

Mopedbus: a mass-transit alternative

By Philip Brewbaker (midbrew@yahoo.com) 8/13/2024

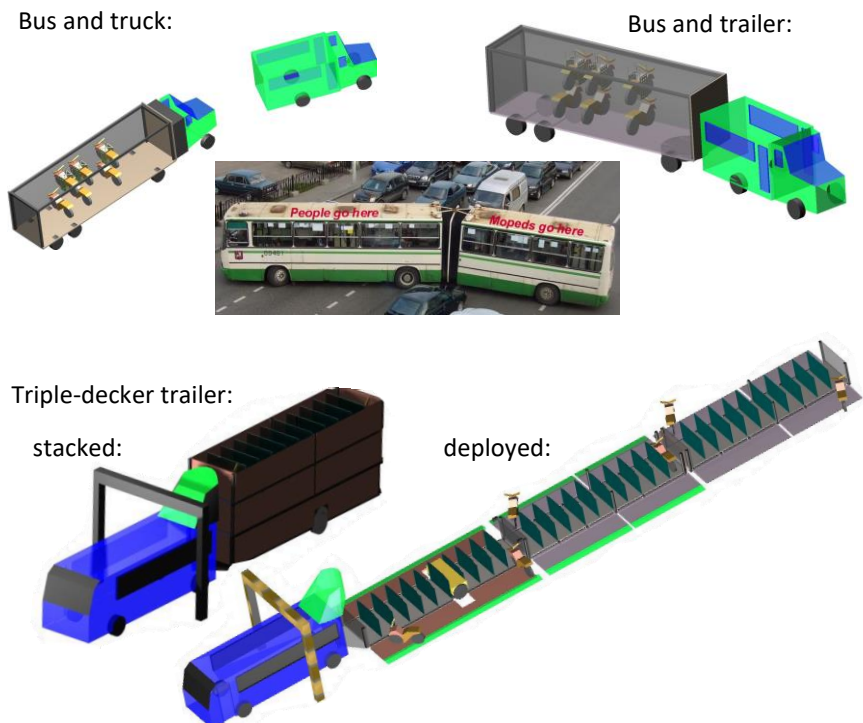
In cities, roads tend to fall into two types: freeways and streets. These reflect their different purposes: streets are designed to get you to and from your ultimate destination and freeways are designed to get you to and from streets. The freeway prioritizes speed over accessibility while the street prioritizes accessibility over speed. We use one kind of vehicle to travel over these two kinds of roads, yet there are many kinds of vehicles that can travel streets but cannot travel freeways. Mopedbus bridges that gap. With a Mopedbus pass a person can rapidly travel the length and breadth of the greater L.A. area with little more than a bicycle. Or a Moped, as the name suggests. Although Mopedbus is designed to help combat climate change, for a city like L.A. its greatest usefulness may be to combat freeway congestion.

A Mopedbus travels only on freeways (ideally). It stops only every 5 to 20 miles. The rest of the distance, from destination to destination, is performed on the other vehicle. As shown in Figure 1, on Mopedbus, the passenger goes on the bus, and the vehicle (moped, bicycle, etc) goes on the

trailer behind the bus (or, initially, on the flatbed of the truck following the bus).

Because it travels on carpool lanes at freeway speeds, going from destination to destination on Mopedbus may be faster than by car. It will be much better for the environment, and a less-stressful commute option for the user. The option may be less expensive than the alternatives, especially if it

Figure 1: Mopedbus configurations



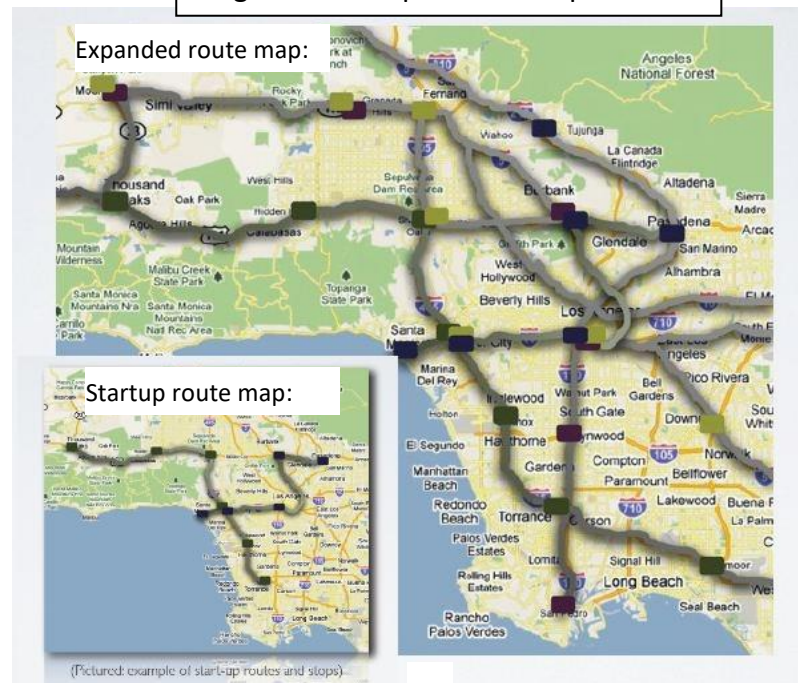
allows the user to forgo car ownership altogether. And because it removes cars from the freeway without removing their occupants, it has the potential to improve the commute for everyone, whether they use Mopedbus or not.

Compared to other forms of mass transit, what are the initial risks to starting a Mopedbus

operation? All the infrastructure that Mopedbus needs to begin operation already exists. Hence, risk exposure is limited to the cost of renting a bus and a truck, access to Mopedbus stops along freeways, and the cost of staffing, insurance, and other miscellaneous items. If the customer base doesn't materialize, MopedBus is not out the high infrastructure cost associated with rail, ordinary bus systems, or special commute lanes. It can be scaled up and down to meet current, local demand using real-time data. An example of a route map for L.A. is shown in Figure 2. MopedBus could begin by offering limited routes past Universities because college students are often unable to afford more expensive forms of transportation yet prefer to live away from the high-rent area near college.

Modern urban life is made possible by the enforcement of limits on individuals. But the overall effect of these limits is a population seeking escape from them, and urban places are on the front lines in the war against methods of escape that are ultimately ruinous: drugs and alcohol being two examples. Automobiles are one such method of escape. When urban pressures get too high, urbanites with cars can exercise the option of taking the 'open road'. And if you work a normal job, just knowing the option is there, to take a break and just drive,

Figure 2: Example route map for L.A.



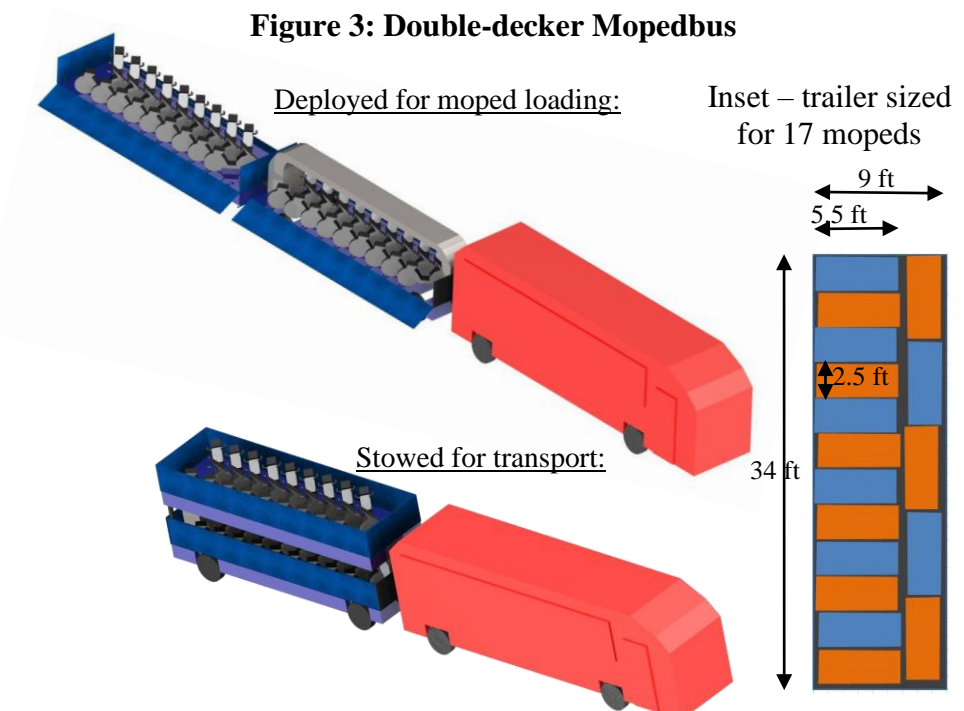
can be a career-saver. Hence, for psychological reasons, having a personal vehicle at the ready is for many people not really optional.

Mopeds can also offer this feeling of independence. Near the workplace or home-place, the moped can simply be hopped on and taken out. In fact, in the nearby environments of either workplace or home-place, a moped is potentially as fast and flexible as a car. It's certainly safer for pedestrians. With Mopedbus, a personal powered vehicle can offer many of the freedom-seeking psychological benefits of the car, without the resultant congestion.

Regarding rainy weather, moped manufacturers already offer a complete line of light and flexible plastic overalls that fit easily under the moped seat. Because a moped travels at less than 40mph, heavier materials, such as would be required of motorcycle riders, are not needed to keep the rain off. And mopeds with proper mufflers are quieter than cars.

If the concept grew popular, the objective would be to serve as many customers as possible per employee. This directs the design toward trailers that deploy in such a way as to be self-loaded and unloaded by the customer. Double-decker trailers and even triple-decker trailers can be imagined, making it possible for one bus driver to serve as many as 45 customers, a ratio similar to municipal bus lines. Figure 3 shows a double-decker trailer that has a structural

track which supports the second deck during transport and helps it deploy for loading. The inset in Figure 3 shows that 17 mopeds would fit in a 34 ft by 9ft trailer. This assumes each moped has the

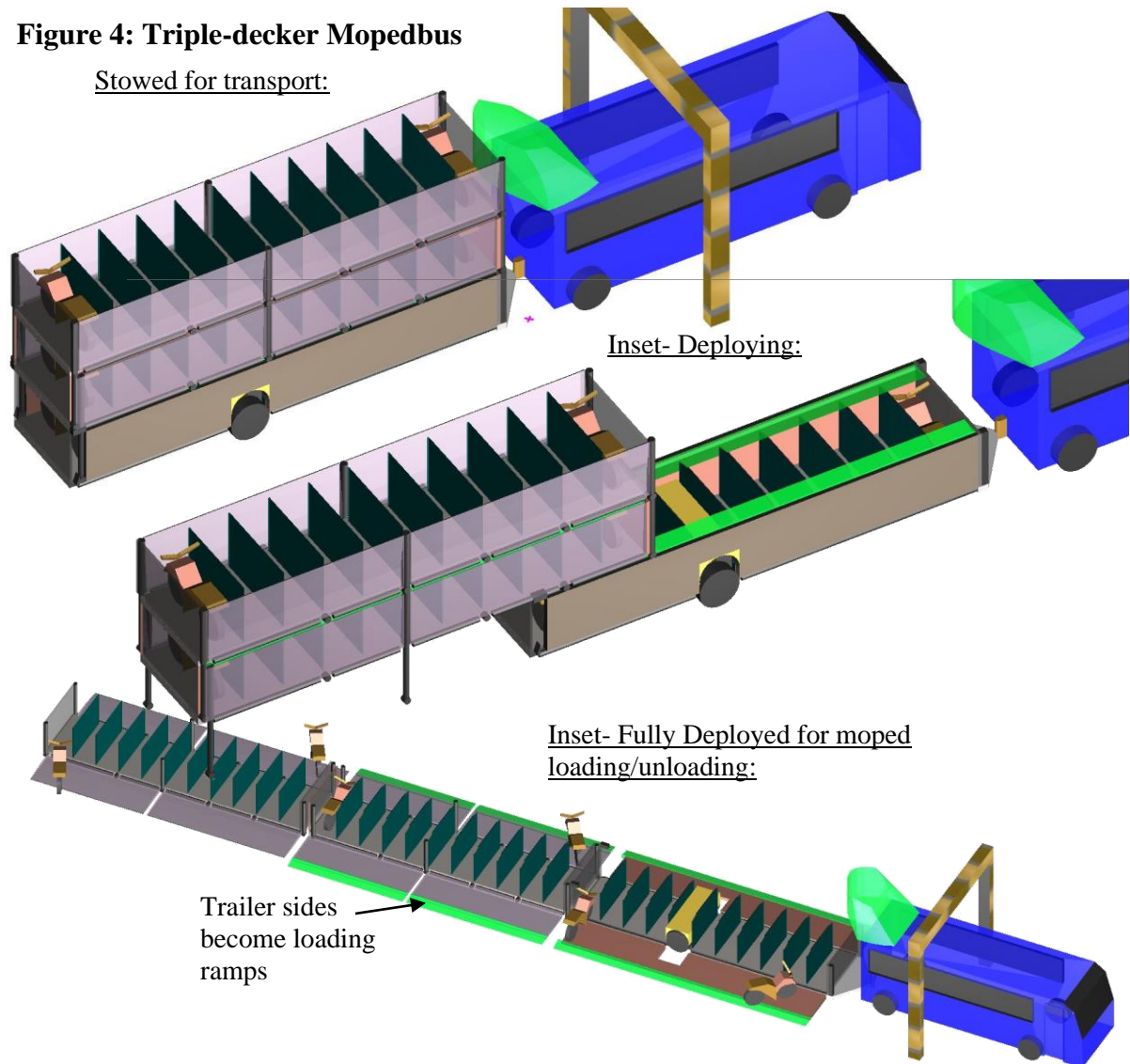


typical moped dimensions of 5.5 ft by 2.5 ft. Stacked in double-decker fashion, this would accommodate 34 customers. Since a 34-person bus is about 30 feet long, the maximum length of the combination would be similar to the allowed maximum length for tractor-trailers and municipal buses, such as auto-transporters, which is 65 feet.

Figure 4 shows a triple-decker trailer towed by a 45-person bus. Each deck can deploy by rolling backward on tracks formed by the sides of the deck below it. This is shown in the inset in Figure 4. The fully deployed trailer is shown in the inset at the bottom of Figure 4. It indicates how the trailer sides rotate downward to compose ramps by which the customers can load and unload their own mopeds. The ramps are about 4 ft long. They may contain hinged sections extending their length by 2 ft or so. Attention will have to be paid to ensure the deployed ramp slope remains within the 1-to-12 maximum slope recommended for such applications.

Although a triple-decker trailer may exceed the 14 ft transport height limit, the fact that MopedBus is designed to travel exclusively on highways and freeways, which often have taller underpasses, may make this disadvantage acceptable. However, since most mopeds and bicycles are less than 4 ft tall, a triple-decker trailer with 3 inch decks could fit within a 14 ft height limit with a foot of ground clearance. This would require that some of the structural loading in transport be offloaded to the sides of the trailers, but since these are already fortified to handle ramp loading they should be appropriate for this task.

If the trailer is limited to two decks, 45 passengers could still be accommodated. When stacked in a manner similar to that shown in the inset in Figure 3, 24 mopeds could fit in a 45 ft long trailer. When pulled by a 40 ft long bus, the combination is 85 feet long. This length may require that the trailer be broken up into two trailers. Such a configuration and length is found in some municipal bus lines.

Figure 4: Triple-decker Mopedbus

In summary, the MopedBus concept offers customers the flexibility of a car with the fuel efficiency and congestion relief of mass transit. The challenge will be to develop the technology so that costs remain low while performance remains compatible with highway and urban environments. The trend toward larger, higher, and longer bus/trailer combinations will ensure future competitiveness for this commute option.