

TOWARDS AN APPROACH TO HUMANIZE THE STREET ENVIRONMENT: RECONCILING PEDESTRIAN-VEHICLE RELATIONSHIP

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Abstract

This study focuses attention on new approaches that had emerged seeking to create an equitable balance of street space, and it is not possible without a need to compromise between the street movement function as well its place function, the type of compromise varies widely throughout different cities; approaches as 20 mph zones, 30 km/h zones, traffic signal priority, complete streets and transit friendly streets focus on street techniques, whereas 'woonerf', 'home zones', and 'shared space' focus on street environment. The study stands in the belief that it is matter of how the street physical environment affects the way people use it than what it looks like and in doing so, it reviews previous experiences that made targeted efforts to get the most out of their streets, both as transportation links for all modes of commuters and as vital places for people to enjoy, in addition to it addresses how to make streets work with all its components, how to get use of the right of way trying to achieve different users' needs with having limited constraints; ensuring that everyone can get from A to B easily besides enjoying using the street and concludes with identifying how the change in the street physical environment affect the way people use and perceive the street and ends up with specifying design guidelines that translate the relation between the physical attributes of particular public realm (street design) and the range of behaviors that this street environment affords (users' behavior) and its integration as an incentive for the promotion and integration of non-motorized modes; specifying a street design approach that reconcile people, place and traffic, and contribute in creating safe, attractive and enjoyable streets.

1. Introduction

Nowadays, restoring the functional manifold of the street becomes a trend, basing on the belief that the street's function can't be limited just for the movement of vehicles and parking spaces.

The urban street of the 21st century will be a street for all users accommodating pedestrians, cyclists, and transit riders alike, balancing between the need for mobility and the need for quality public space. Different approaches had appeared that call for moving away from segregating vehicles from public space and move towards sharing streets that take into consideration the movement and place street functions alike. Consequently, urban design and traffic planning face a complex challenge in achieving an equitable balance between the interaction between different forms of traffic and the social life of the city, so strengthening the professional background for the selection of solutions has become a need especially the design of measures necessary in different traffic situations.

2. Humanizing the street environment

Streets play an important, if not the primary, role in shaping the quality and character of urban living, they contribute to the sociability and sense of place and make the city so distinctive, however this street seniority as a place had been lost and the function of the street has changed dramatically with the introduction of cars, and the prevalence of planning ideals of modernism to the present day since World War II when Le Corbusier, one of the modernist movement's founders, renounced the street as an inadequate transportation artery by saying: *"Our streets no longer work Streets are an obsolete notion. There ought not to be such a thing as a street; we have to create something that will replace them"*.

This simplified mono-functional view of the street had been criticized by Lillebye (2007) saying that it was a "limited" conception of the notion "street", as Le Corbusier regarded it purely as a technological device with the sole purpose of carrying people from the various residential and commercial places that constituted the functionalistic town. Accordingly, only two types of streets prevailed, traffic streets and pedestrian streets, a street was either designed for traffic (ex. The motorway), or it is designed for social activities, and the design of street became dominated by two main ideas:

1. The first was designing streets primarily for traffic movement, rather than as places; in which their most important role was to facilitate vehicle journeys.

2. The second was many new built-up areas, road systems were established in accordance with the idea of segregation car traffic and pedestrian/bicycle traffic into completely separate traffic systems, Figure 1.

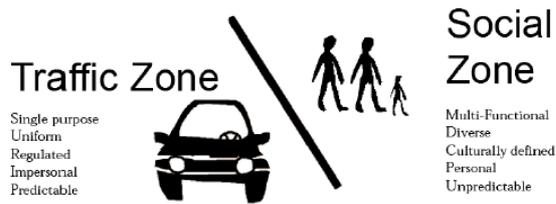


Figure 1: Show the Idea of Traffic System Segregation, according to (Hamilton-Baillie, 2000)

The combination of these two ideas led to the widespread introduction of ring roads that cut through the historic street patterns in our towns; pedestrian underpasses; pedestrianized streets in town centers; and metal barriers along the edges of pavements to prevent people crossing roads when and where they want to, Figure 2. Besides, designing streets primarily for traffic movement has reduced the richness and variety of public space and its uses, Jan Gehl (2010) had commented on this degradation in the quality of the city saying: *“What was very important has been pushed to the side for long periods of time by the introduction of the automobile. People are starting to stand up and recognize that we have lost something which was always very important, and now we have time to recover from the first wave of automobile pressure, and can start to rethink a better balance where important things are not lost.”*

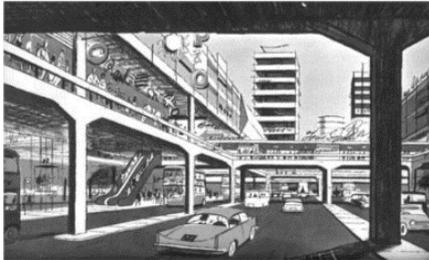


Figure 2: Illustrate the Concept of Segregation, according to (the Buchanan Report, 1963)

As the shortcomings of this approach have become apparent a new movement to look at streets within the broader context of a community have appeared seek to extend the social zone and limit the traffic zone impact. Two ideas had govern the new movement that are:

1. Designing Streets for people: in which to shift our streets away from an auto-centric approach to one that treats streets as public places, and prioritizes them for walking, biking and transit.
2. A balanced, multiple traffic use of street space, particularly in small cities and urban areas, moving “from separation to integration”.

This movement was led by many architects and sociologists who called for decisive shift in the way cities were built and took the effort to rehabilitate the street as a true social arena, among the contributors Jane Jacobs, Gordon Cullen, Kevin Lynch and Donald Appleyard, in addition to Jan Gehl and William Whyte represented vital contributors through focusing attention on the relationship between human activities and the built urban environment and the ability for humans to navigate within such environments. Those frontrunners had created a transformation for the design and construction of public streets into places, they had adopted a socially based approach in dealing with the street; focusing on what has been referred to as the ‘social usage’ of space, those authors had dealt with practical realities concerning the patterns of human activity, in which they illustrated the interplay between social life and physical settings; and that what the study call it humanizing the street environment.

The study highlights street as a physical and social part of the living environment; as a place simultaneously used for vehicular movement, social contacts and civic activities, that has long been argued by many authors, whom in their definition for street had taken in their account street as a place rather than a traffic route, and treating them as quality places in themselves, and this had been indicated clearly by Moughtin (1991), when he said *“The Street, in addition to being a physical element in the city, is also a social fact.”* In his studies, Moughtin has shown the street social use as:

1. It can be analyzed in terms of who owns, uses and controls it; the purposes for which it was built and it’s changing social and economic function.

2. It also has a three-dimensional physical form (length, proportions, and sense of enclosure) that make up the major public open space in the city which, while it may not determine social structures, does inhibit certain activities and make others possible.
3. It provides a link between buildings both within the street and to the city at large, it facilitates the movement of people as pedestrians or within vehicles and also the movement of goods.
4. It has the less tangible function in facilitating communication and interaction between people and groups, thus serving to bind together the local urban community.
5. Its expressive function also includes its use as a site for casual interaction, including recreation, conversation, and entertainment, as well as its use as a site for ritual observances.

Consequently, for the purpose of this study, street is defined as:

An enclosed three-dimensional space between two lines of adjacent buildings, in which all forms of movement coexist, and interact with each other; it is a place to stay, not just a place to pass through. The sidewalk and street furniture in the pedestrian domain and the roadway with the vehicular domain together form a streetscape; it is a term used to describe something more than a public infrastructure used for movement.

3. Street environment challenges

The most apparent characteristic of the street is its manifold of functions. Since the modernist period, the role of the urban street has been reduced to that of a road; a conduit through which vehicles and people move (Anderson, 1980; Lozano, 1990; Moughtin, 1991). This simplified mono-functional view of the street is changing very slowly among planners and designers compared to the efforts done to illustrate its multifunctional role by some researchers: the street as teacher (Clay, 1991), the street as playground for children (Gehl, 2011; Moore, 1991), the street as workplace for vendors (Habe, 1988), the street as a place for social interaction, recreation and public life (Jacobs, 1961).

Streets whether considered from the point of view of mobility, the state of the economy, our health, social interaction, or how the city looks; they can contribute to better communities by changing the way that streets are thought about and designed, however, the conflicting relationship between pedestrian and vehicle impede the street from achieving these benefits. There is a need to set the balance between the use of street space for through users (who could use other links to get from A to B) and for locale users (who are seeking to make use of that particular section of the street). The more the street can overcome this conflict, the more the street achieve its multifunctional role.

3.1. Pedestrian- vehicle conflicting relationship

"It's no big mystery. The best streets are comfortable to walk along with leisure and safety. They are streets for both pedestrians and drivers. They have a definition, a sense of enclosure with their buildings; distinct ends and beginnings, usually with trees... The key point again, is great streets are where pedestrians and drivers get along together." Allan Jacobs

Jacobs in his previous words advocated pedestrian-vehicular interaction in the public realm, depending on field research and observation he found out that safety and community vitality were decreased on the segregation of cars and pedestrians, on the contrary, multi-modal streets that are characterized by the interaction between different modes work best and help in creating livable community by acting as attractive, welcoming, and exciting places.

The study prepared by Jacobs had been asserted by Moughtin (2003) who illustrated that the function of the street governs the degree of interaction between pedestrian and vehicles; giving concern to the place function of the street characterized by a lively and active street that will increase the interaction between pedestrian – vehicular like many pedestrianized town centers in Britain and in continental Europe are extremely successful, while in giving concern for good access to both private and public transport will decrease this interaction and may be separation of high-speed traffic movement from pedestrian traffic will be necessary like Paris Boulevard, which has wide pedestrian pavements separated from the road with trees and in some cases lanes for parked or slow-moving vehicles.

The relation between people and traffic had been illustrated by Jan Gehl (2010), he pointed out that there are four basic patterns governing the relationship between traffic and more vulnerable road users, Figure 3. Gehl showed that the first pattern is cars share space with others in which the car dominates (eg. Los Angeles) - Vehicle roads, or a second pattern where cars are kept distinct from others; separation between road users (eg. Radburn), or cars share space with traffic but the pedestrians and cyclists dominate, and this third pattern provides the principle within which the first "woonerven" were introduced in Delft. The fourth and final pattern of Venice represented in pedestrian streets; where cars are entirely excluded is rare on any large scale.

The third type illustrated by Jan Gehl, showed that traffic integrates on the terms of slow-moving traffic, and giving priority to pedestrian and cyclists, require two main actions simultaneously, achieving some displacement of traffic and at the same time creating an appropriate balance between different user groups by redesigning a relief street to facilitate that; where a variety of users and activities would be welcome, as Hans Monderman said: *“Through the syntheses between traffic and public interaction we could build wonderful places that can tell the story of our past, the heritage and the cultural identity of place”*.

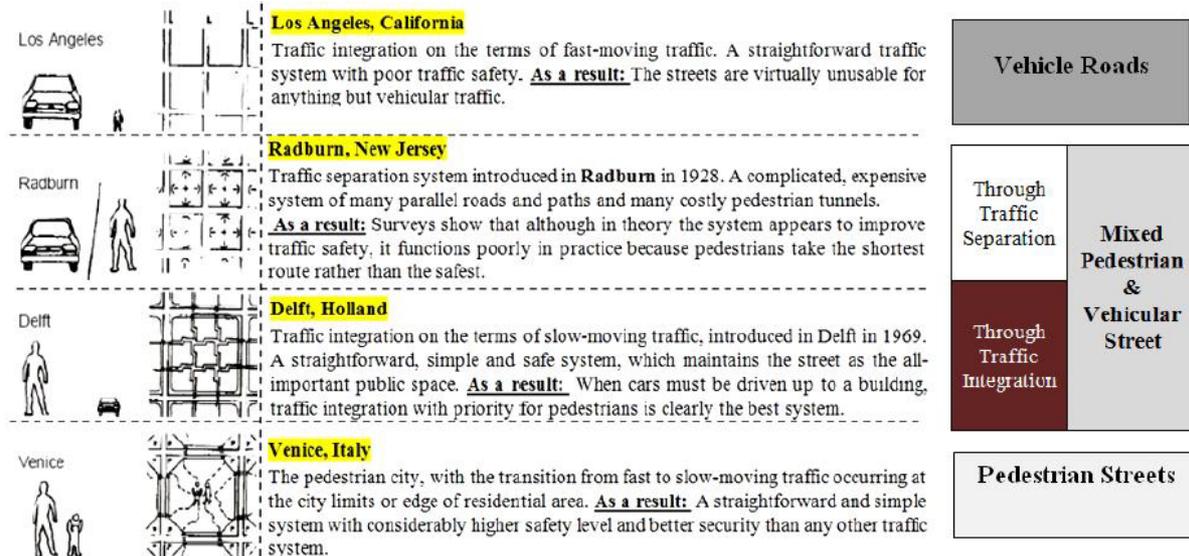


Figure 3: Show the Four Traffic Planning Principles; illustrating the four types of relation between People and Traffic, according to Jan Gehl, and represented by (the researcher)

4. Approaches to reconcile pedestrian – vehicle relationship

Many principles have been introduced for a viable street design options that balance, multiple traffic use of street space; like the woonerf idea, sojourn-play areas, shopping Erfs, traffic calm neighborhoods, home zones, shared space, complete and transit-friendly streets etc. This part of the study discusses these approaches and studies the common practices that reshape notions of how cars, people, and public transit could coexist.

1.1. Complete Streets

It is a notion that seeks to create healthy streets that balance between pedestrians and vehicles movements in an attempt to rejuvenate communities that are inviting and comfortable for everyone who uses them. Many pioneers of the Complete Streets movement are working on establishing practices and models about this notion; spreading the world researching and producing materials trying to reach an accurate definition for Complete Streets approach.

The National complete streets coalition defined “complete streets” as:

“Streets that are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities are able to safely move along and across a complete street; they are streets that work for all users, not just those using a car” (Complete streets.org.)

Whereas, the definition made by Minnesota Department of Transportation (Mn DOT) defined Complete Streets more as a policy rather than streets; in which it said:

“It is the planning, scoping, design, implementation, operation, and maintenance of roads in order to reasonably address the safety and accessibility needs of users of all ages and abilities. Complete streets consider the needs of motorists, pedestrians, transit users and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings in a manner that is sensitive to the local context and recognizes that the needs vary in urban, suburban, and rural settings”

It was illustrated by (Barbara McCann, 2005) that the main policy of complete streets is to guarantee that the entire right of way is designed to qualify safe access for all users, regardless of age, ability, or any transportation mode which return with a great benefit to the community, and accordingly that there is no a single description for a complete street or a specific size, it is varied in types, Table 3 as the National Complete Street Coalition said:

“There is no one designs prescription for complete streets. Ingredients that may be found on a complete street include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent crossing opportunities, median islands, accessible pedestrian signals, curb extensions, and more. A complete street in a rural area will look quite different from a complete street in a highly urban area. But both are designed to balance safety and convenience for everyone using the road.”

1. Rural route

A complete street in rural areas installs a wide paved shoulder in order to help pedestrians and bicyclists.



@ Walkable & Livable Communities Institute

2. Arterial

A complete Arterial streets install a bike lane and a protected sidewalk with grassy median and street trees. The median also acts as a traffic calming for making riding a bike safer and more comfortable.



@ completestreet.org.2010

3. Main Street

A main complete street is characterized by large street trees in planting strips, good sidewalks and well-marked crossings to help pedestrians travel to their destinations along the street, and street parking to give motorist easy access, while colored pavement to calm traffic by narrowing the travel lane, keeping speeds at an appropriate level.



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4. Residential

A complete residential street is characterized by slow-moving traffic and sidewalks, while for cyclists they can share the travel lane with motorists as speeds are slow and traffic levels are low, or they can easily share the one side sidewalk with neighborhood pedestrians.



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5. One- way street

In urban areas a narrow complete one-way street varies in its treatments either comprise a bike lane, on-street parking, and short, well-marked crosswalks.



@ completestreet.org.2010

Table 3: Types of complete street, according to the National Complete Street Coalition

It is agreed upon that there are no special requirements for the implementation of complete streets, however, the complete street coalition identified key techniques for urban arterials in implementing a complete street using a combination of physical measures; traffic calming tools as chokers, bulb-outs, cobble paving, speed humps, or roundabouts in order to reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users reducing speed to be more compatible with pedestrians and bicyclists. The combination of techniques, included:

- May use road diet treatment where the number of lanes is reduced, and the free space converted to parking, bike lanes, landscaping, walkways, or medians to enhance the street environment for bicyclists and pedestrians.

- Universal design features are installed, including audible signals, curb ramps, and a path on the sidewalk.
- Corner treatments are installed and may include curb extensions, right-turn slip lanes, or tighter turning radii, all of which slow right turns and provide greater visibility for pedestrians.
- Transit accommodations are improved in a variety of ways as the bus shelter.
- Sidewalks, if missing, are installed and pedestrian crossings are enhanced with ladder-style or zebra-style crosswalk markings and signal modifications such as a countdown timer, in addition to Driveways may be consolidated to reduce walkway interruptions by moving vehicles and raised medians are installed, which improves safety for crossing pedestrians.

Complete Streets proponents seek to transform the look, feel, and function of the streets by changing the way of thinking in planning and designing streets, calling to always design with all users in mind in order to make all users feel with a sense of place and create a kind of social interaction between all users in addition to other benefits as:

1. Economic Revitalization: a balanced transportation system provides accessible and efficient connections between residences, schools, parks, public transportation, offices, and retail destinations that help in creating economic vitality.
2. Improve safety: by reducing crashes; using traffic calming as installing raised medians and redesigning intersections and sidewalks which reduce pedestrian's risk, emphasize safety and convenience of bicyclists.
3. Encourage more walking and bicycling: installing facilities for pedestrians and cyclists provide safety and create a welcoming environment for them.
4. Increased Transportation Alternatives: streets that keep all users in mind provide travel choices for people and give them alternative modes to avoid traffic jams which encourage street connectivity and create a comprehensive, integrated, connected network for all modes.
5. Create child- friendly environment: giving privilege to walking and cycling, regenerates the use of the public space with better environmental conditions especially for children that help them get physical activity by encouraging them to either walk to school using safe sidewalks or cycle using comfortable bicycling routes.
6. Enhance livable communities: Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the complete street design provide safe and affordable access for everyone, whether traveling to school, work, the doctor, or any recreational place as restaurant that in turn meet community's goals in creating a suitable environment to live, work and play that improve the quality of life.

1.2. Transit-friendly streets

The Project for Public Spaces defined Transit-friendly streets as:

"Places that "balance" street uses over having any single mode of transportation dominate. In many cases, this means altering a street to make transit use more efficient and convenient, and less so for automobiles – while still accommodating them. When these alterations are done right, a kind of equilibrium is achieved among transit, cars, bicycles, and pedestrians".

Transit friendly streets seek to achieve a kind of equilibrium among all users whether transit rider, motorist, cyclist, and pedestrian, so it works on addressing the need of the different modes of transportation; for transit rider it establishes a clear transit priority and a convenient, accessible transit stops and creates a strong pedestrian orientation by providing appropriate circulation space with clear crossing streets, adequate amenities and wide sidewalk that enable people to socialize; talk, meet friends, or watch other people, in addition to reducing conflict between different modes, including reduction of vehicle speeds, all of which contribute to comfort and convenience.

It follows what PPS said *"Understanding the nature of the problems on a street is the first step toward developing effective solutions to those problems"* so it understands the need for flexibility in balancing user needs, however the PPS (1998) identified *five strategies for the design and traffic management of transit friendly streets* and can be taken as general strategies depending on each different situation, as Table 4 shows.

– Strategy 1: Provide Adequately Sized Sidewalks

Transit friendly streets work on developing a strong pedestrian orientation in a street by first Widening Sidewalk to accommodate pedestrian movement as well as seating, trees, bus shelters, lighting and other appropriate amenities that support social activities and secondly by using a traffic-calming physical design technique that seek to widening sidewalks at congested locations or intersections such as "Nubs" or "Neck downs".



Sidewalk "Nubs" or "Neck

– Strategy 2: Provide Amenities for Pedestrians and Transit Riders

Transit friendly streets provide amenities either through segregation by installing bus and light-rail stops along a street, concentrating passenger amenities in one location as subway stations, this segregation decrease from street quality rather than the other approach to provide amenities through integrating transit amenities into the street, treating bus shelter as street amenities like benches, planter ledges, trees, telephones, light fixtures, and information kiosks; clocks, sculpture, drinking fountains, banners, and flags. This integration stimulates activity on the street and makes a street more pleasant and comfortable.

downs”, @ (PPS.org)



Provide Amenities for Pedestrians and Transit Riders, @ (PPS.org)

– Strategy 3: Create Priority Lanes for Transit Vehicles

In a commercial street, it is common to use a transit-priority or transit-only lane in order to create a transit friendly street such as a transit mall. However due to the difficulty of keeping private vehicles from using reserved bus lanes cities used a “contra-flow” system that provides a single lane one direction for buses while providing for cars the other street lanes but in the opposite direction. Despite the importance of this strategy is in improving the buses efficiency, but it doesn’t improve the quality of place.



Create Priority Lanes for Transit Vehicles @ (PPS.org)

– Strategy 4. Initiate Traffic-Calming Measures for Automobiles

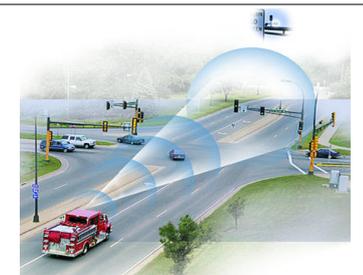
Transit friendly streets use certain techniques of traffic calming that cause no or little delay and allow a smooth and continuous movement of buses. They use methods that don’t change on the elevation of the street and only allow methods that create “pinch points” as road narrowing by road markings; mini-roundabouts; bus berths or nubs; and changed materials of road surfaces such as pavers instead of changes in street elevation.



Narrowing a road to one lane using ‘pinch point’ @ (PPS.org)

– Strategy 5. Redesign Intersections and Modify Signalization

Transit friendly streets design its intersections in a way that increase transit efficiency by using signalization changes as signal preemption that allow buses not to stop, or using priority green signals that give a green light to buses before automobiles do. In addition to using different traffic calming design features at intersections as bus nubs that shorten pedestrian crossings and provide safe waiting places, while in heavy volumes roadways a “queue jump” method is used that narrow street at transit stop to prevent automobiles from passing buses and to reduce the danger to pedestrians crossing the street to the bus stop.



Signal preemption work @ (images .google.com.eg n.d.)

Table 4: Strategies for the design and traffic management of transit friendly streets, according to (PPS, 1998)

1.3. Shared Street Concept

This concept is considered to be the revisiting of street integration that had been lost since the sixties, as according to (Southworth & Ben-Joseph, 2004) the underlying concept of the shared street system is based on the integration between all users’ street, where pedestrians, children at play, bicyclists, parked cars, and moving cars all share the same street space, with an emphasis on the community and in doing so the concept had passed by many stages trying to improve the street quality and to restore the social function which is lost

in the street on the base of segregation; in each stage it had used different measures as: “Environmental areas” or “Urban rooms”; In the late 1950s and early 1960s: Buchanan's theoretical concepts, “Traffic integration” and “Traffic calming”; In 1960s: shared street grassroots movement, “Woonerf ” translated as residential, or living yard Figure 4; In 1969: Niek De Boer overcoming the contradiction in Buchanan's concept , Designed for “30 km/h” or “20 mph” ; In the late 1970s :the development of European slow streets , “Home Zones” Figure 5; In the late 1990s: UK equivalent term for “woonerf”, “Shared Space” Figure 6; During the nineties as an alternative approach to traffic calming, besides similar solutions like 20 mph speed limit zone, pedestrian zones and cul-de-sac realized in different countries, with or without the original traffic sign.



Figure 4: Dutch Woonerf, according to (Schepel, 2005)



Figure 5: Methley Home Zone, the UK, according to (methleys.org.uk)



Figure 6: Shared Space Scheme, according to (vector1media.com)

It can be concluded from the previous that the ideas of shared street had passed through many stages Figure 7, but all these stages strives for all the same objectives as the ideologists of the “woonerf” and “Home Zone” pioneers illustrated (i.e. streets where children and the elderly can cross safely, diversity and mixed traffic flows) however the “woonerf” and “Home Zone” considered being the most advanced form of traffic calming which imposes even more restrictions, requiring cars to travel at walking speed, while “shared space” extends this way of thinking and the way of working by depending on the psychological traffic calming instead of traditional traffic calming measures; replacing traffic rules, typical traffic engineering elements by informal social rules; so these streets have been stripped of the signs and markings; and variously referred to as “legible streets” or even “naked streets”.

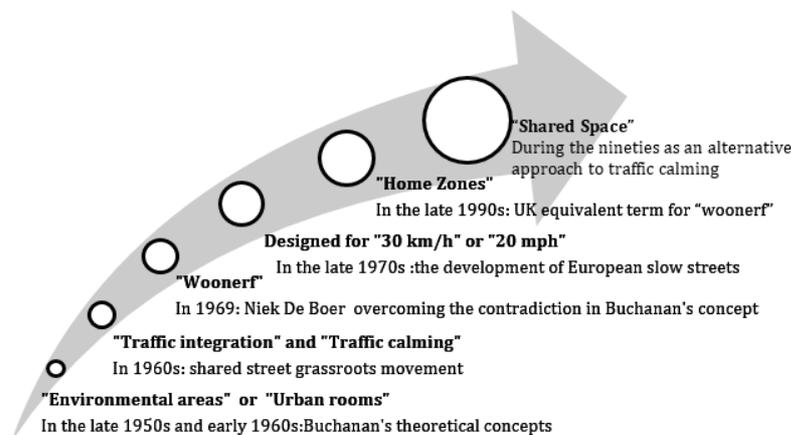


Figure 7: Illustrate the Emergence of “shared Street” Concept, according to (the Literature Review and represented by The Researcher)

There is general consensus on the characteristics of shared street according to (Duany et al., 2000; Ewing, 1996; Jacobs, 1961); it is a street that seek to enhance the pedestrian character of the street by providing a continuous sidewalk network and incorporating design features that minimize the negative impacts of motor vehicle use on pedestrians, of particular importance is the role played by roadside features such as street trees and on-street parking, which serve to buffer the pedestrian realm from potentially hazardous oncoming traffic, and to provide spatial definition to the public right-of-way. However, there isn't a set formula or list of prerequisites that guarantee a shared street, it is relatively planned for variety, choice, and satisfaction; so use some key features that serve a variety of uses and users, and in many ways as:

- Make use of various installations such as street furniture, bollards or planters to guide users.
- Clear signs to reinforce the message to drivers that they are entering a different kind of street
- “Shared surfaces” feature that make car drivers realize they are guests in an area where children may play on the street.

- The priority in woonerf and Home Zones is for the other users rather than vehicles, depending on “Priority by negotiation” to tackle between all road users, unlike shared space where all users are equal.
- It shares the point of view of influencing driver’s behavior to reduce speed “psychological traffic calming”; they embody the design principles of safety through uncertainty, whereby an absence of priority along with short driver sight-lines, social activity and a lack of clarity regarding vehicle routes, significantly reduce vehicle speeds.
- Low- speed environment not exceeding more than 30km/h (20mph).
- The design of the space makes it clear that it can be used this way “self-explaining street”, rather than extensive signage, but Shared Space exploits this further with naked streets.

5. The dilemma of sharing or separating

New approaches had emerged seeking to improve the quality of streets. These new approaches based on a careful and multi-disciplinary approach that meet people’s needs in streets as places for living, working and moving around in through the trade- off the street space. At the heart of these new approaches lies reconcile through traffic flow with other urban activities; emphasizing on the balance between movement and place; people and vehicles by focusing attention on mixed pedestrian and vehicular streets through integration. The attempts to reconcile the relation between people, place and traffic varies, but it can be classified into two main approaches, the first adopted the notion of separation as complete streets, transit-friendly streets, “Traffic signal priority” streets and 30 Zone or 20mph zone, in which complete and transit-friendly streets didn’t mean all modes on all roads but rather support the idea of flexibility in design to meet the land-use needs and possible users.

The concepts use expressions as develop “a balanced transportation system” and achieve “a kind of equilibrium” to assert on the idea of taking into consideration the needs of all modes but on a segregated street surface; dealing with each user individually, the same with “Traffic signal priority” streets and 30 Zone or 20mph zone but it focuses more on using certain design techniques to reduce speed to be more compatible with pedestrians and bicyclists.

The second approach adopted the notion of integration as shared streets that aim to design street as a social space for all users; where the street space is shared between drivers of motor vehicles and other street users in a low-speed environment, with the wider needs of all users - drivers, transit vehicles, bicyclists, and pedestrians of all kinds (disabled, elderly, children, and lingerers); regardless of age, abilities or disabilities being accommodated, and in doing so the street is open to all forms of transport but pedestrians have priority; as they can move with complete freedom across the entire width of the street, so the street becomes a shared surface.

In reviewing different approaches to reconcile pedestrian- vehicle relationship, it can be assumed that there is a scale for the relationship between people and traffic starts with the traditional street where there is segregation between them giving priority to traffic and at the other end of the scale is pedestrianized area giving priority to pedestrians and between them lies complete streets, transit friendly streets, traffic signal priority streets and a tempo30 zone (30 km/h zone) or 20 mph zones and also shared Streets (i.e. pedestrian priority zone), however the former are more related to traditional streets regulations while the latter is related to pedestrianized area regulations, Figure 8. It is a spectrum of humanizing the street environment and each portion of this spectrum is considered to be a form of the new forms of urban streets that have emerged to humanize the street including; “pedestrianized” street, auto-restricted zones, malls, traffic-managed neighborhood streets, “share use streets” as Home Zones in the UK and Woonerf in the Netherlands and, more recently, “privatized” indoor commercial streets.

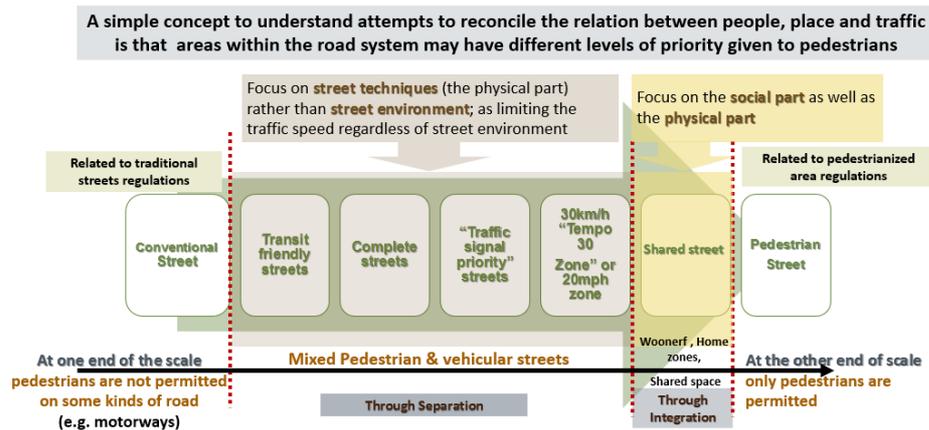


Figure 8: Show the relation between People and Traffic, according to (the research analysis)

The design guidelines that humanize the street environment

Humanizing the street environment represented the answer for how to solve the conflicting relation between different users where pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses, and motorists, can comfortably coexist with each other, how to satisfy the desire of movement for traffic and pedestrian as well as satisfy the desire for on-street activities as walking, jogging, playing, skating, talking, watching, sitting, selling, partying, waiting, and so on in the available limited amount of street space.

The approach has been innovatively applied to a variety of street conditions with different characters, so there is no recipe for reconciling pedestrian – vehicle relationship. However, according to (Bongardt et al., 2010), general design guidelines can be deduced based on “Push and Pull Approach”. The design guidelines include a set of measures simultaneously concerning the three main aspects of the street that are: Traffic, Place, and People

Traffic : Apply guidelines concerned with the movement of the driver of the motor vehicle where it is allowed to enter the street but its accessibility was limited by using physical features for controlling vehicle speeds and creating a balance between different modes of transport through adopting activities that push car users out of their cars, minimizing the negative impacts of automobile use on pedestrians so as to create engaging public spaces that draw people in; so, it imposed restrictions on the driver; the accessibility of motorized transport was limited in order to make the pedestrian accessibility easier; where motorized vehicles may only stop and park in designated areas, and the speed of motorized vehicles are controlled using traffic calming techniques and at some zone it may limit to 30 km/h, besides using shared surface that, gives pedestrians and motor vehicles equal rights to the street space by eliminating curb boundary between a sidewalk and vehicle right-of- way, Figure 9.

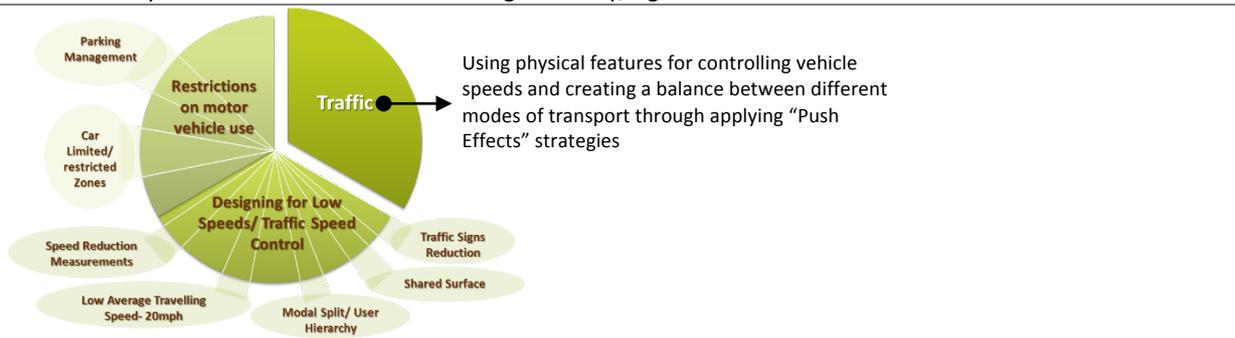


Figure 9: Guidelines concerned with Traffic movement

Place : Apply guidelines concerned with pedestrians, cyclists, public transport users the needs of all the people who use them as fathers pushing strollers, grandmothers, children, walking to school, people driving to work, bicycle messengers, people using wheelchairs, and people taking the bus by using physical features for improving the quality of street environment and creating a sense of place through adopting two main activities: Figure 10

- First: Activities that support public transport; trying to pull car drivers out of their cars to environmentally friendly modes of transport through the provision of better transit design features and transfer possibilities; to turn the usage of public transit and cycling into more appealing modes
- Second: Activities that act to serve non-motorists; and design multi-modal streets as the redistribution of roadway space to create a balance between different modes of transport by providing better facilities for walking and cycling; and supporting the street as place function using functional landscape design features with

high quality that give new value to street space, besides creating a street life by creating a welcoming street space where people like to walk, bike and stay that will bring in return more life to the streets and a greater wealth of experience, and the last design feature is active frontage that emphasizes the sense of place in the street through streets linkage with land use that creates good scenery and views and creates activity in the street; that translated into making the frontage along street active.

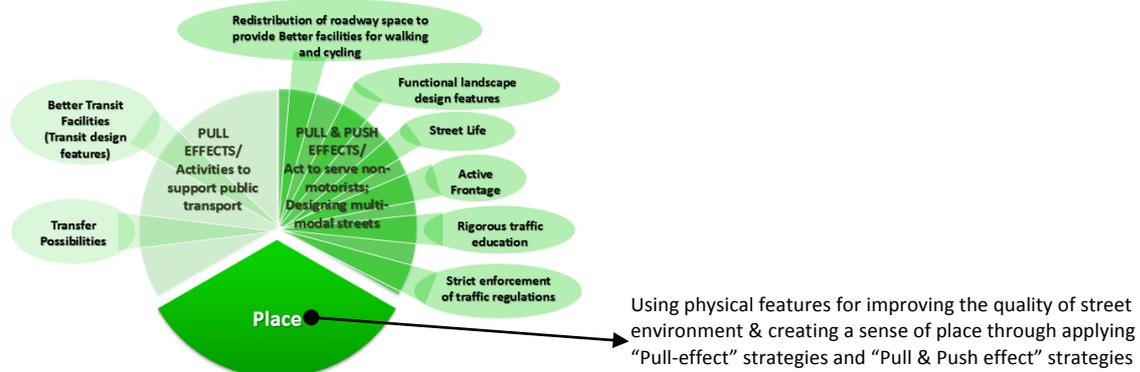


Figure 10: Guidelines concerned with emphasizing the place function of the street

People : Achieving what the people need in any particular street doesn't mean that it's a shared one, it is more to do with the way people use it than what it looks like so the more users are engaged in the street the more the street become more human. Some approaches apply guidelines that address a driver's internal ability to notice and avoid a potential conflict with other road users; by managing driver behavior to minimize the risk to other street users through Psychological cues as uncertainty, intrigue and risk compensation and self-explaining street. Figure 11

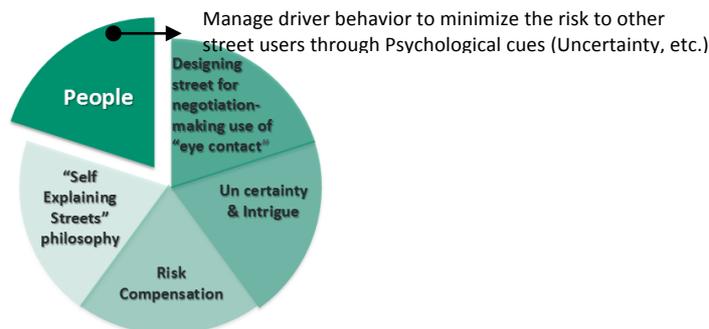


Figure 11: Guidelines concerned with users of the street

In tracing these design guidelines it is recognized that the more they are correlated to each other, and work in parallel; the more the street environment is being humanized; designing the street in a way that sends a psychological cue to the user in the street and guide him how to behave; accordingly engage drivers with the surrounding environment, causing them to drive more slowly, attentively, and courteously; creating according to (Monderman & Hamilton-Baillie, 2006) what the experts so-called "psychological traffic calming"; in which as people reach the street, they move slowly enough to make eye contact with each other and consider how they relate to other "users" (pedestrians, bicyclists, drivers of transit vehicles, etc.) of the space; achieving a better street safety that the Dutch call it according to (A view from the cycle path, 2010) 'Sustainable safety'

Figure 12 by informing each user in the street how to behave; using speed reductions as traffic calming measures or reducing traffic signs and road marking create risk compensation and uncertainty environment that make the driver to actually feel unsafe at speeds approaching and above 20 mph (32 km/h) so they slow down and all road users keep sharply aware of what is happening around them; making use of their eye contact, and that assert Monderman's quote when he said "When a situation feels unsafe, people are more alert and there are fewer accidents" Another aspect lies in the design for place guidelines; as not only did these guidelines contribute in enhancing the street environment for pedestrian and transit users trying to get them out of their cars using pull and/ or push effects, but also it encourage more attention to the environment by giving drivers, and others, interesting features to look at interesting Installations, such as gardens, art, or benches and at the same time intriguing drivers, signaling to them that they should expect the unexpected and travel slowly and with caution (i.e. uncertainty); as when something's worth seeing, after all, people slow down. In addition to, the active frontage and street life designed the street as community space; leaving a lasting reminder to drivers that they are guests in that community space ; forcing him to drive slowly.

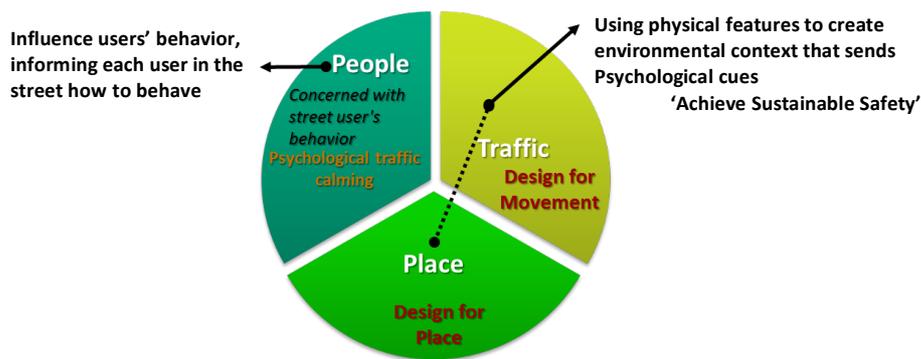


Figure 12: The main three pillars of the design guidelines to humanize the street environment as deduced by the researcher

6. Conclusion

This study highlighted attempts to tame traffic in cities around the world, and this process of trying to humanize environments, against the constant growth in levels of traffic in cities, still continues today. The types of protection vary between street separation as complete, transit friendly streets, and 20 mph and 30 km/h zones, or street sharing as shared streets with their different patterns as a woonerf, home zones, and shared space. These types of protections had focused attention on facing the deterioration in environment and street safety, however the study showed that shared streets focused on street environment; the social part as well as the physical part of the street, on the contrary of the complete, transit friendly streets, and 20 mph and 30 km/h zones that focused on street techniques rather than street environment; as limiting the traffic speed, easing traffic and reducing accidents regardless of street environment, studying each and every need and try to solve the conflict that will arouse according to their variety, neglecting factors that make people use and do not use the street. Shared street concept was a combination of elements that work to limit the volume or speed of traffic while at the same time creating greater sense of comfort in hope that people will use the street space, it depends on the behavioral change of all street users which Hans Monderman name it psychological traffic calming rather than limiting car traffic and its speeds by the traditional traffic calming measures which means the traffic code should be replaced by a social code and in investigating the difference between these approaches it is indicated that humanizing the street environment not only depend on 'vehicle' (including bicycles) and 'street' (design) but also it incorporates 'human' (behavior) in setting its design guidelines; so adopting streets and vehicles to the human capabilities; reducing the frequency of conflict between street users and achieve 'sustainable safety' by informing each user in the street how to behave. Thus, the concept of shared street is considered to be an efficient attempt to reconcile people, place, and traffic however, there is no blueprint for humanizing the street environment, it depends on the context, if a shared street is an appropriate solution for a particular situation, changing the situation may call for different solutions; it may need to an overlap between different approaches. Thus, the attempt to humanize the street environment should be treated as an experiment until the correct "fit" for the context is found. There should be a study which aspects of the different approaches work well together, as every case needs to be examined individually with traffic calmed and transit solutions applied according to the particular circumstances.

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