

## **THE ULTIMATE SAFE AND EFFICIENT TRAFFIC SYSTEM**

**By**

**William Reville, University College, Cork.**

Everyone knows there is something radically wrong with the way we organise traffic - accidents, grid-lock, air pollution, wasted fuel, frayed tempers, etc. There must be a better way. John Gilmore, Lecturer in Environmental Engineering at Dundalk Institute of Technology, has conceived of a radical and comprehensive solution. This article is based on his analysis.

The motor car is slightly over 100 years old. So far motor car accidents have killed more than 25 million people, and have injured and disabled 600 million people. In Ireland over 400 people die annually on the roads and over 20 are permanently consigned to wheelchairs. Road accidents also cost an enormous amount of money - £653 million in Ireland in 1994.

The combustion of petrol in the motor car produces carbon dioxide (CO<sub>2</sub>) and water. Every car produces 4 times its weight in CO<sub>2</sub> per year. The build-up of CO<sub>2</sub> in the atmosphere is causing the world to warm up and cars contribute 20% of global CO<sub>2</sub> emissions.

Petroleum is a fossil fuel, a limited precious resource. We are burning the earth's fossil fuel 100,000 times faster than the resource is being replenished. Almost all petrol burned by motor cars can be considered to be wasted. The average weight of a saloon car is 1 tonne. The average weight of an occupant is less than 100kg, so 90% of the fuel is used to move the car and only 10% to move the occupant. Because of various inefficiencies, only 10% of the fuel is used productively to overcome drag, which means that only 1% of the fuel is used to carry the passenger, and 99% is wasted.

The average efficiency of motor cars in developed countries is around 35 mpg. We could do 100 times better. The world record for a one-seater 'car' is 9,436 mpg. These cars are special light weight and small engined (30-50 cc) designs. Small engines can still perform - a 250 cc Kart can sprint from 0 to 60 mph in 3 secs., whereas a Porsche 911 takes 4.5 secs; a 50 cc motor bike can reach 60 mph.

Traffic accidents are largely the result of human error and, so, the ultimate solution is to remove human control of the driving process, replacing it with mechanical and electronic automation. This system could also vastly improve fuel efficiency and reduce pollution to an irreducible minimum.

John Gilmore's solution is a comprehensive network of channels along which light-weight cars travel. All driving, cornering, braking, etc. is effected by the channel itself. The passenger merely enters the system, keys in his destination and relaxes until he arrives. The system would be designed to take maximum advantage of gravity to help move the cars just as gravity assists water transport through pipework. The system would have a siding on every street to allow embarkation and disembarkation. Vehicles would travel well spaced apart and automatically controlled so that collisions could not occur. Traffic would move continuously; there would be no traffic lights. The small size and lightness of the cars would make for great fuel efficiency and very low pollution.

The system can be pictured as a staid version of a roller-coaster ride. Roller-coaster cars are mechanically lifted to a height and then released along a rail. The motive power from there to

the end of the ride is natural gravity. The car is guided, banked, etc. by the guiding rail. These systems, despite being deliberately designed to thrill and scare, are very safe.

On first encounter, John Gilmore's vision has an uncomfortable aura of Brave New World. This reaction passes as the benefits and uncompromising logic of the system sink in. Nevertheless, one might argue that the proposed system is inflexible. With the channel system one could not travel exactly from A to B. You might have to walk a street length from A to board the system and walk another street length at the other end to reach B. But, isn't this exactly what you have to do in Dublin now with the parking situation. In Gilmore's system the journey between the two short walks would be safe, quick, relaxing, and non-polluting. At present the journey is dangerous, slow, stressful, and dirty.

John also has proposals on the best ways to transport goods. Most goods we use are small - packets of cornflakes, etc., and are transported by lorry from factory to supermarket, packed into larger boxes. Ninety nine per cent of energy expended in this movement is wasted as are vast volumes of packaging. John suggests that the best way to transport these goods is by pipeline. The Royal Mail in London does just this, beating London's grid-lock by using a dedicated tunnel. Alternatively channels, as previously described, which are empty at night, could be used.

John Gilmore recognises that his vision is radical, expensive to install, and unlikely to be adopted in the near future. He suggests an alternative solution in the meantime. Personal motoring in cities would be confined to specially designed light-weight cars that would move very economically at about 150 mpg. Traffic would move continuously along one-way streets and roundabouts at a speed limit of 15-20 mph. The car would be so light and of such a design (something like Motaball) that even if it hit a pedestrian no harm would ensue. If society insisted on retaining an option to travel faster than 15-20 mph, this faster traffic would be confined to a separate channel system.

It is all too easy to dismiss a vision such as John Gilmore's as interesting but impractical. But it already exists underneath airports, where baggage handling systems flow freely and efficiently. As a biochemist I am certainly no expert on traffic, but, while I cannot evaluate John Gilmore's plan in a professionally critical manner, I know that the solution requires such radical and creative thinking. John is writing a book (*The Last Traffic Accident*) on his solution to the traffic problem.

*(This article first appeared in The Irish Times, June 8, 1998.)*