Traffic pollution and countermeasures of urban traffic environment

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Abstract. Background: Traffic environment has become a serious social problem in China currently, therefore, urban traffic environment governance is the requirement to solve this issue because as an important place in people's social life, urban traffic environment shows a strong city's energy. Objective: Based on analysis on social function of city traffic environment and its influence of traffic on urban environment in this paper, the goal to establish a healthy urban traffic environment must be included under the aim of sustainable development eternally and feasible measures were put forward afterwards. Method, result, conclusion and possible applications.

1. Introduction

It is estimated that in the year 2025 more than 60 percent of the world's pollution will live in urban areas. Traffic is a major source of pollution in cities. Thus, the growing amount of vehicles increases congestion and contributes to the deterioration of air and storm water quality. Air pollution is a mixture of several components, including gases, organic compounds, metals, and ambient particulate matter (PM); the latter is believed to be the most widespread threat, and has been heavily implicated in disease. PM is usually characterized by aerodynamic diameter: for example, PM10 is comprised of particles <10 mm in diameter, while PM2.5 represents particles <2.5 mm in diameter. Also of relevance are ultrafine PM (UFPM, with diameter <100 nM), which may easily reach the general circulation and distribute to various organs including the brain. UFPM can also access the brain

Through the nasal olfactory mucosa, reaching first the olfactory bulb. The association between air pollution, particularly PM, and morbidity and mortality caused by respiratory and cardiovascular

Diseases is well established in Table 1.

Table 1 Traffic air pollution in selected cities worldwide.

City	PM 2.5($\mu g/m^3$)	
	June 10, 2015	September 13, 2015
Hyderabad, India	301	109
Zhengzhou, China	416	227
Beijing, China	215	126
Los Angeles，USA	-	68
London, Great Britain	-	70

2. Social function of urban traffic environment

City is an important component of social system, and urban traffic is an important subsystem in a Urban social large-scale system. In the past few decades, especially since the twenty-first century, many problems in urban environment has been exposed in accompany with progress in traffic and economy. That is to say, traffic environment has become a serious social problem in China to arouse more and more attention. Therefore, urban traffic environment governance is the key point in traffic management. Traffic environment has broad and narrow sense. The generalized traffic environment includes the primary natural environment, traffic construction, construction environment and traffic environment after transportation planning while narrow traffic environment mainly refers to the operating environment after traffic completion. Hence, to recognize the connotation of traffic environment must understand psychological and behavioural patterns in people's daily travel, especially feeling and cognition of general public to traffic environment. Therefore, the traffic environment should not only include transportation facilities in road, but non material such as humanism and society as well. To some extent, people, cars and road are also important components of the traffic environment. Only when these three elements coordinated with traffic environment, elements of the transportation system will be coordinated and related to fully play the role of various parts in transport system to achieve the system's overall optimum and furthermore, connotation exploration of traffic environment based on human subjectivity will help us to get rid of limitations of urban road as a purely traffic engineering entity. In addition to provide space carriers for social life, in fact, traffic environment has directly or indirectly induce a large amount of social interaction to gather large numbers of heterogeneous people. As one of the important places where potential events in civil life occur, it constitutes the living environment and space of modern urbanity indicating strong urban vitality which embodies the following social functions below.

2.1. Organizational ties of urban social activities

People's diversified travel motivation and complex traffic behavior are derived from different regional distribution of city's highly developed and differentiated social activities which was further exacerbated by upgrading of urban information and traffic technology and manifested concretely in spatial separation, while road traffic environment system should not be passively adapted to these discrete social activities, on the contrary, as a link, it takes a more effective organization of city social responsibility objectively.[1] From the point view of urban planners, road has played the most basic and important position in the whole urban environment. Firstly, it is the main clue to the layout of a city; secondly, it carries traffic, and people's movement as well. It is in this environment that people in the movement, consciously or unconsciously, observe and experience the city. When being asked the question of relationship between people and street, perhaps the first reaction in the mind is to pass. Whenever passing on foot or by bus, street seems only a distance, or a process to us which aims at leading to our destination. However, when we think this, we have overlooked in fact; when we walk in the street, it is indeed a contact, and an exchange to people know or unknown in all sorts of subtle, secretive while existing mode. [2]

2.2. Carrier of urban citizens' daily life

Urban traffic environment is an important part of urban landscape. People walk on the streets all the time with all directions and different scenery. These roads are not only the transportation line that people depend on, but also the carrier of city life that provide the main place of communication, leisure and consumption. In this sense, the road really exists in every urbanite's life. To some extent, it is not only an important element and channel for people to perceive the city image with partial, overall urban landscape organization and recognition, but is important social life place for citizens to continue the function of social culture. In this way, the quality of traffic environment will directly affect people's quality of urban life. A pleasant, comfortable and safe traffic environment is an important index to measure a city's habitability (livability) that all public desires.

2.3. Guarantee of sustainable, healthy and benign operation and development

Jacobs pointed out that in the city, in addition to carrying traffic, street has many other uses. In essence, like the traffic cycle system, these uses are the basic elements of a city's normal operating mechanism. Streets and sidewalks, the main public area of a city, are the most important organ of a city. [3]Consequently, improvement of traffic environment is not only related to the accessibility right of different social classes, but to normal and effective operation of the whole city's social security system as well. As a beautiful urban experience, a pleasant trip will help to strengthen the sense of belonging and pride of the city, and to strengthen the public's psychological recognition of the city where they live. Besides, as an important urban public space, better traffic environment could enhance potential social interaction of heterogeneous population, ease social differentiation so as to promote social integration and sustainable development of society.

3. Influence of urban traffic on urban environment

Environment, as a resource, its irreplaceable and non-renewable feature will make it conflict with the rapid growth of demand to result in double scarcity of economy and material which has an important impact on all aspects of social development. From the historical point of view, the development of urban traffic is a dynamic process, the impact of which will not only affect existence and life of contemporary people, but also several generations.

3.1. Influence of urban traffic on the natural environment

Impact of traffic on the natural environment mainly includes automobile exhaust pollution and traffic noise, vibration and so on. Presently, urban traffic system has become a major air pollution source, in some cities, motor vehicle emissions even account for 90% of the total pollution sources, in addition, Traffic noise and vibration have become a prominent factor in the pollution of residents' living environment and sensitive facilities such as schools, institutions and hospitals. Pollutants from automobile exhaust, such as carbon monoxide, hydroxide, hydrocarbons and lead particulates, have some adverse effects on people and animals and plants to a certain extent. Because the car has the characteristics of dispersion and mobility, its pollution is far more difficult to control than industrial pollution, thus, becoming one of world's most difficult to be solved.

3.2. Influence of urban traffic on ecological environment

Effects of traffic on the ecological environment include land, afforestation and water quality, among which, impact of road construction on ecology is mainly through two channels: one is non-polluting damage caused by construction activities to the natural environment resulting in physical changes in the environment and affecting organisms; the other channel is pollutants discharged through the atmosphere, water, soil and other environmental media before getting into the living organisms. As plants and animals interact with each other in complex ecosystems, construction of transport facilities can destroy the balance created among the members of these ecosystems. Therefore, it is necessary to take account of the decrease of these important organisms and the harm they do directly (i.e. destroying vegetation) or indirectly (i.e. polluting water resources). [4].

In the urban ecosystem, the influence of road traffic on urban green space is more and more big reflecting concretely in overall level and layout of urban greening and layout of urban greening. As roads occupy more and more space, people's activities and green spaces are decreasing rapidly. Obviously, road is a powerful invader that breaks the harmony and tranquillity of nature, weakens living animals and plants, and leads to eventual extinction.

3.3. Influence of urban traffic on social and cultural environment
The influence of urban traffic on social environment includes community tradition, social justice, regional development and central area vitality. Traffic is not only a major component of a regional economy and land use system, but also a determining factor in the quality of public life. The construction and operation of traffic engineering will cause community segmentation, change community traditions, living atmosphere and quality so as to cause spatial separation, hinder social interaction, and even destroy neighbourhood patterns, weaken or perish community cohesion. In some developed countries, as city planning is designed for the car, not for the people, a series of serious consequences for human health occurred, the direct of which was disease spread on account of air pollution and increase in casualties caused by traffic accidents, the indirect of which was impact of cars on urban patterns and communities that could not be ignored. While increasing the sense of distance between people, automobiles also increase people's mental pressure. In addition, they have a destructive effect on social cohesion and people's feelings about society. [5]

The impact of traffic on culture includes historical sites, cultural landscapes and so on. Each city has its own characteristics and positioning, especially for some historical and cultural cities and ancient capital. How to combine protection, utilization of the traffic construction and to promote transportation facilities construction without hindering historical site, general features and overall style of natural landscape is worth paying attention to by urban planners and builders. Unfortunately, urban space in China is being eroded on a large scale by road land such as bulldozers that build roads could shovel their predecessors' cultural heritage overnight in many cities or even destroyed merely on one day.

4. Countermeasures for urban traffic environment control
So far, people have never given up the pursuit of a better living environment in accompanied with urban development. Hence, urban traffic environment construction in the twenty-first century should not remain in a level to solve low level urban traffic function, but incorporate into the scope of sustainable development from the height of creating a high quality living environment in the city. A comfortable, pleasant and safe traffic environment should allow people to be free from traffic, contact freely and easily and should improve the quality of traffic so that everyone could master the initiative of traffic. What we are concerned about should not be merely the speed of development, but the quality of the whole transportation space. How to create a healthy, humanistic transportation environment, and a lot of work needs to be done.

4.1. Environmental law governance to improve urban traffic soft environment construction
Soft environment mainly includes the safety consciousness, the moral consciousness and the compliance of the traffic rules of traffic main body. A serious and unreasonable rule will obviously do more harm to the interests of the disadvantaged groups. A healthy society should not discriminate against the weak**,** similarly, to create a healthy and perfect urban transportation system, it is very important to actively safeguard the interests of the disadvantaged groups, that is not only getting them to participate in urban transportation equally, but relying on them to gradually eliminate the unequal phenomena in the urban transportation system to create a beautiful, harmonious and ideal urban society. In the traffic environment governance, various rights and obligations between human beings and natural environment, as well as the rights and obligations between human beings should be fully taken into account to bring people and nature going together into future. Therefore, human beings should rationally develop nature on the basis of maintaining ecological balance, regulate the mode of production and life style of human beings within the limits of the ecological system. And actively transform and utilize nature on the basis of love for nature, respect for nature, conservation of nature and the maintenance of ecological balance.

4.2. Urban space creation to figure new ecology of traffic environment
First of all is to create a "walking friendly" urban road space. With the influence of the theory of sustainable development, people have come to realize that the method of walking space isolation or protection cannot meet the needs of reality, moreover, in reality, it is impossible to completely separate

the pedestrian traffic from the motorized traffic. It is increasingly unfavourable for pedestrians in the whole city traffic environment such as space for walking traffic is constantly being eroded, length of pedestrian crossing is longer and longer resulting in the walking block becoming an isolated island in the spring tide of urban motor traffic. Hence, it is necessary to integrate all the transportation space so that demand for pedestrian traffic taken into consideration by each traffic space minimizes the threat and interference of motorized traffic to pedestrian traffic. The second is to create a friendly road space for public transportation. As an important part of public space, street space plays an important role in promoting street vitality, promoting interpersonal communication and creating a more suitable space for people to live in apart from providing traffic space. Hence, other types of transportation could not be ignored while paying attention to public transportation which is a gradual process modified and adjusted as time goes on without taking large-scale construction activities to achieve substantive results. Last but the least is shape the "new ecology" of environmental landscape" which integrates the laws of modern ecology and biological evolution. Although city is constantly changing forever to provide people with a variety of opportunities and venues in exploration, but there should be a healthy thread in its change. A city's culture, history, culture, architecture, neighbourhood community's physical form should be treated as a living life, a form of life, and a system of life, and be maintained, kept, developed and updated according to its "life" history and living conditions.

4.3. People-oriented" to create a happy environment for people to live in
Most of the cities we build now serve the motorization of automobiles rather than the happy lives of city dwellers. The task of creating a suitable environment for human survival is not simply to create good cities, but to create an environment where most people can live happily. In order to reflect social justice, maintain environmental sustainability and economic growth, we need a model of urban traffic development which is different from the model we have pursued in the past, that is, green traffic model, which needs adequate and high quality pedestrian public space required. As the world's most populous country, China has the largest population of children in the world. According to international standards, there are about 360 million children, of whom about 150 million live in the city, but children living in the city are faced with the risk of being killed by a car when they leave home, thus many children are so afraid of the car. "We can't leave our children out of sight, so we can only drive them to other places like the sports ground instead of letting them go on foot or by bike. Tie them in the back seat of the car, pick them up and drop off, training, and learn piano lessons every day. Boys and girls are like prisoners in love." [6] In spite of the fact that viaducts and roads are often used to represent the advanced cities, only high-quality walking trails are actually the basic elements of a liveable city. From the point of view of urban society, the advancement of cities should be reflected in the fact that toddlers should walk safely everywhere other than how many broad roads they have [7] We must know what kind of city we want, that is, what kind of city life we desire, whether we are going to create a city that serves the old, the children, the poor and all of us, or the city that serves the car. This major problem has nothing to do with engineering technology, but to urban life style. Urban transportation is more a political issue than an engineering one.

5. Conclusion
The operation and development of social system can be divided into three types: benign operation, neutral operation and vicious operation.[8] As an important subsystem of urban social system, urban traffic has its inherent regularity, these three types of operation also exists.[9] How to evaluate the quality or status of urban traffic and traffic environment (type) is not to count the number of traffic facilities or how many means of transportation (cars), or even counting how many broad roads and viaducts should be, but to observe whether people's daily activities are in a normal state.

A traffic environment with good geographical significance should consider the environment, users-people's subjectivity, and multiple physiological and psychological needs. A friendly traffic environment will bring a full sense of pleasure and a beautiful city experience to the public. Good urban design creates a suitable social interaction situation for the traffic environment. Moreover, appropriate

traffic environment supports the occurrence of diverse social communication events, thus promoting social integration and social capital accumulation. The key to success is the spread and acceptance of a correct value, not simply to broaden the road and innovate technology. Consequently, urban traffic environment governance will be a long way to go.

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