time. The positive way of transit oriented development is that, it combines both the importance of the communities in the neighbourhood unit and the importance of communities that are spread out. When the quality of life increases in the neighbourhood unit, the individuals have more opportunity to be socialised and the sense of community is preserved. And the improvements in the transportation infrastructures the spread out communities like fan clubs, organisations, supporters and so on can travel towards the events or places and gather together there to get socialised.

7. CONCLUSIONS

It is for sure that, the borders between the cities, regions or countries are getting disappear in the modern world. The families, friends or work-mates mostly are no longer living in the same neighbourhood, community or even the city. The socially connected individuals are scattered all over the world and they all live at-a distance to each other. This situation also affected the linkages between the social networks in a negative way by weakening the bonds and making the distance of the links longer between the individuals. However, because of the structure of the social networks, even the distance between the individuals getting higher, the demand for coming together never decreases. In fact, the numbers and arguments in the previous chapters showed that the importance of face-to-face interactions and the proximity is on the rise. And individuals are still looking for the options to meet others to be more social.

Although many researchers are arguing on the negative effects of urban mobility towards the social networks, my opinion about the issue is the just opposite. The improvements on the urban mobility structures and urban mobility nodes are one of the most significant methods to bring social networks together and to make the linkages between them stronger. Because of the need for being social, the individuals need to travel somehow to meet their families, friends or work-mates and urban mobility structures like the mass transit options should take them from the origin to a destination that they wanted to be in. On the other hand; the significance of urban nodes is about the demand of societal space in the city or neighbourhood scale. Because as the urban nodes improved, the opportunity to meet other individuals, who can also be called as “weak ties”, and socialising more will increase.

That is the reason why mobilities are broadly considered in the design of the modern urban life. The design criteria of cities change in every moment and it is the time to consider cities with more social life. The facilities and the quality in a network of mobilities should be increased in the city as the need for co-presence increase, so that the individuals can find much more opportunities for meeting each other and socialising somehow.

When we view from this aspect, we can say that transportation carries individuals from one point to another for socialising and transportation nodes offers one of the best societal space within the cities for the individuals who are on the move. This is how the dispersed social networks will again be able to come together in small or large scales. When we combine these two features of urban mobility we find a solution for the modern city planning which is called the transit-oriented development. If transit cities are designed with the consideration of correct implementation of transportation facilities and transportation nodes; then with the result of this situation the social bonds in the networks will be closer to each other again.

Talking about the social ties in a network and in a city or a region, we can consider that the most significant principle of transit cities is the emphasis on the design of the urban nodes. Because with continuous movement of individuals in the neighbourhood, city or a region; they should be arriving to the transportation nodes for sure. Thus, the improvements in the transportation facilities and the urban activities in the nodes will let the individuals to spend more time in these places, and to socialise more at the same time. To do so, as the node-place graph showed us that, the important point is to protect the equilibrium in these nodes. The facilities of transportation and the variety of activities should be considered together and it should not be too much to cause conflicts or too little to be not preferred by the individuals. The equilibrium between the transport facilities and the number of urban activities will increase the accessibility option of the node. The more accessible the node is, the more the individuals will prefer to be there.

The improvements in the transportation nodes and their surrounding areas will create more livable neighbourhoods around the nodes. Because the increase in the number of walkable streets and the knowing of easy transportation options at the nodes will reduce the private car usage and individuals will choose to walk towards the nodes to cover the distance they want to move. Of course this situation will affect the probability of meeting casual encounters positively. This will increase the possibility to know more weak ties than before. And as a result individuals feel like they are a part of the community where they live. And this will reduce the individuals' feelings of being lost at-a distance from their friends or families.

Finally, we can say that, with the modernisation of cities with the improved transport and telecommunication technologies, the mostly needed urban activity which is the interactions of individuals, became increasingly independent of physical proximity. The social and economic activities started to take place in distant places to high density areas which also lead cities to be decentralised and expand their borders. The decentralisation of homes towards suburban locations or the growing of virtual networks on internet, leaded urban designers to create more dense urban neighbourhoods and socially active nodes in those places where live human contact can take place. The design of new active transportation nodes in the transit cities is a product of these spatial decentralisation and spatial separation of social networks. Today, the present urban system with the improved transportation technologies resulted an increase in the number of people on the move, passing through transportation nodes, because in the present day individuals live in one place, working in a second and spent their free time in a third location. Also, the need for face-to-face interactions in the business life or in the family life should not be ignored as the contacts of persons generally based in locations at-a distance in which individuals surely needs transportation options. Thus, every individual needs transportation facilities in a multiple range of spatial scales from global stations to the stations in neighbourhoods. As a result of this situation, the public transportation nodes and its surroundings areas become one of the very few social spaces in the modern city where the individuals of scattered communities can still meet physically.

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