We complain about suburban sprawl, pollution, and gridlock on the highways, yet many of us live in single-family homes, and most of us drive automobiles. We bemoan the loss of ‘community’ yet choose to live in faceless suburbs. We think we want more ‘livable cities’ but are unwilling to sacrifice the perceived benefits of a suburban lifestyle to have them. For decades, city planners, transportation planners, and policy analysts have struggled to reconcile what we say we want with what we actually choose. By and large, they have failed. Around the world, car use has grown unabated. When people get wealthy, they buy cars and live in bigger homes further away from central cities. Nothing short of outright prohibition or economic catastrophe – not high gasoline prices, not better public transit, not better zoning – has stopped this trend. The result is a host of seemingly intractable problems: unacceptable congestion and fatalities, environmental degradation, ugly infrastructure, social fragmentation and insularity, and cultural impoverishment.

The plan explained
To address these problems, we take what we believe is a distinctive approach. First, we start by accepting that many people want to live in single-family homes, in relatively low density, and to be auto-mobile. We design a town that accommodates those preferences, yet at the same time offers qualitative improvements in safety, aesthetics, travel pleasure, infrastructure cost, social organization, pedestrian space, and so on. Second, in order to accomplish this we separate travel according to the kinetic energy of modes, because many transportation problems are attributable at least partly to the high kinetic energy of fast, heavy motor vehicles. Finally, we develop a particular land use and transportation infrastructure layout that accomplishes what we want.

We design a city with a dual-road system, based on the complete separation of high-speed, high-mass vehicles from low-speed, low-mass vehicles on a citywide scale. Instead of having a single road system that serves everything from 50 lb children walking at 2mph to 150,000 lb trucks traveling at 65mph, we propose to plan new...
We propose to plan new towns with two separate road systems, segregated according to the maximum mass and speed (i.e. kinetic energy) of the modes. By contrast, the main function of the LLM streets is to provide access inside the town, especially to and from the town center, via the central LLM ring road. The FHV network and the LLM network thus complement each other functionally: the LLM network is designed mainly for trips within the town, and the FHV network is designed for all other trips.

Analysis

This transportation and town plan gives rise to appealing town characteristics and provides substantial safety, social, environmental, and economic benefits, while at the same time enlarging choices for travel and living.

Stores, offices, schools, civic buildings, churches, parks, inter-city transit stations, and so on are in the center of town (Figure 4) and neighborhood centers (Figure 2), not sprawled disjointedly over a suburban landscape. This coherent social and commercial geography identifies the town and neighborhoods. High-density multi-family housing units are around the core (Figures 2 and 4), and provide convenient pedestrian, bicycle, and other LLM access to the town center for those who prefer higher-density, more urban living.

The LLM network dramatically improves transportation safety, without increasing the time or cost of travel. In fact, it should be possible to virtually eliminate fatal crashes on the LLM without sacrificing travel convenience. As they are low-speed, safe, inexpensive, and convenient, LLMs are attractive to four groups for whom ownership and use of FHVs is now problematic: the young, the elderly, the poor, and those otherwise without licenses
Implementation

In the preceding sections we have discussed a wide range of potentially significant personal and social benefits of the LLM network: nearly perfect safety, reduced congestion, a unified street space and coherent community feel, very low environmental impacts, near-zero petroleum use, and so on. Of course, the overall magnitude of these benefits, and hence the desirability of the entire system, depends directly on the extent to which LLMs are used. However, there is nothing yet in the real world quite like what we have proposed, and consequently it is not possible to provide a straightforward empirical answer to the question of how much might LLMs be driven. Our inferences from studies of the use of small electric vehicles, and our own analysis of trip-making behavior and the potential of LLMs to displace certain kinds of trips, suggest that LLMs can displace in the range of 30-50% of vehicle miles of travel by current light-duty vehicles.

The final question is where might towns like this be built? In many of the growing urban areas around the world, from South America to Asia to the American West, the urban newcomers are developing the exurban fringe. This kind of exurban-fringe expansion can be accommodated well by the town and transportation plan we propose. However, in rapidly expanding cities in developing countries, it may be difficult to commit the necessary capital up front to establish the basic dual-network transportation infrastructure. Thus, the plan perhaps is more naturally suited to large new subdivisions on the urban fringe of cities in the American West, such as in California's Central Valley.

Many transportation-related problems, from accidents to climate change, are attributable to the high kinetic energy of fast, heavy motor vehicles. The challenge is to find a way to dramatically lower the kinetic energy of personal travel, without compromising any of the benefits of motor vehicle use and suburban living. This is achieved by creating two autonomous and universally accessible travel networks: one for fast-heavy vehicles, the other for low-speed, light transportation modes.

The town plan and transportation system we propose is safe, convenient, clean, and pleasant. It should be attractive to households without economic or regulatory incentives or injunctions. The requisite technologies, and analyses of their economic and social impacts, are available now. The challenge is to interest city planners and developers in the idea.

Further reading