OUR HOUSE

BY VICTORIA & ANTHONY STOPPIELLO

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Most people live in existing housing and are baffled about how to make their lifestyle more sustainable. Inheriting a 19th century fisherman's house in Ilwaco, Washington, made our lives immediately more sustainable by releasing life energy from acquiring real estate to retrofitting the house and other pursuits.

This article describes the house retrofit; presents data on kilowatt reduction year by year through the transition, including an overall reduction of 66%; places living sustainability in the context of existing housing stock, energy use, endangered species, and small town economic development; and shows that sustainable living operates on permaculture principles. Because they were implemented in the fall each energy measure's impact is seen in the following years Kilowatt Hour (KWH) reduction.

In our life together, we've made a series of conscious choices based on professional knowledge and ethical values; these criteria dovetail with principles embodied in Bill Mollison's *Permaculture Design: A Practical Guide for a Sustainable Future* (Island Press, 1990). Those principles include: Humans should set limits on our population and consumption, home design and construction should work *with* nature, we should use the least amount of land necessary for our existence, what we build should last as long as possible and take the least maintenance, and most important, that information truly becomes a resource only when it is implemented.These values informed our decision to move into a 19th century house.

The small town location and county public transportation system were important factors, but the critical one was that the house faced south, and the 80x84 foot lot was large enough to have a big garden and fruit trees. A windbreak protected it from the northwest winds in the summer, providing a warmer microclimate. The building itself was sided with 20 foot long, clear western red cedar siding, silvered like driftwood. An old photo card, postmarked 1909, shows the house the last time it was painted.

The house was built with plank construction, no tar paper, and before electricity. Old timers knew about natural light; windows are on the east, west and south, with only one on the north. A remodel in the 1940s incorporated studs on the ground floor. In 1988 the house got a new roof, wiring, plumbing, floor coverings, and insulation blown in from the interior whereever possible.

We inherited the house in 1989, but it wasn't until late 1992 that we decided it was better to use our resources to retrofit this house with its embodied energy than to take out a mortgage elsewhere. We brainstormed all potential improvements to the house and property, then set priorities and found that weatherization was number one, followed by a kitchen remodel. Weatherization is a classic example of the permaculture principle "stacking functions." By insulating, we reduce energy consumption and costs, we reduce noise and drafts, and we reduce the external costs of power production, which in the hydroelectric Northwest includes destroying salmon runs.

In February 1993 we moved in. In August our first projects were a new foundation, kitchen remodeled, and new unpainted fir double-pane replacement sashes. We removed the ropes and weights and insulated the cavities around windows to maximize insulation.Better kitchen design created more storage. Cabinets used alder, a plentiful native tree. A fast growing nitrogen fixing pioneer species in clearcuts, it's usually killed with herbicides to make room for out-of-sequence conifers. By using it for cabinetry we create new markets, which could diminish herbicide use. We thoroughly insulated the kitchen's west wall, which bears the brunt of winter storms, a wall that couldn't be insulated before due to the location of plumbing and cabinets. We decided against a dishwasher, but *for* a Sunfrost refrigerator and a solar oven, which further reduced KWH use.

The old kitchen had no morning light. To alleviate this, we moved the doorway between the living room and kitchen and created a new pass-through between the rooms. These openings on the north/south axis allow east light to flood the kitchen from the living room and west light into the living room. This change made the small (450 square foot) downstairs seem larger and more cohesive. It provides better natural ventilation and heat circulation from our main heat source, a small, efficient wood stove. When we are away in winter, our power bill actually goes up because electric baseboard heaters are on. Our primary firewood is again alder, the famous salmon-smoking wood of Northwest natives. However, when well cured, it provides more BTUs per cord than softer wood types. Typically using 1.5 cords of firewood per year, we believe that a passive solar house with an alder-fire efficient wood stove may be our bioregion's most sustainable home heating program.

In 1994 we began a complex project that took two years to finish: carport, workshop and house addition. The 8x16 foot addition on the north side of the house provides a laundry room, vestibule/mud room for the north entrance, and a dressing room with storage. Now clothing is kept downstairs next to the only bathroom and steps away from the laundry. We closed the addition to weather and insulated before winter set in. (Though we added more space, KHW consumption dropped again.) The addition overlaps the north exterior, which couldn't be insulated due to plank construction abutting a stairway; the space between exterior and interior walls was literally less than one inch. The addition illustrated another permaculture principle, the least change for the greatest possible effect. We integrated new products and techniques: blown in batt insulation, Marmoleum, truss joists for floor and ceiling, and OSB and reused bead board for interesting interior textures at low cost.

In 1995 we finished the carport and shop and constructed a passive solar batch water heater. The old garage was due west of the house, taking up southern exposure that could be a garden, so we relocated off street parking to the north.With a clear polycarbonate roof to add light and control mold, our carport has turned out to be a pleasant surprise. In permaculture terms, it is one tool that serves many tasks: Firewood curing on the north edge creates a summer wind and privacy screen; tomatoes and other heat loving vegies grow in pots; without vehicles we have a 20x20 foot covered work area with excellent natural light; hanging baskets and a picnic table create a pleasant outdoor dining area; and we have covered parking during the rainy season.

The shop measures only 6x12 feet; it appears to be old because we reused siding, windows and a door from the garage. We reused kitchen cabinets for interior storage and sheathing scraps left over from the house addition. The shop is insulated and warm enough to winter over tender perennials. It is the storage area for tools, ladders, snow tires, bikes, etc. It tends to overflow, but we see that small spaces force us to deal with our accumulations, and no matter how large our storage, it will always be full.

The batch solar water heater was sited on the shop roof to maximize solar access and make it visible from the street (and resulted in KWH reduction). The batch water heater cost $300, using mostly salvaged materials. Is it effective? We got a down to earth answer in May 1997, when our electric water heater sprung a leak. We tied in the solar hot water directly, so we could investigate electric thermostatically controlled demand heaters. We were still investigating a year later — which means we've been living with solar only even through the winter. Admittedly, the water doesn't get hot enough for showers November through January, but in late February we began getting hot water again — visceral evidence of the arrival of spring.

In 1996 we traveled for six months. A house sitter cared for our home and we did no major projects, but 1997 was the Year of the Garden, the Garage & Finishing What We Started. On arrival in 1993, there was virtually no garden; only a lawn, a couple of rhododendrons and trees, the western windbreak, and a huge thicket of flowering quince and Himalayan blackberries on the north. Little by little we are carving away the lawn. Each year we've built raised beds, combining vegetable and flowers to make our garden both ornamental and productive.We've planted fruit trees, rescued old boysenberry vines from the blackberries, and now contemplate replacing the old Hawthorn in front of the house with more fruit trees.

An organic garden is a lot of work, but it provides all our vegetables from May until October; our climate is so temperate we are able to grow cool weather crops through the winter as well as an annual supply of perennial onions, garlic and herbs. We have primitive water catchment systems collecting rainwater in barrels from down spouts and use that water for container and house plants. Except for the height of the gardening season (August and September), we never use our minimum allowance of 1,000 gallons for two months. Even though our town doesn't have a water rate structure that encourages conservation, we have instituted water saving measures wherever possible.Waste reduction, recycling and composting have been part of our lifestyle for 25 years; a compost pile creates soil while reducing solid waste. Our typical garbage volume is six 30-gallon cans per year, mostly packaging. We buy in bulk with reusable containers in an effort to reduce this further.

The major building project of 1997 was dismantling the old garage, piece by piece. While burning construction debris is a common practice in our area, we ended up with one grocery bag of waste — old wiring that we learned later could have been recycled. Everything else had a re-use: cedar shingles for kindling, split sheathing, clear grain studs, rafters and remaining siding for later projects. Even the concrete floor was cut into blocks to build walkways and raised beds. Like a compost pile, reusing these materials illustrates another permaculture principle, that the waste product of one process becomes the raw material of the next.

When we built the addition, we saved siding from the north wall of the original house and now we applied it to the west wall which the garage had covered.Corrugated galvanized siding was chosen for the addition exterior for many reasons: Low environmental impact compared to matching clear cedar, low cost, recyclable, easy to install and remove. We also wanted to make an aesthetic statement: Galvy is part of the indigenous architecture of the Lower Columbia region, showing up on work buildings in backyards, fishing ports and lumber mills, plus it shouted "This addition is new!"

That's where our project stands today. Potential additions: more garden beds, drip irrigation and rainwater catchment, PVs to run our Sunfrost, a direct gain system on the south end of our living room, a sauna, greenhouse, and without a clothes dryer, we need a more reliable clothesline!

Our house is a few blocks from the Columbia River and about two miles from the Pacific Ocean. Settled in the 1860s, Ilwaco was the premier fishing port on the Washington coast. (Victoria's) father, grandfather and great-great uncle all participated in that industry as commercial fishermen. However, the first fish hatchery in the state was built nearby in 1896, evidence of salmon's early decline. After 1937 that decline accelerated with the building of Bonneville Dam and others whose turbines kill small fish heading for the ocean. Great forests have been logged and turned into tree farms. Overfishing, dams, timber and agriculture practices have all combined to put the indicator species for our watershed on the endangered list.

Ilwaco is looking the worse for wear. Like many American communities, 80% of the housing stock and most of the downtown commercial buildings were built before 1950. Since fishing and logging no longer provide major employment, local people grasp at tourism as a source of new jobs — but we are three hours by car from urban areas. This geographic isolation protects the town from rapid growth and its impacts, but injures it economically. On the other hand, the whole town faces south, the climate is temperate, the people have down to earth know-how and aren't afraid of work. In spite of economic problems, the social fabric is still intact.

As a result, it seems Ilwaco is a prime candidate for sustainable development. Weatherization could be one tool for many tasks: new jobs installing insulation and better windows, reduced energy consumption and costs, improved comfort in homes and workplaces, and the satisfaction of knowing we are doing our part to restore salmon runs by reducing our dependence on hydro. Most households heat with electricity or wood; almost all water heating is with electricity, but our local Public Utility District has limited weatherization programs. Thinking sustainably creates small business opportunities: constructing simple solar water heaters, weatherizing homes and businesses, growing food and flower crops in passive solar greenhouses.The location of a new environmental bank in Ilwaco, Shorebank Pacific, offers a ray of possibility.

Before we inherited this house, we worked on it with Victoria's dad. Those work parties, punctuated by coffee and donuts on the south facing a front porch, the natural light flowing into the rooms, told us this was an aesthetically satisfying house, built by fishermen with common sense. That basic approach has been continued: all the energy conservation measures we used are simple to implement and have been available for decades. Our 19th century house with its retrofits is outperforming new houses built with the current Washington State Energy Code. We've come to realize that *small* is in itself another way to conserve, not only electricity but our own time and energy.

We decided we weren't going to wait for a utility program, a government subsidy or even the reassurance that our measures would generate a payback. We've reduced our energy use by two-thirds, improved our quality of life, created a local example that solar energy works, demonstrated permaculture principles and shown that big change can come in small increments — all without debt.

This article was presented to the 23rd National Passive Solar Conference in June 1998 in Albuquerque, New Mexico. The conference was sponsored by the American Solar Energy Society and the American Institute of Architects, of which Anthony Stoppiello is a member. Acknowledgments are made to Jim Dolan of Pacific County PUD No.2, Jerry Heffel from the Portland Office of the National Weather Service, Willie Marsh for access to 1992 KWH data, Alisa Carlson and Marnie McPhee for technical support and encouragement, "and the ancestors who made our life here possible."