The Smart Jitney: Rapid, Realistic Transport

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The Smart Jitney: Rapid, Realistic Transport

Introduction

The world is facing twin threats from global climate change, caused largely by CO_2 released from burning fossil fuels, and declining fossil fuel resources. Automobiles play a major role in both of these potential catastrophes. The damage is already so significant that severe restrictions may have to be placed on consumption of the remaining fossil fuels, making the development of alternative transport systems vital.

For many decades U.S. transportation has been focused on the energy-intensive private car. After World War II the United States made transportation via the private car its top priority – at the expense of public transportation. However, the private car, regardless of its convenience, can no longer serve as the principal mode of people transport. Its high cost, the depleting of fossil fuels, and climate deterioration – along with high rates of deaths and injuries – make it unacceptable and unsustainable over the long term.

Prudence requires a backup plan. One such backup is the “Smart Jitney”. A “jitney” is a small vehicle that carries passengers over a regular route on a flexible schedule. Basically, jitneys are a form of mass transit using cars and vans rather than passenger buses or street cars. A “smart jitney” system could be developed rapidly and provide a very sizable (75%) reduction of both fossil fuels consumed and greenhouse gases generated by personal transportation in the United States. It could also be the model for a new and more efficient approach to personal mobility. At the very least, it could keep the U.S. economy functioning by giving people a way to get to and from work if there was suddenly insufficient fuel for private cars.

The Private Car Paradigm

The private car dominates our economy and our way of life. In spite of its numerous benefits, the many conveniences, and the sense of freedom associated with the automobile, it is unlikely that we can continue using a machine that has been so devastating for the planet. Traffic is worsening all over the world. As energy resources deplete and CO_2 emissions increase, even a 100 MPG private automobile cannot be the main mode of transportation for seven billion people.

Table 1 shows the total U.S. transportation fleet except for trains.[1] Vehicles last a long time (12 to 20+ years). It would take decades to replace them all with more efficient ones, assuming highly efficient vehicles were available. Heavy trucks are extremely important for transporting food and other materials. In addition, the 8,500 aircraft flying at 30,000 feet do more climate damage than their numbers suggest because the emissions from burning fuel are deposited at higher altitudes. The size of the transportation fleet is huge and the investment is in the trillions of dollars.

U.S. Capital Stock Profiles

	Autos	Light Trucks	Heavy Trucks	Air Carriers
Oil consumption (MM bpd)	4.9	3.6	3.0	1.1
Share of the U.S. total	***25%***	***18%***	***16%***	***6%***
Current cost of net capital stock (billion $)	$571 B	$435 B	$686 B	$110 B
Fleet size	130 MM	80 MM	7 MM	8,500
Number of annual purchases	8.5 MM	8.5 MM	500,000	400
Average age of stock (years)	9	7	9	13
Median lifetime (years)	**17**	**16**	**28**	**22**

Table 1: U.S. Transportation Fleet with Replacement Costs

Private Car MPG Improvements and Growth Trends

In his testimony to a Senate subcommittee, John German, Manager of Environmental and Energy Analyses for American Honda Motor Company noted,

> It is clear that technology has been used for vehicle attributes which consumers have demanded or value more highly than fuel economy . . . . If the current car fleet were still at 1981 performance, weight, and transmission levels, the passenger car CAFE [corporate average fuel economy] would be almost 38 MPG instead of the current level of 28.1 MPG. The trend is particularly pronounced since 1987. From 1987 to 2006, technology has gone into the fleet at a rate that could have improved fuel economy by almost 1.5% per year, if it had not gone to other attributes demanded by the marketplace. [2]

His testimony points out that the problems of energy use are not just technical but also cultural. Americans want speed, acceleration, and big cars – not efficiency.

Petroleum consumption and accompanying CO_2 emissions are steadily increasing due to the rapidly growing number of cars and trucks not just in the United States but worldwide. Figure 1 shows world growth projections for automobiles and light trucks in black and the growth projections for petroleum fuels in gray. [3] Note that the rate of growth of petroleum (gasoline and diesel fuel) is slower than that of cars, reflecting improvements in fuel economy. But the total fuel consumption is still increasing, making the case that greater efficiency does not reduce total consumption.

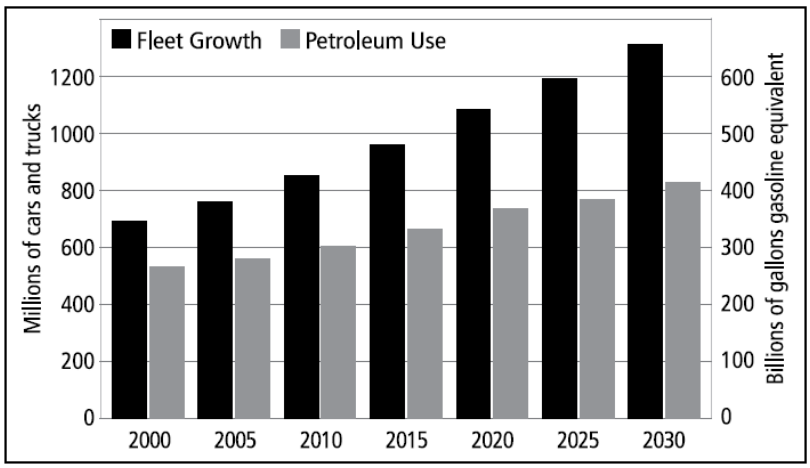

Figure 1: Projected Growth – Global Fleets and Petroleum Consumption

When oil production peaks or when stringent laws are passed to reduce CO_2 emissions, there will be an annual decrease in the availability of diesel fuel and gasoline. Those who argue that basic changes to the transportation system are not needed because of improved car efficiency are not addressing the implications of going from about 750 million cars today to nearly 1.3 billion cars in the next 20 years. Taking this a step further, today the average car in the world might get 35 miles per gallon with an average yearly mileage of 10,000 miles. In the future 1.3 billion cars getting 50–70 MPG and being driven an average yearly mileage of 15,000 miles will be disastrous to the planet. The increase in the number of cars driven and the distances traveled far outweighs the mileage improvements from any new type of engines. Even if there were sufficient oil to fuel this growth, the amount of CO_2 generated would increase, worsening global climate change. Rapidly increasing the number of cars, while improving performance relatively slowly, cannot continue. We must increase the number of passengers per vehicle trip as well as the miles per gallon (MPG) of the vehicle.

Car Deaths and Injuries

The current car paradigm encourages people to take as many car trips as possible. Such heavy use of cars requires building and maintaining an enormous number of roads, garages, and parking areas. Advertising supports the cultural ideal of rugged individualism. People are encouraged to drive the largest possible cars while buses and trains become neglected alternatives. Walking and cycling can be inconvenient and dangerous because accommodating motor vehicles is given top priority.

The cost of the private automobile goes beyond financial and climate considerations. Figure 2 illustrates annual auto deaths and injuries. [4] The world total is about 1.2 million deaths and 40 million injuries yearly. In the United States about 40,000 people die each year in auto-related accidents. Deaths and injuries are also high in the developing world, where the infrastructure to support the car paradigm is not as well developed as in the United States. As cars begin to penetrate societies such as China and India, pollution, injuries, and deaths will increase there as well.

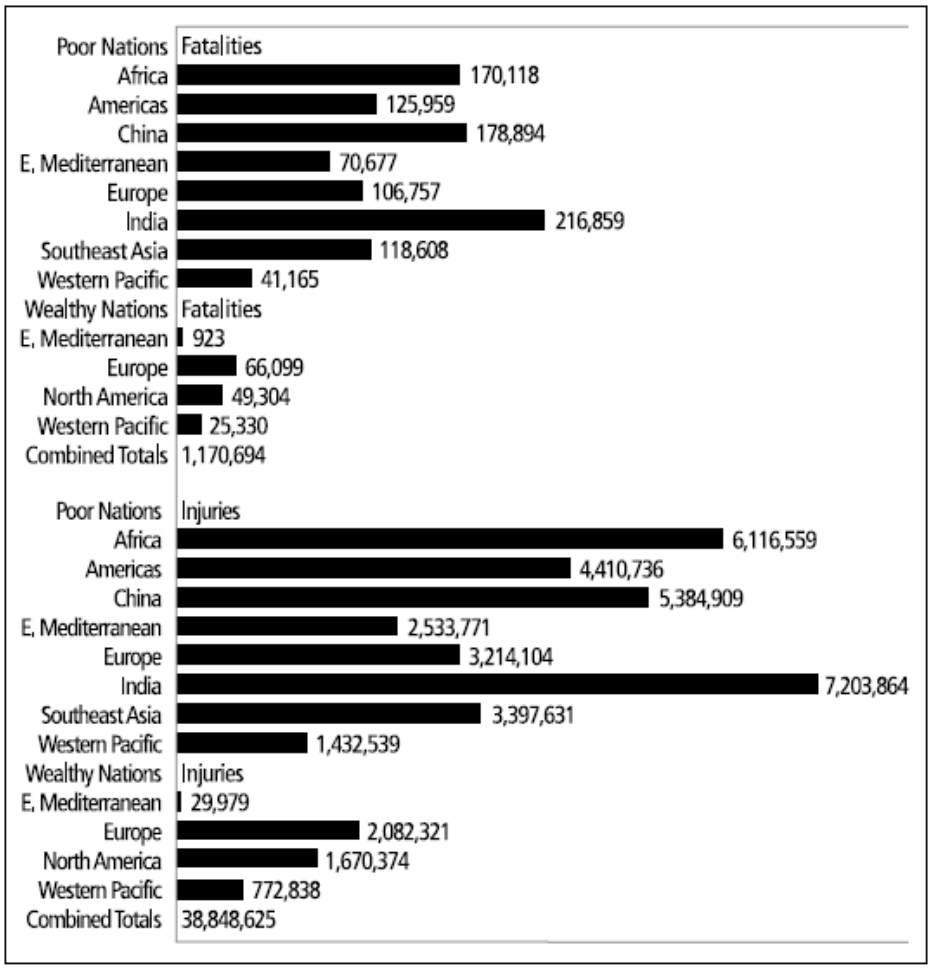

Figure 2: Worldwide Traffic Fatalities and Injuries – 1998

Results of the Private Auto Paradigm

Cars have played a major role in destroying community, by which I mean a feeling of home, family, and neighborhood. With the private automobile, we have gained speed and mobility but lost personal relationships. We have chosen freedom for the individual over the integrity and support of the community. Of all our vaunted freedoms in the United States, none is more important than the freedom of the open road. Getting a license to drive is a rite of passage for our teenagers. The automobile allows young people to leave their communities, to experiment with high speed and, removed from family influence, with sex, alcohol, and drugs. We have accepted this so-called freedom for our children, ignoring potential damage and danger to their wellbeing. Parents' major fear is not teenage drug use or pregnancy, but death or injury in a car accident. And no wonder parents are concerned: almost every beginning driver in the United States has an accident. Parents don't want their children to be among the 40,000 yearly deaths or the 2 million yearly injuries, many which result in permanent disabilities.

Because people crave the freedom the car provides, they have accepted the destruction of communities, the negative impact on family life, and the deaths and injuries. But now

the private car is threatening the future well being of humanity as oil production begins to decline and climate change challenges the current transport paradigm.

The Limitations of Mass Transit

It is assumed that mass transit is a possible and obvious alternative to the private car. European cities are often praised for their superior transit systems. The New York City subway supposedly offers an alternative to the private car. But in all the cities with mass transit systems, the car population is still growing. Streets are becoming more crowded, and far more expenditures are made on roadways than on subways and buses. Subways and other forms of mass transit today only supplement the car since high density is required for mass transit. In successful past implementations, residential developments were laid out in dense corridors, typically along a rail or streetcar line, with open spaces and farms between these corridors. The ideal configuration was analogous to a wheel: the hub represented where people went to work and shop, while the spokes represented where they lived. The space between was often used to grow food.

When the private car became popular, the areas between the spokes were more accessible and were eventually filled in. Food growing was transferred away from where people lived. This led to urban sprawl and suburbs, making effective mass transit more difficult. Eventually, there was no longer any attempt to build along mass transit lines; many such lines disappeared. North American urban sprawl has no precedent in history, so the feasibility of a contemporary mass transit system has yet to be proven. A true mass transit system for the United States may, in fact, not be possible.

The potential energy savings of mass transit, in the context of implementing such a system in today's configuration of cities and urban sprawl, may be highly overrated. Table 2 depicts the BTUs of energy per passenger mile (assuming average passenger densities per vehicle) for each mode of transportation. This illustrates the fact that existing mass transit systems in the United States do not provide significant fuel savings. However, vanpool BTUs per passenger mile are 1,322, hinting at the viability of a jitney system. [5]

Private car	3,512
Light truck (SUV)	3,944
Vanpool	1,322
Bus transit	4,235
Airplane	3,261
Amtrak train	2,650
Rail commuter	2,996

Table 2: BTU Cost for Mass Transit vs. for Other Kinds of Vehicles

The Smart Jitney Option

A new transport paradigm would place the highest priority on minimizing the use of fossil fuels, rather than on convenience, speed, or personal freedom. A smart jitney system would reduce energy use by more efficiently using existing vehicles by increasing the number of passengers. Jitneys typically are not required to travel exact routes on an inflexible schedule the way trains, buses, and street cars are. A U.S. jitney system could increase passenger occupancy from the current 1.6 persons per trip to 4-5 persons. An increase of three times would use one third the number of vehicles to achieve the same number of passenger trips, removing most of the cars on the road and thus substantially reducing fuel consumption and CO_2 emissions.

The Smart Jitney Technology

The technology needed for smart jitney implementation is already available with existing automobiles. Jitney service can be provided by any vehicle, new or old, small or large, but with the minor addition of a special cell phone connected to the car. The cell phone would include GPS capability as well as an emergency call button for security. Whenever the rider or driver felt any sense of danger or threat, punching an emergency call button could automatically transmit information to the nearest law enforcement center for assistance.

Each passenger using the jitney system could use a personal cell phone, computer, or regular phone to reserve a ride. Initially, there would be relatively small adjustments to the existing vehicle fleet and the cell phones currently dominating communication. Reservation tracking systems would need to be developed and implemented. The reservation system would control both the ride management and bookkeeping of this new transportation modality. Rides would be planned and scheduled in a way similar to an airline reservation, except in a more timely, local, and responsive manner.

Scientists have already developed many kinds of ride optimization algorithms to coordinate complex pickup and deliveries for both people and materials. Systems used by FedEx and UPS routinely optimize pickup and delivery. An Auto Event Recorder (AER) is analogous to the flight recorder on an airplane. AERs already exist on more recently manufactured automobiles; the National Transportation Safety Board (NTSB) estimates that 65–90% of all vehicles in the United States contain some type of AER. These systems record driving activity, including vehicle speed, that is taking place in real time. This information would provide the basis for adding a new level of traffic safety and could be fully implemented nationally.

The Smart Jitney Process

The process begins with a request for service initiated by a passenger who contacts the ride sharing control center and enters a pickup location and a destination location along with desired times for pickup and drop off. One could also specify the level of service desired (see Options for Levels of Service below).

The smart jitney control center would constantly monitor information about all cars in the system, including the number of passengers, destinations, and vacant seats available.

Once the analysis was completed (requiring only a few seconds of computer calculation), the rider would be assigned to a participating vehicle. The driver of the vehicle would be notified and provided with the pickup location and time, along with directions.

The rider would be picked up and dropped off as requested. The driver would be compensated for providing the transportation service, with the fee regulated similar to mass transportation fees. After the trip, the rider would submit an evaluation of both the driver and the condition of the vehicle by cell phone or via the Internet, similar to the evaluation used by the Internet based company eBay. By publishing customer satisfaction for all to see, eBay eliminates many complaints because people simply stop buying from sellers with poor delivery performance. By having both a ride evaluation and AERs, records of long-term driver performance would be available.

Options for Levels of Service

The easiest and most efficient system would be one in which all riders take whatever ride is available, but it might be difficult for Americans to accept such a completely democratic system. Therefore, different levels of service might be required. The first level of service could be more or less random. Only the pickup and destination locations would be entered along with the time of pickup and preferred time of drop off. The rider would input the data and the system would inform him or her of the car description, driver name, and time of pickup. This level would allow for the most possible rides and the quickest service.

A second level of service could allow a person to input preferences, requesting rides with certain groups of people. Possibly the most important would be for women to be able to request rides with other women. Men could also request non-coed trips. Another option would be to request certain age groups. Still others might want to put limits on the playing of music or wish to ride with people who will be quiet. Any rider could be allowed to select the mode that best suits him or her. Of course, if a rider's preferences were too strict, availability of rides would decline.

A third level of service could allow scheduling future rides with a specific set of people. For example, a group of people with mutual interests who have a predictable schedule on a regular basis (such as work or school) could easily plan to travel together. Other levels of service would be added as experience dictates.

The Smart Jitney Driver

The smart jitney need not be implemented as a separate business like a taxicab service or a mass transit business. It is a form of ride-sharing using existing passenger vehicles and existing drivers. Overall, the number of people driving should decrease significantly. Although people could still drive and maintain an automobile, it is expected that eventually most people would accept the role of passenger. Anyone with a good driving record could serve as a jitney driver, but certain limitations would be stipulated. For example, inexperienced drivers could not be jitney drivers. Minimum age limits for drivers might correspond to age limits set by insurance and rental car companies, which reflect the higher accident rates of younger drivers.

More rigorous driving tests could be administered to grant qualification as a jitney driver. People with poor driving records, as measured by accidents and traffic citations, could also be barred from being smart jitney drivers. People with Driving Under Influence (DUI) convictions might not be permitted to be drivers until some time had elapsed since their infraction or they complete some type of re-qualification. People with child molestation records would be excluded. Similarly, existing smart jitney drivers could lose driving privileges because of poor driving or the use of intoxicants.

Smart Jitney Benefits

The smart jitney's first advantage is that it could be quickly implemented using the existing U.S. vehicle fleet. A jitney system would make it possible for people to continue to travel fairly long distances to work and school, and for other necessities, should gasoline shortages occur or when people realize that the deteriorating climate effects of CO_2 emissions can no longer be tolerated.

Secondly, a smart jitney system could solve some of the problems of the existing system. For example, it could be safer. Walking, cycling, and sharing rides could be made much more convenient and private cars less convenient, reversing the trend of the last century. This differs from most of today's proposed solutions, which involve combinations of mass transit and using fossil fuel generated electricity to fuel private electric automobiles.

A third benefit of the smart jitney is faster transit time. Commuters sitting on freeways in any large American city experience stop-and-go traffic at rush hour, averaging only a few miles per hour for much of the journey. A smart jitney system would eliminate most of the cars currently on the road, allowing much more rapid flow of traffic. Even time for stopping to pick up and drop off riders would be small relative to time spent in the current congestion!

The fourth major benefit is drastically reducing consumption of fossil fuels. Increasing the number of passengers per vehicle would provide a large reduction in fuel use. (An SUV getting 10 MPG but containing five passengers achieves the same MPG per passenger as a Prius with just a driver.) This will help avoid economic contraction, lower the chances of conflicts over fossil fuel resources and, most important, reduce CO_2 emissions substantially. This is a major step in eliminating the specter of global warming with its potential for massive disasters and loss of life.

The final benefit of the smart jitney is eliminating the tens of thousands of deaths and millions of injuries we currently accept as part of ordinary life. The proposed technology would include monitoring driving in real time and recording driver performance by AERs. Lives would be saved because of the associated decrease in traffic and because the best drivers would be at the wheel. In addition, lowering speed limits to save gasoline will lower the accident rate even more.

Addressing Concerns: Security, Safety, and Privacy

Evaluators of this smart jitney proposal typically are concerned with issues of personal security, safety, and privacy. In general, women are more concerned than men about security. Other issues deal with a feeling of loss, both of private time while driving and of self-esteem associated with ownership of a vehicle. Americans have been taught to believe vehicle ownership says something about who they are. The automobile has become far more than transportation – it represents the good life.

To be fair, the private automobile has also been responsible for the fears and concerns many of our smart jitney evaluators expressed. Cars certainly have made crime much easier: perpetrators can be miles away from the scene of the crime in minutes. Date rape becomes easier when two people are alone in a vehicle.

Moreover, the image of the private automobile, as presented in advertising, is typically one of power, speed, and force. Cars are sold on that basis, with strong emphasis on the individual rather than on the community. The poor record of young male drivers may be based more on driving with a certain machismo image in mind than from a lack of driving skill. The smart jitney could serve as a vehicle for cultural change as well as a new transportation modality. But to do so, security, safety, and privacy problems must be addressed.

Security – Security refers to the risk and danger from other people who, for whatever reason, may intend some kind of harm to our persons or psyches. Concerns about personal security are not trivial. The United States is a dangerous place, and its citizens are more violent than the majority of people in the rest of the world. Women have good reason for concern. “I wouldn’t ride with a man,” many female reviewers of the smart jitney have said, stating openly their fear of the violence that is common in our culture. The ability to choose to ride only with other women must be part of the smart jitney system. American men, although feeling more secure than women, must also take the necessary precautions for living in a violent society. Children, too, must be protected from violence, bullying, or other anti-social behavior.

As noted earlier, at the completion of each ride, passengers could be asked to rate their smart jitney experience, covering such categories as the condition of the vehicle and the skill and suitability of the driver. With multiple passengers daily providing reviews, poor or unsuitable drivers could quickly be identified and their jitney licenses taken away. Obnoxious passengers could also be identified by the rating system and appropriately managed.

Safety – Safety in relationship to automobiles refers to the accidents, deaths, and injuries that come from a myriad of causes, including auto and traffic equipment, roads, driver errors, and recklessness. Initially, to ensure vehicle safety, there would have to be mandatory inspection of vehicles for smart jitney licensing. Annual inspections would also be required.

At first, the smart jitney system would use existing cars, but eventually they would be replaced as much higher-MPG vehicles became available. Newer vehicles would be developed with a focus on safety rather than style. Instead of more car electronics for watching TV, accessing the Internet, or automatically parking the vehicle, collision avoidance electronics could be developed and installed. Automobile companies have

always given priority to speed, styling, and image over safety. However, if the approximately 100 billion dollars spent annually worldwide on automobile research and development were redirected from styling changes, then major safety improvements could be realized quickly. Furthermore, cars could be designed for greater longevity and ease of repair, which would contribute to reducing CO_2 emissions by minimizing the amount of embodied energy expended on the automobile fleet.

Traffic equipment and roads must be carefully evaluated, but they are not the main reason for accidents. Driver errors could be dramatically reduced by setting a lower speed limit; 45–55 miles per hour is the optimum speed for efficient performance of internal-combustion engines. Slower moving vehicles with higher passenger density would leave more of our streets available for bicycles and also reduce the risks involved in riding bikes in traffic. Through this shift to ride-sharing, the United States could set a high priority on reducing highway carnage. Legislation and market demand for safe jitney vehicles could force automobile manufacturers to improve safety standards.

Privacy – Protecting privacy means respecting people's need to maintain the confidentiality of their personal identification, including name, pictures, employer, or place of residence. A breach in privacy occurs when people intrude in our lives through inappropriate access to this personal data.

In modern times, real privacy is increasingly limited even though people have an illusion of it inside their private cars and homes. Internet access and phone records, along with other private information, can now be purchased by businesses, corporations, and individuals. Government agencies such as the CIA, FBI, and NSA maintain civilian databases. Marketing of people's personal information is now acceptable and viewed simply as a business opportunity. Governments, particularly since 9/11, are collecting massive amounts of data on people.

With people sharing rides with strangers on a daily basis, protection of privacy will be a challenge. The smart jitney system could use the same methods of anonymity and protection as banks or any other institution promising confidentiality with the similar caveat that these institutions use. That is, they cannot absolutely guarantee that ride sharing information will not one day be inadvertently revealed or stolen. Infractions of privacy could be traced back in the ride-sharing system by reviewing ride records, and appropriate responses to violations might include denial of ride service.

Implementations

Implementing a system of this complexity would not be difficult. Although the smart jitney is different from existing ride and car-share systems, they serve as models for how technology could be developed. One rental car company, Zipcar.com, has an Internet system with some of the scheduling features and GPS tracking proposed for the smart jitney. In the United Kingdom, liftshare.com administers a ride-sharing program that matches riders and loads to cars and trucks around the country, using phone and Internet connections. Liftshare has more than 300,000 individuals and businesses as members. [6] Mitfahrzentrale.de, based in Germany, offers ride-sharing throughout Europe to its more than 600,000 members. [7]

The most significant implementation I have identified was developed by the software company Avego, headquartered in Kinsale, Ireland. [8] Founded by Sean O'Sullivan, a previously successful entrepreneur in the development of mapping software, Avego released its first version of "shared transport" in late 2008 with a second release in late 2010. The product was demonstrated to me in early 2009 at the Avego headquarters in Ireland. The system uses an Apple iPhone as the user communication device. The website for the product notes that "Avego Shared Transport enables private cars to become part of the public transport network by providing a marketplace for drivers to offer their unused seats to other people in real time." The system is well designed and extremely convenient both for drivers and passengers. The implementation was done with a relatively small programming team and its functionality could be duplicated easily, that is with a few millions of dollars rather than the hundreds of millions of dollars spent on a single new car model.

A variety of transportation companies are beginning to use the Avego system. In February 2010, VPSI, the world's largest vanpool service provider, began to deploy Avego's system for its nationwide fleet of more than 5,000 vans. [9] Twenty-five million passengers use VPSI vanpools annually. This illustrates that the Avego system can be used in a variety of modes.

Shared transport has not yet been taken seriously at the U.S. Department of Transportation. That organization is still committed to the private car as the basis for transport. Mass transit supporters still argue for their approach to save energy and reduce traffic congestion but the country is now so spread out that it is well nigh impossible. It is expected that both car and bus positions will shift when shared transport products become more widely known and when electric vehicles fail to deploy rapidly.

In the meantime, early pioneers for smart jitney concepts remain active. Bob Behnke, who originally used the term, continues to advocate for the approach, convinced that Wi-Fi and other technologies now make it more feasible. [10] Park Woodworth continues to research ridesharing opportunities in Washington State. He and Behnke co-wrote a paper entitled *Smart Jitney/Community-Enhanced Transit Systems* describing a possible implementation. [11]

Long-Term Implications

The use of fossil fuels changed North America from a place of small local communities with limited mobility and resources to one of large urban and suburban concentrations with high mobility. Goods and food are now shipped thousands of miles. This high mobility is based on the private car with its continuous use of significant quantities of gasoline. The advantages of this way of living, especially considering the effect on the climate, are becoming more and more questionable. Low-energy ways of living will need to include many changes, such as devolution from concentrated urban centers to smaller communities and more local food supplies. Eventually, a pattern of smaller neighborhoods and towns with a focus on walking and bicycling will be more the norm. This is not a return to some previous period in human history. Most of the world is living this way now. Medical science and other advances will not be abandoned even if people drive less and share vehicles.

A primary cultural value of the developed world is competition; it is the key principle of our economic system. Cooperation, a key value in other cultures, is a sign of weakness in the United States. Walking or getting in a car with a stranger or riding a bus may be just an inconvenience in other cultures. For Americans, it could be a threat as to how we view ourselves. The depletion of fossil fuel sources and climate change will force us to be more cooperative. The smart jitney may start as a short-term emergency solution within the existing infrastructure, since it will allow us to keep similar patterns of living. Any inconvenience and discomfort experienced will be overshadowed by the possibility of stopping planetary degradation and its threat to basic survival. In the long run, the smart jitney could evolve into some mode of transportation not yet envisioned. It could help serve the larger physical community in the future as an intra-city mechanism for longer travel. It's possible that evolution of a jitney-based mass transit system, within the context of a decentralized local way of living, will naturally occur.

Conclusion

In April, 2010, the EPA announced new higher mileage standards for automobiles, proposing to raise the U.S. fleet standard to 35.5 MPG by the year 2016. In late 2011, the standard was increased to 54.5 MPG by the year 2025. It is not clear how much of this improvement is based on inaccurate measures of MPG performance of BEV and PHEVs. The EPA did not define the performance or emissions for electric cars.

A Wall Street Journal article pointed this out, referring to the earlier announcements by GM of a 230 MPG Volt and by Nissan of its 367 MPG Leaf. [12] The extent of backlash to these outrageous claims took the EPA by surprise. The article also referred to GM's "short lived viral marketing campaign." Part of the April, 2010 EPA announcement exposed the unrealistic MPG claims being made for electric and PHEV vehicles. In May of 2011, the EPA provided a new set of window stickers. [13] These provided a method of measuring MPG for electric cars, labeled MPGe or Miles per Gallon equivalent. The method assumed a ratio of 33.7 kWh per gallon of gasoline, ignoring the loss of energy in creating electricity and transmitting it to the user. The appropriate measure should be 12.3 kWh per gallon of gasoline, which would reduce the EPA MPGe numbers by about two thirds.

This is representative of the hype about new car technologies that has been going on for forty years. Car companies, with U.S. government support, have offered a myriad of so-called "breakthrough technologies" – fuel cells, electric cars, diesel hybrids – which were to have been deployed decades ago. Since these claims began in the 1970s, hundreds of millions of gasoline cars have been added to the world fleets. And car companies, with government support, continue offering more techno-fixes, ignoring the failures of the recent decades.

Peak Oil and climate change call for a new transportation approach, one that does not depend on the private car (which someday may be viewed as possibly the most destructive device ever made and the prime example of questionable American consumer values). Sharing rides may be a traumatic change from using private cars. But the threat of energy shortages, loss of jobs, and life-threatening climate change provides motivation for trying out a new approach, one that may have long term benefits for the environment. It is my belief that significant and positive personal gains in terms of time,

safety, and economics will also be realized. Choosing this transportation approach might well save us from climate disaster and could prove to be superior to what we have now.

The technology (hardware and software) is already developed, making it feasible to replace the private car quickly with smart jitney ride sharing, substituting low energy shared transport for private transport. Rather than waiting decades to improve car miles per gallon adequately to meet the climate crisis – an approach that has a high risk of failure – we can change our current individual car paradigm quickly with little risk. Such a shift will change (for the better) relationships between people and help restore community. And our public behavior may have to adjust (also for the better). Just as people cannot drive when drunk, they may not be able to ride when drunk. If all participants respected one another, a smart jitney ride could be a real pleasure as well as an energy-saving convenience. It could be an opportunity to learn new things and meet new people.

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