

# STUDY OF SOME INTERNATIONAL EXPERIENCES IN THE FIELD OF TRANSPORTATION, TRAFFIC AND ROADS: COMPARISON WITH BLOOD CIRCULATION AND NERVE CELLS IN HUMAN BODY

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**Abstract**— we have studied many of the international experiences in the field of transport, traffic and roads, such as the experiences of each of European countries, Japan, Brazil, Turkey, USA, KSA, China and India. We have examined some of the solutions that reduce congestion in some countries, in particular, the intelligent garage and the future intersections has been considered.

We have also studied the blood circulation in the human body and found that the heart is a link for all the arteries of the human body, which represent in the city free intersections (it is filled with such bridges and tunnels connecting parts of the city together). The existence of such interchanges in any city is important. They are regulating the movement and traffic in the rest parts of the city.

Also in the heart of the human body, there is a small mind like the human mind, but it is only the official of heart movement in our body. This is newly discovered. Similarly, there should be a traffic control center which controls traffic at intersections Free.

Then we studied the nervous system in the human body and found that the presence of the brain to the body as there must be vectors of neural signals in the central nervous system and peripheral and autonomic regions signals gathered in nerve terminals. From this fact we can learn that the existence of centers to control traffic and means to transmit signals to the

centers and to the cars and to individuals which means a three-way controller. Many other interesting results have risen.

**Index Terms**— Circulatory system, nerves system, brain, heart, road, traffic, transportation

## I. INTRODUCTION

The traffic congestion is one of the problems that face humans all over the world. When we talk about traffic congestion, it can be recorded in the different countries with varying degrees depending on the degree of the country's development. Three important factors have to be considered in this case: transportation – traffic – roads.

There have been many attempts by professionals to resolve the crisis. For example, Thailand ) tried to solve this problem by placing the law of taxes on the purchase of new cars. Also a lot of countries in the world tried to solve the problem by providing sufficient means of public transportation Many other interesting solutions carried out by some countries will be mentioned later.

But we have in this research look at the crisis with other attitude of thinking. Looking to the nature, we found in the human body (particularly, in the blood circulation & nerves cells) successful systems for transportation, road & traffic

system. In fact it is the subject of Mimicry which is the science who specializes in comparing nature, with man-made products as simply explained by figure 1.

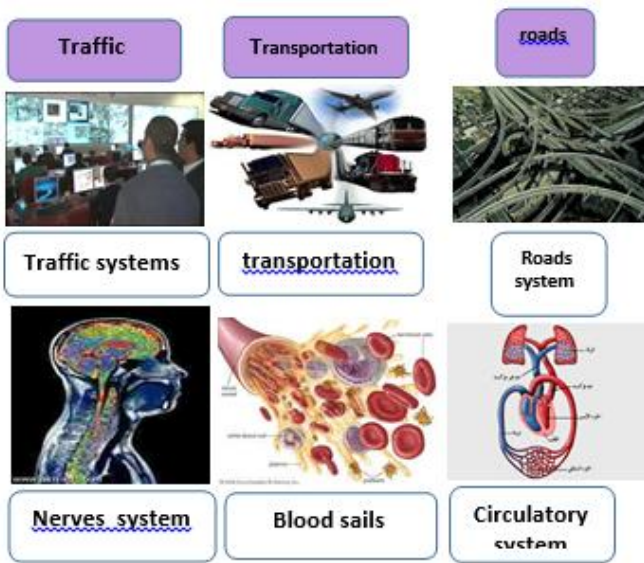


Fig.1. the basic elements of similarity between roads, blood circulation and nerve cells.

Through the study we found Quran verse speaking at the same meaning, namely:

"بِهَآ يَسْمَعُونَ أَذًا أَوْ بِهِآ يَعْقِلُونَ قُلُوبٌ لَهُمْ فَنَنْكُحُ الْأَرْضَ فِي يَبْسِيرُوا أَفَلَمْ  
 "دُورَالصَّدْفِي الْتِي الْقُلُوبُ تَعْمَى وَلَكِنْ الْأَبْصَارُ تَعْمَى لَا فَايْنَهَا

Have they never journeyed through the land so that they have hearts to understand, or ears to hear with? It is not the eyes, but the hearts in the chests that are blind." (Al-Hajj (A Quran verse 46))

Have they never journeyed through the land( means road &( so that they have hearts to understand) The meaning of the brains and heart is that the heart is the free roads intersections & the brains is the traffic control centers.(ears to hear with)&( It is not the eyes) Tools that are used in traffic control (Ear for hear - eye for looking ).

How the world tried to solve congestion problems:

Japanese's . (roads in japan 2012).have developed public transportation and especially express trains and provided electronic agency to speed up traffic, such as the electronic collection gates. They also used traffic intelligent which connect individual, cars & roads. (roads in japan 2012).They also prevented the noise by using buffer barriers for voice and planting trees and plants and use porous asphalt under bridges to absorb the noise as explained in figure 2. (roads in japan 2012).



Fig.2.Japan experiences in roads-traffic systems

But India's public road system takes the priority of the developed considered. They organized tracks of movement. Indians have allocated paths for pedestrians, another for ambulance, fire, police, buses and last for bicycles. Indians succeeded in organizing the roads without the need for a large change in infrastructure of the roads. Figure3 show a sketch of the Indian roads and how they are organized, Pardeshi, 2013).

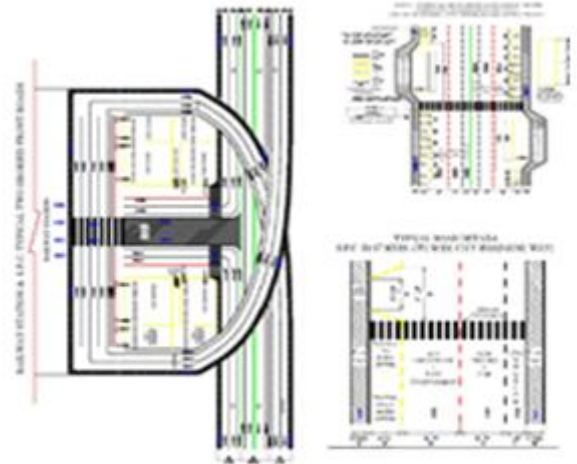


Fig.3.Indian experience in planning roads

Turkey and Europe focused in solving the problems of congestion by development of the roads and traffic. They Save places for the traffic control and interchanges of roads and provide the means of transfer of information on the roads, whether to individuals in the form of maps or traffic control centers in the form of surveillance cameras .They also, provided advanced sea and river trans- portation, in addition to public means of tram, bus, metro and railways. Figure 4, shows an example of the control system in Istanbul,Turey. (Elnawawy, 2015) .



Fig.4. An example of Turkey and Europe traffic control systems.

Americans focused on free intersections in the cities and that caused traffic liquidity for each State(fig.5) (Elnawawy, 2015).



Fig.5. Intersections in USA.

As well as Saudi Arabia (particularly, Riyadh) has a recent traffic control center and the free zone intersections (e.g. Cairo Square) linking many main streets in Riyadh with each other.(fig.6) (Elnawawy, 2015).



Fig.6.traffic control system & intersection in Riyadh

China tried to solve congestion problems by ( Tbs). It is a bus carrying a slow car or broken car. The idea is installed to help traffic flow. It is still an experiment under test and has not yet been implemented.(fig.7) (Elnawawy, 2015).



Fig.7. TBS and Chinghai intersection.

Brazil has a unique experience by making the bus station inside tubes. This idea organized passenger movement and develop the traffic systems. Consequently, they succeeded to increase the number of trips in the city. This encourages citizens to use public transport with active traffic fluidity.(fig.8)( Antonio.l., et.al., 2013)



Figure 2.4.1 Curitiba Tube Station Concept

Fig.8. Busstation in Brazil

From our study of the experiences of the above mentioned countries we recommend the following major points:

- 1- There must be a traffic control centers with active network of surveillance cameras on the roads.
- 2- Sufficient number of free intersections in the cities to connect roads with each other is required.
- 3- The use of modern technological tools in transportation, traffic and roads is the best way for the treatment of traffic congestion problems..



Indicators from the blood circulation & nerves systems:

In this section we explain how to derive some of the indicators from blood circulation and nerve cells in the human body and to see how to apply these indicators on the treatment of transportation, traffic and road problems:

#### 1-traffic (nerves system):

The nervous system is a device giving traffic signals within the human body, as shown in Figure 9 (e.g. netter, 2011). It convey different sensations to the brain. The brain is the place which collects every nerve signals, both external and internal signals. External signals are transported by nervous system peripheral, while internal signals are transported by autonomic nervous system. The engineering indicator concluded here is that, there must be traffic control centers like brain to control the transportation, traffic and roads.

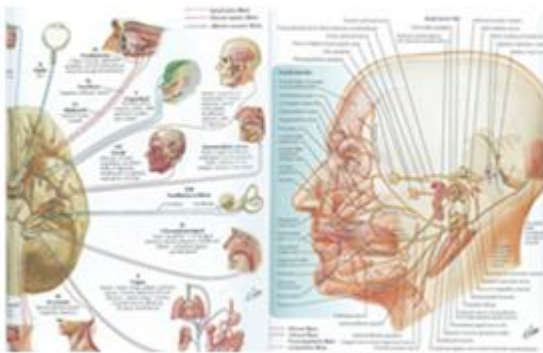


Fig.9. Brain and its interactions with different parts of the human body.

The brain only understand through the language of electrical signals and therefore it can be represented in the road by Internet network linking surveillance cameras by traffic control centers. In addition, a newly discovered device that can be installed beneath the car to give information about the car to the traffic control center and from the traffic control system to the car (Elnawawy, 2015)



Fig.10. Imagine the form of nerve signals coming out of the brain

Nerve terminals are the place where to sort the nerve impulses. It can either allow the nerve impulses to pass or to be erased hence, not felt by the body (as explained by Aldoo, 1983) From this fact, it can be found that, there must be a source of useful information, both for regular cars or services, such as ambulance - police - fire brigade - or means of transport.

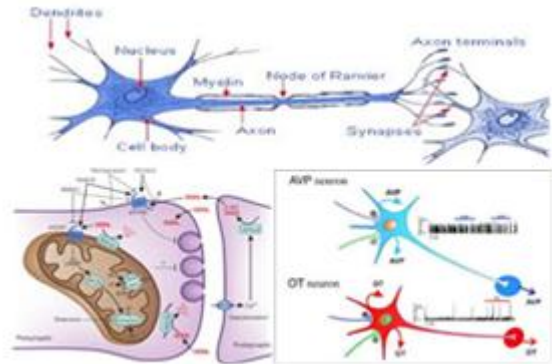


Fig.11. The nerve terminals and how it works

A peripheral nervous system, collect information on the external status of the body by: touch - sight - sniff - heard - heat - pressure as shown by Aldoor, 1983)

The above mentioned point refers to the importance of the following requirements:

1. The existence of signs and signals of the touch plates that gives the maps of transportation in the whole city.
- 2-Sensor fires attached to lamp posts every five kilometers similar to the sensors alarming in case of fires in hotels.
- 3-Noise problems can be solved by use of acrylic paintings on the two sides of the roads.
4. Extendable asphalt on roads to address the problems caused by thermal expansion.
- 5-Sensor on ways to measure the density of car numbers to open an alternative route in case of high rate of high density. (Elnawawy, 2015)

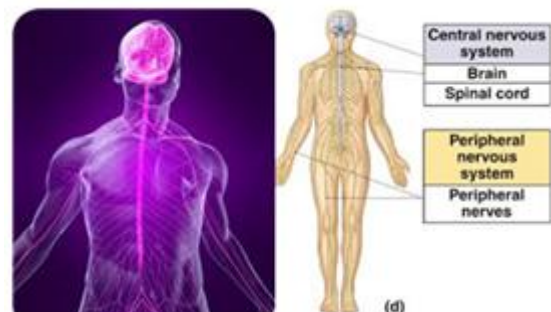


Fig.12. The peripheral nervous system

Autonomic nervous system: transmits signals from the body's internal organs to the brain, such as breathing - heart-stomach. (Aldoor, 1983) From this we concluded that there must be a workshop on the roads for maintenance (ambulance - Ashtrays - police). (Elnawawy, 2015)

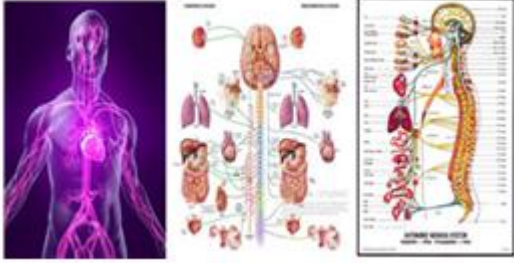
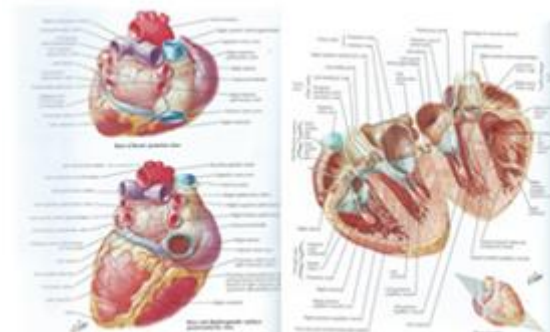


Fig.13. Autonomic nervous system

#### 2-roads (circulatory system):

The heart is the place that pumps bad blood and oxidized blood ( see fig. 14). The blood is pumped from the heart to the different parts of the body and it is the link to the arteries and the main veins in the human body (Macfooad,1999). The engineering indicator of that is the importance of intersections free zone linking roads to each other and if the city is big then many intersections are required and central traffic control system will be essential . (Elnawawy, 2015)



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Figure.14.The heart and its detailed structure

The flow in the human body is constant and stable because the speeds in the small capillaries are larger than the speeds in the large arteries (e.g. Macfooad,1999 and netter, 2011). Therefore, we have to look for using organizes traffic maps to regulate traffic of citizens and to demand balance in traffic flow.

Road system in cities should depend on the possibility of existence of alternative roads. In the human body there are many alternative blood roads. This gives high mobility for the blood traffic inside the human body. This indicator erases the importance of the idea of alternatives roads and alternative methods of transportation, such as rivers or sea transportation. (Elnawawy, 2015)

There is a small mind inside the heart that controls the traffic inside the heart and it has only recently been discovered (<https://www.youtube.com/watch?v=qB1FazYAv6U>)

This discovery indicates the importance of installing different small control systems according to the city size and density of transportation.

Fig.15.the heart in human body



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