



The Streets in a Livable City

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ARTICLE INFO

Article history:
Received 05 November 2014
Received in revised form 24 February 2015
Accepted 05 March 2015
Available online 11 March 2015

Keywords:
Livable City Streets;
City Transportation;
Sustainable Streets;
Streets Planning.

ABSTRACT

In a world of rapidly increasing urbanization, striving to develop more livable cities, the city's streets designing and planning should be high on the agenda for policymakers, city planners and other practitioners, as well as researchers. Designing streets is not as easy as it might originally seem, however, done correctly it means that one third of the city was designed successfully with an immense impact on the rest of the city. The key challenge in developing sustainable and fulfilling streets is to develop an integrated approach in planning them, where it is necessary to consider all aspects involved. Meanwhile, efforts devoted to this topic vary considerably from place to place. Thus, this paper aims at discussing the main elements involved in designing streets for a livable city, in a comprehensive approach including pedestrians, vehicles, and parking areas.

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1. Introduction

Streets are more than just car corridors, they are places where people walk, shop, meet, and generally engage in various array of social and recreational activities that, for many, are what makes city's living enjoyable. They are also places where people can be affected from polluted air due to car exhaust, noise, accidents, and cognition. And of course, streets are places where vehicles or other means of transportation, whether public or private, transfer citizens or goods from one place to another. Thus, if streets are overrun with cars, pedestrians are jammed onto sidewalks, cyclists are forced into dangerous traffic, buses fall behind schedule, and deliveries, taxis and emergency vehicles struggle to get through, like what happens in many of today's cities, the streets will not be livable and neither are the cities. Hence, streets are considered as valuable civic spaces and assets that need to be wisely allocated and improving them is the

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simplest way to improve the quality of life and livability of any city and its residence (Dumbaugh, 2005) & (NYC Streets org., 2012).

There has been many works describing the characteristics of livable streets. Livable streets are mainly streets that seek to better integrate the needs of pedestrians, transit, cars, alternative forms of transportation, and local developmental objectives into a street's design. They are pedestrian-friendly that are increasingly linked to social outcomes, economic growth and innovation, improvements in air quality, and increased physical fitness and health. Hence, livable streets must consider the social, economic and environmental dimensions, while making the best possible use of local limited infrastructure (Dumbaugh, 2005) & (UNEP, 2007).

2. Comprehensive Approach to Livable Streets Planning

Livable streets are crucial to the success of a livable city; unfortunately current streets are being managed almost entirely for traffic flow, thus a comprehensive approach while planning them is much needed. An approach that considers both traffic and pedestrians needs, while creating livable streets that are healthy, safe, and walkable. Streets which are attractive and appealing at the same time, offering choices for timely transportation for the resident's needs. The main strategy to accomplish this is to design streets with all potential users in mind, whether they are old or young, people using wheelchairs, walkers, or canes, pedestrians, bicyclists, bus riders, and drivers. In addition, a comprehensive approach to livable streets also include strategies that involves sidewalks, bike lanes, dedicated bus lanes, comfortable and accessible transit stops, frequent and safe crossing opportunities, median islands, curb extensions, limited curb cuts, narrowed travel lanes, etc. (NYC Streets org., 2012) & (CMAP, 2012), Figure 1.



Figure 1: Different types of streets' potential users.
(Photos used with permission from NYC Streets org., (2012))

Planning or redesigning the streets for livability, in this comprehensive approach, where streets have a dual role, as both infrastructure to move people, and as social space, needs a gradual change. It should start with the city implementing a vision that considers many goals, such as (Livablecity org., 2002):

- Making it easier for residents to get where they need to be, while reducing car traffic, improving public transit, and encouraging walking, biking or any alternative transportation.

- Allowing fewer pedestrians to be killed, where Kids will be able to walk or bike to school safely and older residents or handicapped will live and walk without fear of being run over.
- Paying attention to all modes of transportation and to the quality of urban space that the transportation system supports while spending less money on transportation.
- Creating stronger walkable neighbourhoods with attractive, comfortable local shopping streets.
- Increasing residence's health from strolling daily and providing cleaner air.
- Enhancing environmental and economical developments of streets.

These goals are aimed at enhancing streets in order to develop a more comfortable environment in which residents are invited to linger and enjoy their city, rather than rush through it. As such, each city should develop its own goals for future growth and envision how they would like their streets to look, and function. With that in place, it will be easier to deduce the best approach to take toward creating livable streets (NYC Streets org., 2012) & (CMAP, 2012). Finally, there are six fundamental aspects to the comprehensive approach to planning livable streets and they are:

- Some general street planning rules
- Transportation, congestion and parking areas
- Pedestrians; residents or tourists
- Safe & secure streets
- Green areas, streetscape & environmental factors
- Economics & resiliency

2.1 Some General Street Planning Rules

Planning streets in a livable city should involve in general a strategy to accommodate all the people who use it. The streets design should be appropriate to the uses and functions on its side while allowing easy access to any place. Planners must put in mind that when designers creates a welcoming passers-by streets in the ground floors with a mix of restaurants, stores and services, there are always reasons to linger from residents. This will require a network of attractive streets and public spaces, determining the streets width; travel lanes width and number, parking lanes, sidewalk width, number and design of gathering points and focal points, and cars and pedestrians light signs, public paths, etc. (NYC Streets org., 2012), Figure 2.



Figure 2: Ground stores mixed uses for livable streets
(Photos used with permission from NYC Streets org., (2012)).

In addition, the city's infrastructure usually found under the streets should be constructed and finished before paving the roadways in an appropriate way to be used by vehicles and pedestrians. For this to happen without wasting time or money, the different government's agencies and municipalities, concerned citizens, business leaders, and elected officials should cooperate from the beginning sharing their targets and needs and coordinating between them to achieve their goals in an integrated manner, without wasting time or money.

2.2 Transportation, Congestion & Parking Areas

The Alliance for Bicycling and Walking in America found that cities with the lowest levels of biking and walking have the highest rates of obesity, diabetes, and high blood pressure. Thus, a livable street is walkable where driving is a choice, not a necessity, maximizing the number of trips which can be made on foot and making the walking experience a joy. Not only that, but in general, livable streets must support multiple transportation options called alternative transportation (Figure 3) such as walking or bicycling which improves the health of a city and the health of its citizens or through public transit. This may require widening the sidewalks, creating special bike and public transportation lanes. In addition, attracting people to public transit is by making it fast and frequent which again means getting transit out of traffic (CMAP, 2012) & (Livablecity org., 2002).



Figure 3: Alternative transportation options.
(Photo used with permission from Paulick Report Staff, (2014)).

One of the most obvious problems with the streets and transportation system is congestion. Time people spent stuck in traffic wastes large chunks of the day. Basically, there are two ways

to reduce congestion by widening the roads or reducing the number of cars. Sometimes, streets can't be widened anymore and other times widening a street may only allow a few more cars to trickle in, with the net result that congestion is not relieved. It is clear that congestion will not be effectively relieved in such a way and adequate restrictive measures should be adopted and maybe choosing option number two and reducing the number of cars by using the alternatives to cars can help. In this context, livable streets should strive to have an effective congestion control plan during rush hours of the day. The plan should include alternative paths for cars users, special lanes for public transit vehicles, specified routes and timings for cargo trucks transporting goods, and high-occupancy vehicles to enable faster transit across the city. In addition, the plan must provide enough and suitable parking areas while promoting car-sharing programs and taxis use. Finally, a long term plan can involve building tunnels and bridges to solve congestion (Livablecity org., 2002) & (Timmer & Seymoar, 2005).

As for freight transport in cities, although it is a major contributor to congestion, local air pollution, and noise, however, it is very beneficial for the city economics. Thus, planners must create a management plan including vehicle time regulations, vehicle weight and size regulations, and lorry routes whether advisory or mandatory routes for goods vehicles. The plan can also include a dedicated on-street space for goods-vehicle loading and unloading, installing shared bus and lorry lanes, and encouraging the use of environmentally-friendly goods vehicles with road pricing systems, and low-emission or environmental zones (VREF, 2012), see Figure 4.

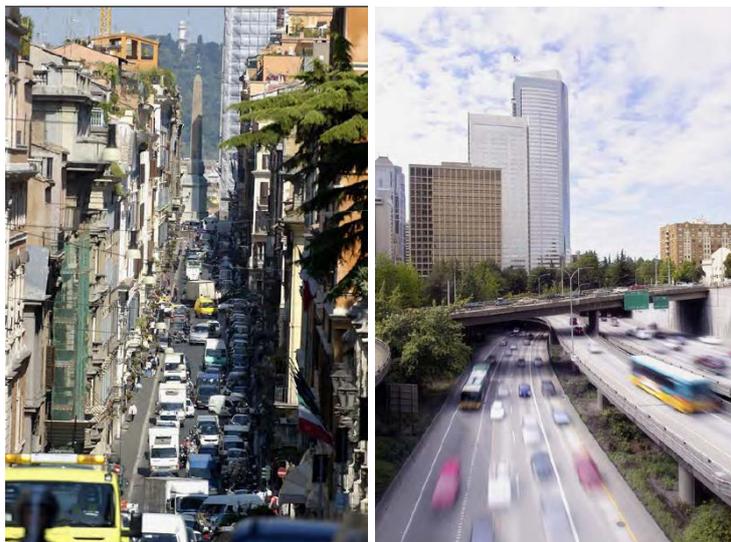


Figure 4: Cargos trucks in the city and bridges
(Photos used with permission from VREF, (2012)).

With driving still the main form of transportation, parking is a very important part of our municipal landscapes, but it is significantly undervalued in some cities because users do not pay

market costs for parking. In general, the design of the streets and how planners manage parking can encourage multi-modal use and improve safety. Parking in livable streets is divided into two types; large parking areas attached to the streets and on-street parking lots. The parking should provide secure bicycle parking wherever needed. Parking problems is not usually solved only by uncalculated increase in the parking lots or areas, but can be resolved through implementing other strategies such as using shared parking plans and allowing parking permits for residents or any other adequate measures (CMAP, 2012).



Figure 5: On-street parking lots and parking areas
(Photos used with permission from CMAP, (2012)).

2.3 Pedestrians: Residents & Tourists

Everyone, at some point in the day, is a pedestrian. Thus, designing pedestrian-friendly environments is a crucial element to the livability of the streets and is the city's most fundamental assets. Livability seeks to enhance the pedestrian character of the street by providing a continuous sidewalk network and incorporating elements that minimize the negative impacts of vehicle on pedestrians. It involves creating buffers from the street for pedestrians,



Figure 6: Special routes and gathering points for pedestrians and tourists
(Photo used with permission from VREF, (2012)) and (Photo from Evans (2013))

providing wider sidewalks and creating plazas, designing traffic calming measures to reduce traffic speed, and building communities that allow daily tasks to be done by walking. The streets must be walkable, easy to cross, and providing pedestrians with signs and bridges. Pedestrians are not only residents of the city, but also tourists and visitors to the city, especially to cities with

historical places and each has his own needs that must be satisfied like safety (Dumbaugh, 2005) & (Timmer & Seymoar, 2005), Figure 6.

2.4 Safe & Secure Streets

While safety has been a concern for the transportation system throughout its history, the current approach to addressing a livable street safety involves both vehicles and pedestrians at the same time. Making neighbourhoods safer for vehicles, pedestrians, and bicyclists saves lives and this can be accomplished through designing safe intersections for all street users. In addition, there must be alternative transportation options lanes such as bicycle lanes that protect riders from other forms of transportation and extra-wide sidewalks for pedestrians. Pedestrian's safety from vehicles can be also accomplished by putting buffers objects in between the pedestrians and the moving cars. Because, if streets are too wide, or if turning cars are encroaching on the crosswalk, the walking experience starts to feel hazardous and uncomfortable, especially when the cars are moving fast. Moreover, pedestrians need to feel safe from crime especially at night and for women, which means providing adequate sidewalk lighting and putting security points or cars wherever needed especially at every major transit station. It can be also solved with cities with high densities and mixed land uses which ensure that there are people around to provide a sense of safety (NYC Streets org., 2012) & (Livablecity org., 2002).

2.5 Green Areas, Streetscape & Environmental Factors

Although green areas and streetscape in the streets and open public areas helps to enhance the aesthetic quality of a roadway and the livability of the roads, there is substantive disagreement about their safety effects, since some regards roadside features such as street trees as fixed-object hazards and strongly discourages their use. In spite of that debate, having trees and green areas is interesting to look at, makes for a better walking experience and helps to



Figure 7: The streets' streetscape and green areas (Photos used with permission from CMAP, (2012)).

create a healthy city with lower carbon dioxide levels. It also offers shading elements in hot countries, reflects the city local and cultural identity, and serve to buffer the pedestrian from

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potentially hazardous oncoming traffic and to provide spatial definition to the public right-of-way. In other words, green areas and streetscape enhance the quality of life in a city. Figure 7, streetscape includes good seating, lighting, clear signage with local information, and other amenities to help people to gather and increase sociability (Dumbaugh, 2005).

Beside green areas, environmental factors that should be addressed while creating livable streets is water and it involves storm water management control plan, potable water supply and minimizing waste water in the streets. It also means creating wastes management plan that provides street bins and waste trucks collection in a manner to help their recycling. Energy is another very important factor, it means saving energy while lighting the streets and may be using street elements to produce renewable energy. And of course, it aims at reducing air and noise pollution due to car exhausts and sounds by decreasing vehicles numbers in the streets. Finally, a comprehensive environmental factors plan requires hazards control plan whether hazards are expected or unexpected, see Figures 8 and 9.



Figure 8: Storm water and recycling waste bins
(Photo used with permission from NYC Streets org., (2012)) and Bajkowski, J., (2014).



Figure 9: Wasted light when letting it works in daytime
(Photo from Glensferryidaho.org, 2014).

2.6 Economics & Resiliency

Livable streets enhance wise development and create stronger local economies. Since shoppers are walkers, thus improving pedestrian life supports local economics and provides jobs. In addition, investing in streets enhance real estate values and increase the tax base, besides making efficient use of existing infrastructure. In addition, this way the city will provide housing that is more affordable, making it more welcoming to immigrants while increasing accessibility

and thus, the city will be more economically competitive. It was also discovered that developing existing cities and improving their livability is more cost-effective and resource-efficient than developing in areas without adequate infrastructure. Yes, transportation is expensive, but there are many untapped resources that the city can turn to. Creative funding options range from user fees to make sure cars pay their own way, to development impact fees, to joint development on top of public facilities (NYC Streets org., 2012) & (CMAP, 2012).

Planning for a future that is better than today, is crucial to the livability of the city. The resiliency concept is so entwined with livability, thus, creating livable streets means making the streets more resilience. Resiliency of a street means planning them to function in 100 years' time. Planners must only imagine things getting worse, predicting that congestion will increase and mobility will decrease. Thus developing a plan to ensure that over time, the city grows more healthy and livable. Comprehensive transportation planning can help us make informed choices about what future the city residents want. In order for this futuristic plan to succeed there must be a continuous maintenance and supervision over the streets and all its elements and infrastructure (Livablecity org., 2002).

3. Conclusion

If planners continue planning the streets for cars and traffic only all what they will get is more cars and traffic; conversely, if they start planning the cities for residents and places, they will get more residence and places. This study concludes that by better understanding the elements involved in a comprehensive design of livable street, which involves the decision maker, the planner, vehicles, and pedestrians, planners can have roadways that are safe and secure for all street users; pedestrians, cyclists, car drivers and transit-users. The livable streets are also environmentally, socially and economically enhanced.

Moreover, livability addresses the parking problems whether on-street or large parking areas as part of the transportation system plan, in addition to congestion control plan and freight transport management plan. It encourages creating pedestrian friendly streets that promotes walking, street aesthetics through green areas and streetscape. Livable streets make it easier to walk from one destination to the other, to cross the street, and to ride a bike; in addition, they can reduce accidents at dangerous intersections. Giving priority to walking over other forms of transportation is safer, healthier and improves the quality of life for residents. Although, driving will continue to be the primary mode of transportation for many residents, but it must be evaluated as one part of a comprehensive multi-modal transportation system that includes walking, biking, and transit. Overall, a livable city is one in which the car is accommodated but

other forms of transportation are encouraged. Finally, reduced emphasis on cars and parking makes transit, walking, and biking more viable options. In addition to the quality-of-life benefits, livability and resiliency of a street makes a good economic sense for the city and its residents.

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Note: The original of this article was accepted and presented at the **2nd International Workshop on Livable City 2014 (IWLC2014)**, a Joint Conference with **International Conference on Engineering, Innovation, and Technology (EIT)**, held at Tabung Haji Hotel, Alor Star, Malaysia, during December 9-11, 2014.