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Shelter

by Tom Bender

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Exactly 10 years ago, I handed out to my architecture design students a paper I had written called "Living Lightly: Energy Conservation in Housing." It made outlandish claims—that we could easily reduce our energy use in housing and connected activities by more than 90 percent; that we could cut our water use by 75 percent, reduce economic costs, solve other sewage and solid waste problems, and end up healthier, happier, and saner.

"Living Lightly" chronicled an experimental solar/conservation house our students had built the year before, documented research already done by many other people, and pulled together a picture of what was truly possible. At that time (back before the first "oil crisis"), the most favorable energy projects still seemed to show the only reductions possible in energy use were reductions in the *rate of increase*! Almost everyone thought we were crazy.

Ten years has left all that in the dust. All we predicted has been accomplished, and more. Houses are now

being built in every region of the country—to the highest standards of comfort and convenience—that are warmed entirely by body heat and waste heat from appliances. Energy conservation in housing has proved so successful and economical that it is now officially expected to provide for almost all of the projected energy growth in the Pacific Northwest for the next 20 years! Humble fiberglass insulation has triumphed over multi-billion-dollar nuclear power plants.

As far as energy is concerned, improvements in housing have been among the shining stars of the last decade—worked out in grassroots fashion, contrary to every government policy, and adapted to the specific needs and potentials of different bioregions. Natural landscaping, cooling tubes, and thermal flywheels have developed in the South, passive solar in the Mountain States and elsewhere, superinsulated and earth-sheltered housing in the Northern climates, and myriad combinations everywhere.

The ease and magnitude of our accomplishment should remind us, however, of the abysmal performance we were so complacently satisfied with just 10 years ago, and of what in us allowed that complacency.

The outstanding achievements on the energy side of housing have absorbed so much personal attention that other aspects of housing have not been well attended to. Attunement to surroundings is still incredibly bad in almost all we build. Some beautiful examples of simpler living patterns have emerged, but they have generally been overshadowed by publicity given to gargantuan eight-bedroom/quad-garage/hydro-spa solar palaces. Our approach to housing, even by those most involved in the movement, is still solidly materialistic and appallingly egocentric (both on the part of the designers and the owners). The main flow has become the standard American middle class home and lifestyle, gussied up in blatant solar-chic for all to see and envy. There's both good and bad in all this, but mostly it points to where work is still needed.

Individual housing technologies have shown considerable improvement in energy efficiency. New folded-tube fluorescent lamps are now on the market in fixtures that are indistinguishable from incandescent fixtures (at 75 percent energy savings). Task lighting, spot lights, and lower ambient lighting levels have become commonplace. Considerably more efficient furnaces and refrigerators are now available, while energy use for clothes washing has dropped dramatically because of cold-water washing with improved soaps. Personally, the most heart-warming innovation is our Vermont Castings woodstove, built from melted-down recycled Petropig engines!

Little attention has been given to community aspects of housing (in spite of solar suburbs, townhouses, and gentrified urban neighborhoods), and this seems unlikely to change until more people take sledge hammers to their televisions, get interested in their neighbors, and decide to give up some of their individualized lifestyles to gain some benefits of community.

Ten years ago, counterculture building materials and processes were in high fashion—domes; hand-hewn mortise and tenon wood frames; salvaged wood, windows, and building parts. These have matured and found more proper use. Mortise and tenon framed housing has survived its early hypesters and developed its own genre of sophisticated tools (adapted from Japanese carpentry tools). Such houses are now built by the hundreds. Underground housing has matured technically, and people are starting to build underground for the ecological benefits rather than for energy savings, which are available much more cheaply through superinsulation. Though the dome hypesters have left the scene, along with the quick-n-dirty builders, domes are still being built and built well. They're hard to roof and trim out, but so are a lot of other homes. Recycled materials are finding more proper use. There is more demand for them and less material available. We've learned to use the materials as they were intended instead of letting interior doors and windows rot by using them on building exteriors.

In general there has been a marked increase in building care, with journals such as *Fine Homebuilding* catalyzing networking on more durable construction and better building techniques. Some techniques, such as rammed earth, have become commercially viable, while others, like cement vaults, have remained in experimental stages.

Some early hopes, like active solar space heating, have been generally superseded by better and simpler techniques. Others, like wind electricity, have yet to find a proper economical and technological fit, and still others, such as photoelectric cells, may or may not reach general application. Alternative sanitation has only achieved limited success to date. Compost toilet performance, economics, and public acceptance have not lived up to early expectations. The public and the professional press still want to ignore the problems and refuse to publish any comprehensive look at the alternatives now available.

One area in particular from the last decade's agenda still remains for major action—economics. Economics is to the coming decade what energy was to the last. Housing has played a very central role both technically and in developing public acceptance of basic restructuring of our energy sensibilities. It can perform the same or an even greater role in reworking our economic structures. We are soon going to realize that we don't have to work for 10 years of our lives just to pay mortgage interest on our homes. We're going to discover the benefits that durability can give in reducing the economic costs of housing and other things we make, and we're going to learn that housing costs can be reduced by *90* percent. (Yep, I'll make the same wager on this as I did 10 years ago on energy use!) And then a great house of cards is going to come crashing down. The whole financial con-game we've been led to confuse with economics is going to become visible and lead to a lot of basic rethinking and redoing.

We're still a long way from living in simple harmony with our hearts, our neighbors, and our surroundings, but we've made incredible progress in the last 10 years. What's more, we haven't done it in isolation, but used our efforts simultaneously to build a successful alternative to nuclear power, change a nation's consciousness about energy, and make visible the interconnectedness of sewage, solid waste, resource, transportation, urban,

and agricultural problems. And we've shown what can be achieved by a small number of people with limited resources.

We've done it and done it well. Let's celebrate, and move on . . . there's more to do!

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