## Transportation

Minimizing the *need* of personal transportation should be a fundamental principle at any level of local sustainability. If most of the things you need to do can be achieved by walking, you are free from a major chunk of expense and hassle of owning a car. If you eliminated the transportation infrastructures from our cities, they would be about half the size . When you consider streets, driveways, parking lots, gas stations, auto repair businesses, parts houses, garages, new and used car lots, vehicle rentals, etc., and you can easily see how about half our environment is obliterated by this single catastrophic category of prosperity. A similar inventory of how much all this costs you may be equally shocking.

A locally sustainable village size and layout would eliminate the need for local transportation. The slower pace of life would softened the urgency of having to get anywhere instantly, and there would be no need to walk more than a quarter mile for anything in town or field. The need to occasionally haul things however, would doubtless remain a necessity. I have observed homeless making their recycling rounds with some incredibly clever bicycle-wheeled hand trucks. It would be worthwhile to consider utility vehicles at this level.

This photo shows a custom hand cart being used to haul bottled water for a homeless community. An axle was made by cutting off the heads of bolts and welding them thread-ends out to a piece of angle iron. Wheelbarrow wheels were then added to the protruding ends and secured with locking nuts. Since each of these wheels typically have a load rating of 300 pounds or more, this axle assembly has a lot of potential.

Steel pads were welded to the assembly to aid in attaching a chassis. This chassis was a simple frame welded up from electrical conduit. A separate handle was made from standard plumbing pieces, and made detachable so the whole thing could be tossed into the trunk of a car if need be.

The chassis in this case is attached to the pads on the axle by a couple of “C” clamps that sandwich it between the plywood deck and the pads provided on the axle assembly.

In this next case, this same pair of wheels is attached in the same manner to a three-wheel frame. This type of flexibility lends itself to a wide range of experimentation.

Speaking of experiments, I needed a bicycle that I could toss under my desk when I arrived at work, so I came up with the configuration shown here. This is in the category of the most important things I've ever made: It's called a mistake. If you aren't making mistakes, it's because you aren't doing anything at all. The intent was that I would steer with the handles protruding from the small caster on the rear. The problem is that nobody has ever been able to ride the thing – but it's been a lot of fun watching people try. For awhile I had a $100 bounty for the first person who could ride it. The good news is, nobody falls far enough to get hurt when they do fall off. Anyone?

At a slightly heavier level, consider a small automotive trailer if there are no significant hills to climb.

.If concessions must be made to the cultural bondage of personal motorized transportation, develop a small vehicle powered by non-petrol fuel for nearby travel outside the village. A suitable rental or public conveyance would be required for more distant travel. The balancing economic theory would be that the savings of having negligible day-to-day transportation expenses would more than offset the cost of an occasional trip in a stylish rental vehicle.

This hero of techno-art has connected a steam engine to a motorcycle wheel to pull his century-old carriage. I don't recommend doing this as a first project, because century-old carriages are a tad rare.

When the sustainable transportation begins to interconnect other sustainable infrastructures, we begin to rise above our current economic and ecological disaster. In the public sector transportation links to points outside the village would be clean, comfortable, and very economical to residents.

*Short-Run Transit*

Here's a concept for local transportation that could move people or freight at a very low energy cost. The range would be limited to a quarter-mile or so, but it could move people and products to and from centralized shopping or industrial areas.

On a small-scale community, it might provide links between shop/factory, marketing, agricultural, and residential sections.

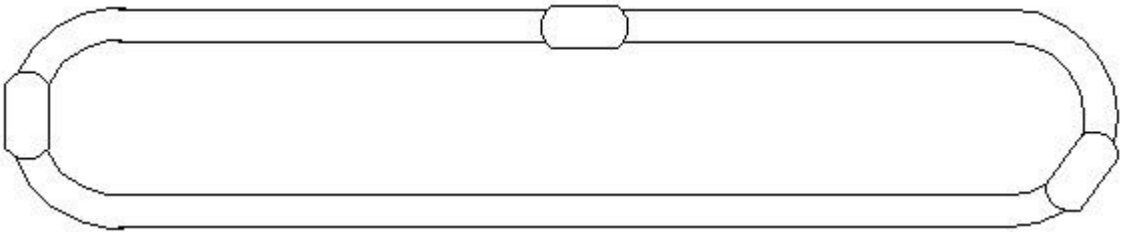
The product is simplicity in itself: a roller-coaster with a mission.

Gravity supplies the energy for acceleration, and for braking at the end of the run. A small battery and motor would supply any additional energy needed to finish making it up the hill at the end of a run. A starter-motor from a dead car would probably be ideal for this application. The battery would automatically connect and receive any needed charging between runs. For that matter, an on-board solar panel might well be adequate.

In a purely mechanical system, pedals could be installed so that a passenger could make up this difference.

A minimum system would consist of a single back-and-forth track, but I wouldn't recommend having enough cars to create a head-on collision (more than one).

A more practical system would involve a loop using two or more carriers.



The initial speeds achievable would depend upon the height. The theoretical speed potentials for various heights are shown below. Keep in mind that these are also the speeds you yourself would achieve by the time you hit the ground, if you stepped off the wrong side of the platform. For you techno-nerds, please notice the decreasing increase in speed as the platform gets higher. This is because the speed increases in proportion to the square root of the increase in height. In other words, to double the speed, you need to multiply the height by four.

| Height | feet/second | mph |
|---|---|---|
| 2’ | 11 | 8 |

| | | |
|---|---|---|
| 4' | 16 | 11 |
| 6’ | 20 | 13 |
| 8' | 23 | 15 |
| 10' | 25 | 17 |
| 12’ | 28 | 18 |
| 14’ | 30 | 20 |
| 16' | 32 | 22 |
| 18’ | 34 | 23 |
| 20’ | 36 | 24 |

It could be a serious chore to back-pack a couple tons of freight up a 16-foot ladder, so you might consider lowering the run-portion of the track deep enough into the earth until the platforms themselves are at ground level.

An overhead “zip” line would be an alternative to using a track. The advantages would be less metal and less real estate consumed. Disadvantages would include the greater technical planning, and probably higher platforms.