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Journal Item

How to cite:

Warren, James P. and Enoch, M. P. (2004). “Needs must when the blockade drives”: Cuba’s less intensive transport society can teach the developed world a few lessons. Cuba Si - Journal of the Cuba Solidarity Campaign

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Version: Accepted Manuscript

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“Needs must when the blockade drives”: academics James Warren and Marcus Enoch argue that Cuba’s less intensive transport society can teach the developed world a few lessons

In terms of transport, Cuba is unique because the economic blockade and collapse of the Soviet Union have led to a transformation in how goods and people are moved.

One example of how this crisis affected transport provision is illustrated by the bus sector. In Havana, by May 1993 the number of operational buses was only 500 compared to 2,200 before the collapse of the socialist block, while outside the capital the number of bus routes operated at the end of 1992 had been cut by more than 80% compared with three years earlier.

The economic downturn effectively cut demand for freight transport and the lack of transport supply has effectively forced many people to either make fewer trips, or else made them ‘trip chain’ more efficiently. Land use planning too has been used to control trip lengths, which is unusual in a developing country. Typically, Cuban cities deploy a strong green belt policy to prevent urban sprawl, and new developments are concentrated along public transport corridors whenever possible. In addition, mixed-use developments are encouraged so that where new housing is constructed for example, enough new schools and shops are also provided to maximise walking opportunities.

Data on how much travel was reduced through people moving house or job or by changing working patterns is difficult to find. However, it was realised that there were many non-specialised workers who had jobs far from their homes. A system was therefore put in place to allow people to exchange their job for one closer to their home, which resulted in over 10,000 people exchanging their jobs to reduce the time and resources spent on commuting.

In the case of a person having to change their job location (in order to be closer to their residence) the government guaranteed an equal salary for the new job position, even if the work position should have been paid a lower rate. This state subsidy offset by the savings made on energy for transport and time. In addition, businesses and work centres changed their working patterns. Where factories worked six days a week, only alternate Saturdays were staffed. Others reduced to a five day week with the same level of total hours worked. These changes reduced the demands for transport as the peak times were either condensed or smoothed out.

On the supply side, as fuel and spare parts became increasingly scarce, policies were adopted to increase the efficiency of the vehicles. Firstly, new informal public transport modes such as truck transport and employer-operated work buses were developed. Secondly, the occupancy of existing vehicles was increased through measures such as organised and informal hitchhiking and the encouragement of ‘*collectivo*’ taxi sharing schemes. Thirdly, technological developments in alternative fuel types were made. Fourthly, regulatory and fiscal instruments designed to limit the demand for the small number of private cars were adopted. Finally, walking and cycling were encouraged, as was the re-adoption of animal-powered traction.

In Havana, flatbed truck trailers pulled by ex-army lorry cabs were given sides, seats, doors, windows, and roofs so they could carry 220 passengers at one time. In 2002, there were ~180 ‘*camellos*’ (called camels because of the ‘hump’ in the design) operating on seven core ‘colour-coded’ routes. The network operates as a surface metro system, with route distances of around 20-23km and an average distance between stops of 1.5 km, compared with around 400m for bus stops. Service frequency ranges from four-minute to ten-minute intervals. The *camello* network currently carries around 250,000 passengers each day in Havana, compared with 374,000 by other public buses. Outside of the capital too, truck transport is important and the prices are very equitable when you consider that for the price of 1 London Underground ticket you could take at least 300 *Camello* trips. Work-buses (or employer owned buses) also provided a travel lifeline to many employees. *Cyclo-buses* also ensured that bicyclists from *Habana del Este* can link to the city in safety and style.

Given the lack of available transport, ‘communal’ hitchhiking is widespread throughout Cuba. This usually occurs on an informal basis, with people waiting at road junctions or by the side of the road thumbing for a lift. However, hitchhiking is also officially encouraged through legislation that requires certain Government vehicles to stop and give lifts when they have space available. In addition, at busy road junctions on the edge of some major towns, yellow-uniformed ‘*amarillos*’ (literally: ‘yellow men’) are employed by provincial transport departments to facilitate hitchhiking. There are usually about three *amarillos* per junction, each dealing with around 1,000 passengers a day, and the system operates seven days a week from roughly 6am to 6pm. Car sharing is seen as particularly useful for people with packages, who may find it very difficult to board a bus or a *camello*. Overall, Cuban officials estimate that there were 31.5m hitchhiker trips made in 2000 and this example of safe car-sharing stands as a testament to the country’s social equity.

The use of taxis is also maximised through the use of '*colectivo*' shared private taxis. These perform as supplementary buses, by collecting passengers at established pick up points, and then dropping people off and picking people up along fixed routes.

With the reduction in bus service levels caused by the lack of spare parts and the fuel shortage, the number of walking trips in Cuba rose significantly as did trip walk length. As of 2002, the average length of walk trip is estimated at 5km, while more than half of walk journeys take longer than 40 minutes.

Prior to 1990, there were virtually no bicycles in Cuba, but with the State of Emergency a team of 25 planners was formed in March 1991 to design the various bicycle facilities that would be necessary for safe and efficient circulation of bicycle traffic. More than two million bicycles were bought from China and sold to Cubans for a fraction of the cost. Local factories were also established which produced some 150,000 bicycles a year during the mid-1990s. As of 1997, there were approximately two million bicycles in the country, half of which were in Havana. In addition, the bike road network (lanes, cycle routes and safety measures) was completed. Related to the increase in bicycle use, was the introduction of the cyclo-taxi - pedal-powered tricycles that can carry up to two passengers. In ten provinces in Cuba in 2000 (not including Havana, Matanzas, and Cienfuegos), they made 9.3m passenger trips.

While the peak usage of bicycles was in 1994, by 1998 there were still 529,000 cycle trips per day in Havana. Bikes also accounted for 14.4% of commuting trips – i.e. more than were made by urban bus, *camellos* or works buses. The typical cycle distance was 4.4 km. Based on a straightforward saddle for seat basis, to substitute the bicycles would require 128 buses, 57 more *camellos* or 300 more work buses. However, cycle use has since declined due to a number of reasons, including a slight improvement in bus services.

The use of animal traction for freight transport, passenger transport and agriculture increased significantly from 1991 onwards. This has almost exclusively been provided by the private sector. From 1998, owners of animal traction vehicles have been required to register with provincial or municipal offices of the State Traffic Unit for a Licence for Transport Operation. By 2000, there were more than 16,000 animal powered buses, carts, carriages and wagons. In 2000, animal traction accounted for 93.2m passenger trips in the 13 provinces outside of Havana.

Future transport policy in Cuba will be significantly influenced by whether the US Blockade is lifted or not. Assuming the Blockade is not lifted in the near future, policy will continue to focus on increasing the service level provided by formal public transport (i.e. buses) through building more vehicles and through efficiency gains. Ultimately, this would also involve replacing the *camellos* with articulated-buses or electric trolleybuses (or even light rail systems in the longer term) within Havana, although this policy would be heavily dependent upon whether sufficient hard currency could be raised.

If the Blockade were reduced or lifted, there would be a rise in economic and hence transport activity. It is difficult to estimate what this growth would be in a country free of constraints, but Cuban Government sources anticipate an immediate increase in the number of tourists from around 2m a year currently to perhaps 4m-7m. To deal with this potential influx, plans are already in place to allow the transport systems and tourist provision systems in place to grow significantly. In addition to the proposed replacement of the *camellos* with trams or high capacity double-length buses in Havana, parking controls would be put into place in order to collect revenue along with appropriate land use policies. One scenario would possibly see the private vehicle owners being taxed heavily in order to discourage ownership and encourage the use of public transport systems and sustain non-motorised means, e.g. bicycle usage and walking. On top of this tourist influx, the increase in overall economic activity would certainly encourage increased mobility – much of it by motorised modes and maybe the private car in particular.

Dr Marcus Enoch is a senior lecturer in transport studies at Loughborough University, and a visiting research fellow at The Open University. Dr James Warren is a staff tutor/senior lecturer in the Faculty of Mathematics, Computing and Technology at The Open University; this report is based on a study carried out in 2002 in conjunction with the Centre for Transport Research and Development (CETRA) which operates under the auspices of MITRANS (the Ministry of Transport).

<http://oro.open.ac.uk/10249/>

Cuba Sí, Spring 2004, Pages 26-27.

Originally published by the Cuba Solidarity Campaign, London, UK.

ORO item no 10249_1645