CHAPTER 9

Downsizing and Localization

LIMITS AND LOCALIZATION

Continuing beyond Chapter 8, and at the risk of redundancy, I will add a few more thoughts to these two directly-related terms. The word "limit" is fundamental to our human predicament. There are a number of books in the included bibliography which use this word in the title. It is difficult to comprehend how, with finite (synonymous with limited) energy and resources, a system can continue to grow. A farmer cannot keep adding livestock and feed more people when his farm is limited in size and ultimately, in productivity. Continued attempts to exceed the physical limits with more difficult sources of fossil fuels and/or new technology will only postpone the day of reckoning and exacerbate the consequences while population continues to grow.

These are the same limits to the concept of "localization." A growing number of communities around the country consist of a handful of individuals who understand the unfolding energy crisis. The Transition Town movement is an example. **Maybe if a few of us just circle our wagons we can weather the storm and live happily in a self-sufficient community.**

Population

It's the same problem regardless of the community size. If a local group increases in numbers per the methodology defined in Chapter 6, and exceeds the carrying capacity ("limits") of its resource base, the per capita food supply will most certainly fail. Figures 4 and 7 show population with two children per female (2 cpf) continuing to grow regardless of community size and without immigration or exporting people to other closed communities. Growing the community's food requirements is the goal, but how about the canned goods, protein (animal or otherwise) condiments, bananas, oranges, chocolates, paper goods, matches, soaps and all the other extras we routinely pick up at the super market?

And remember, any draft animal assistance for work or travel must also be fed from the same working land which reduces the food available for human consumption. It takes about one-fourth of the productive farm area just to "power" the farm with horses or oxen. The same one-fourth rule of thumb holds true for biofuels grown on the farm assuming the extensive infrastructure and capital investment are available. Biodiesel or ethanol production are far beyond the skills and equipment available on individual farms.

In addition, **for long term sustainability, all nutrients and energy-equivalents of food that leave a specific area of arable land must be returned directly to their original source in the form of manure and waste products … including "humanure."** (See *The Humanure Handbook* by Joseph Jenkins.) To export food or rely on imported fertilizer and compost defies the principals of closed-system self-sufficiency. Also, long-distance movement of food and/or return of equivalent nutrients is impossible without fossil fuel energy or water transport. The Romans were fortunate to live on the Mediterranean Sea, but still found that land transport was limited to a few hundred miles because the energy required to feed the draft animals for their muscle power was greater than that in the food being moved.

Local heat and hot water

Without finite fossil fuels, the only renewable source of domestic heat other than sporadic solar-thermal is firewood or some other form of biomass. It takes about one acre of good wood-lot to yield one cord (2000 pounds dry) per year without depleting the base forest. Without fossil fuels how will this wood be harvested and transported to the home except by muscle power? The only answer is solar-electric as described in Chapter 5. **In addition, repeated cycles of cutting firewood are no more sustainable than removing hay or food from the land without returning an equivalent quantity of the removed nutrients.**

Travel

A localized community is restricted by limited travel. Up to a 15 mile radius from the social center is all that is possible by foot, animal, or off-road bicycle. This was the case with small towns in pre-industrial days. Asphalt-paved roads will be crumbling. Maintenance will be curtailed as heavier oil byproducts of fuel production for all forms of liquid-fueled vehicles become unavailable. **We will never go far or fast again, or move large loads without oil or synthetic liquids (synfuels) from**

coal or natural gas … both requiring massive amounts of energy input and contributing to climate change. Biofuels for travel or transport will not happen because of unavailable fossil fuel energy input. See Chapter 4.

Most people live too far from bodies of water for barges or sailing. That is why early population centers began near the potential for water transport or where canals were dug … by muscle power. We've already used most of the high-energy anthracite coal that was necessary for trains. Wood power for steam engines, or gasification will be very limited by availability, the energy required to produce, and very poor (about ten percent) efficiency. Again, the only modern alternative is electric power which can access the energy from PV panels, wind, or hydro power, as supplied by a third rail or carried along in a heavy, expensive battery.

Everything else

For the needs of a self-sufficient "localized" community, we could start an alphabetical list and not get much farther than "b" or "c" before becoming hopelessly bogged down with all the day-to-day needs we take for granted in our high-tech, oil-fueled life. Where else will these be made, and with what energy, in a post-oil age? **It is well documented that far-simpler societies than ours collapsed because of specialized interwoven dependency.** See *The collapse of Complex Societies* by Joseph Taintor. Back to the "b's": bulbs, bullets, batteries (of all types), bottles, bicycles, sanding belts, v-belts, bolts (and nuts), brushes..and so on.

And the "c's": computers (repair?), cans, chains, coins (will they suffice for barter and wealth indebtedness?), candles, canvas (no more plastic tarps or hoop-house covers without petroleum-based feed stocks), copper cartridges for lead bullets, cement, coffee, clocks, cloth, copper wire, cords, and many more. Steadily increasing complexity will soon cause the entire system to unravel. **No single community can be responsible for everything. Specialization creeps in until everyone is an integral part of a much-larger, very fragile whole. Many diverse hands, minds, and local materials are overwhelmed by the failure of any single cog, energy, or other essential non-renewable resources.**

In addition to the basic necessities of food, heat, and shelter, each functioning civil organization must provide the human energy for myriad other activities we take for granted; like education, health care, local administration, social interaction, formal interaction with other community centers, civil control, and security from a local to national level.

By now, the argument should be clear: a few cannot expect to isolate themselves from the highly-structured, high-tech life style we now enjoy. Despite the comradeship and mutual support found in a "localized" movement, there is no hope that local resilience or transition towns will shield us from the imminent macro-energy and over-population crises. Concerned people (You?) that begin and participate in local groups are usually those who have the best grasp of the enormous challenges we face. You should be the most vociferous by "networking" these thoughts on the largest scale possible. Finally, a functioning local community cannot expect to "export" excess progeny to other localized communities which are also struggling to keep within the limits of their own finite carrying capacity.