

Green house

What was it about this normal-looking suburban dwelling—price tag \$1.2 million—that caused such a kerfuffle at city hall? Perhaps it was the walls made of straw bales

GABLED AND L-SHAPED, THE BIG HOUSE ON a corner lot in Mississauga is high, wide and handsome, in a style that suits its suburban street. But the cement blocks that sheathe the first storey, as well as the native grasses and twig “walls” (willows stapled to cedar) in the garden, subtly signal that something smarter than usual is going on here. The solar panels on the roof are another clue, but the house’s biggest novelty—the straw-bale insulation on the first floor—is invisible.

This deceptively normal-looking dwelling meets a stiff set of requirements: as energy efficient as possible, virtually free of allergenic materials and big enough for three separate households, with a common area. In the late 1990s, Cheryl Bradbee had started talking about sharing a house with two friends. She was a Protestant lay pastor and community organizer; Grace Terrett also had a background in community organization; and Beth Northrup had been suffering from chronic fatigue syndrome and multiple chemical sensitivities for years, and was unable to work. None of them expected to be able to afford much in the way of a house by themselves.

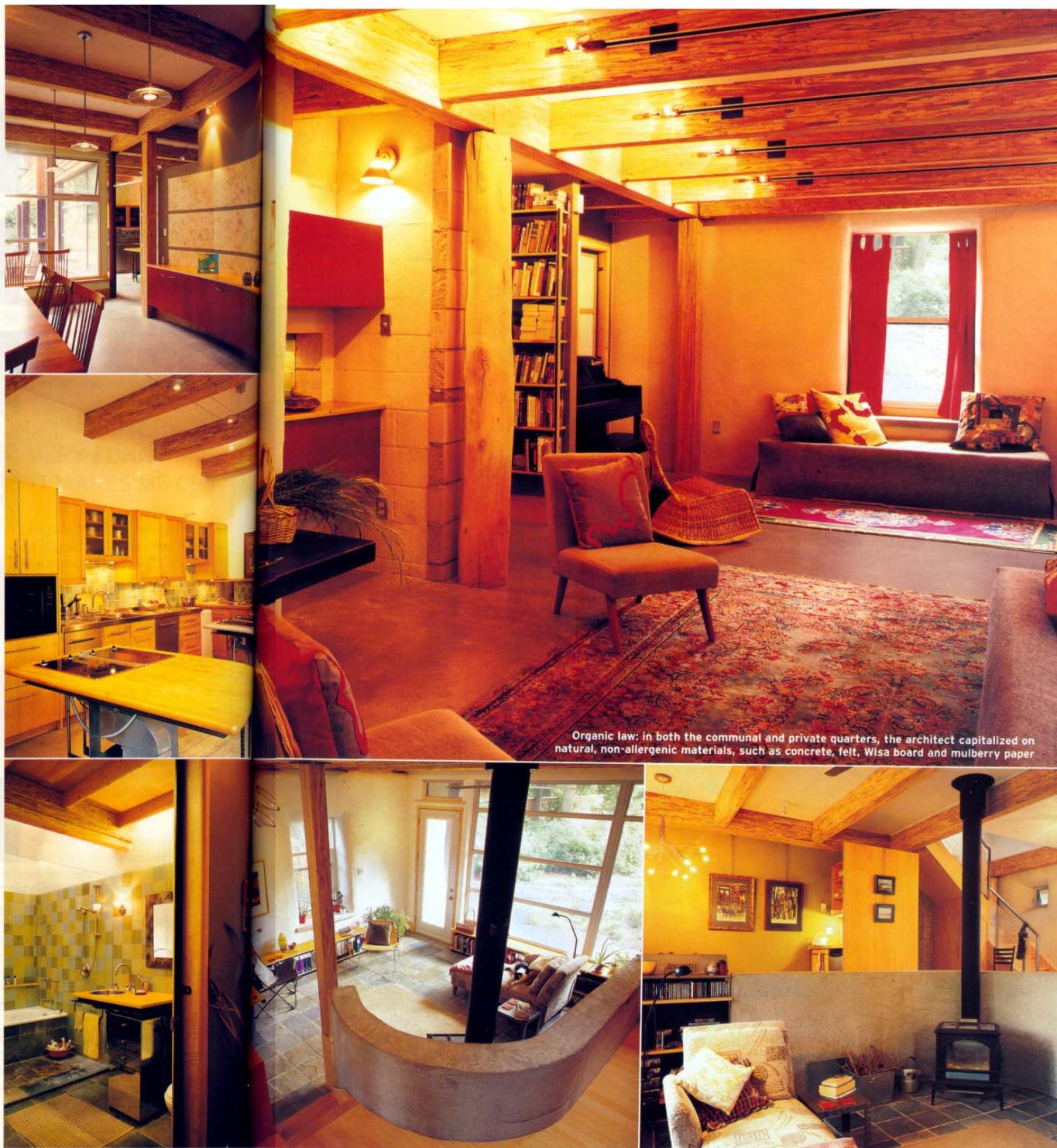
But when Northrup inherited some money from her grandmother, the three single women, all in their early 40s, began their quest for the perfect house. In search of lower prices, they looked at some properties in the burbs and, Bradbee says, “came home and cried”—they all wanted to live in Toronto. When this particular vacant lot came up for sale in the Clarkson neighbourhood of Mississauga, however, there was no denying that it was well situated for solar power and had the space they wanted for themselves and for a vegetable garden. They paid \$250,000 for their half acre, and invited an architect for a picnic.

MARTIN LIEFHEBBER, WHO ARRIVED THAT afternoon armed with kraft paper and pens for sketching, has built a career

around environmental sensitivity. And yet his own house in Riverdale is anything but eco-friendly, being what people in his native Netherlands call *gezellig*—an untranslatable amalgam of cozy, intimate and unpretentious. Settling into a non-descript chair to discuss the Mississauga project, Liefhebber is uncomfortably aware of the discrepancy between his theory and his practice. As he talks about sustainable energy and the need to live “unplugged,” he pauses, shaking his head as if to brush off the discordance: “I feel very self-conscious about the fact that I live in a drafty Riverdale house.”

It’s hard to imagine when he would find the time to build an eco-friendly house for himself. The founder of Breathe Architects, a teacher at the Ontario College of Art and Design and at the University of Toronto’s architecture school, and a frequent speaker on green design, Liefhebber talks about his subject with a messianic but affable zeal. Interest in his work has multiplied since the mid-’90s, when he won a national competition for an energy-efficient residential project. The result was Toronto Healthy Houses in Riverdale: two semi-detached residences that use ambient and renewable energy sources rather than city-supplied electricity, sewage and water, and actually feed power back into the grid. Crises like Walkerton and the 2003 blackout have helped Liefhebber’s unconventional solutions—houses built of rammed earth, tires or straw—begin to seem more attractive. Twenty years since he set up his own firm and more than 30 years after he immigrated to Canada, Toronto is finally beginning to catch up with him.

Liefhebber can sound like a mad scientist when he expounds on office workstations that have panels impregnated with atmosphere-cleaning minerals, or on toilets that water plants (fashioned after a lock system, water is released higher up and irrigates planter boxes on its way down to the toilet tank). Bringing



Organic law: in both the communal and private quarters, the architect capitalized on natural, non-allergenic materials, such as concrete, felt, Wisa board and mulberry paper

PHOTOGRAPHY BY PETER SELLAR

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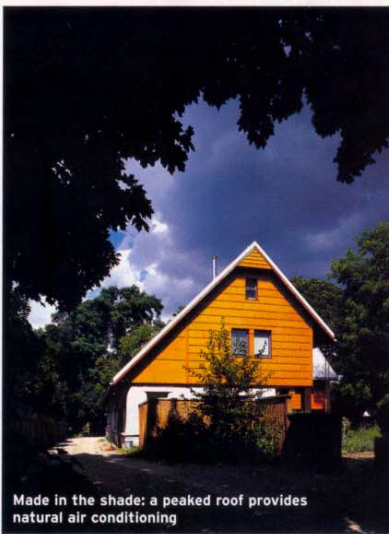
out a model of a house, he rhapsodizes about its solar panels, not its elegant modularity. When he’s reminded that his buildings are as pleasing to the eye as they are respectful to the environment, he nods. He doesn’t say that’s the easy part, because Liefhebber isn’t arrogant. His training, experience and inclination have taught him how to make good-looking buildings. Architects have figured out the beauty part, he says. What’s crucial in the 21st century is to address the environmental crisis in which we’re mired.

THE PICNIC, IN 1998, MARKED THE beginning for Liefhebber and his three clients. But rather like the “slow food” movement, this would be the “slow house” project. The innovative materials, the log-jams involved in obtaining permits, and the need to achieve consensus from three owners, one architect and several builders and craftspeople meant that construction wouldn’t begin until May 1999 and would continue through Christmas of 2002.

Liefhebber warned the women that the design process was traumatic, having himself watched a few marriages collapse. Here, there was no marriage to fracture, but these three women, who had never lived together, and who had different aesthetics and health considerations, faced hundreds of decisions. In essence, they wanted five houses: a separate 1,000-square-foot suite for each owner; a 2,000-square-foot common space with kitchen, living room, library and dining room; and a guest suite in the basement. It was Terrett who came up with the house’s configuration—the common area on the first floor, with Northrup’s one-storey suite above it, and Terrett’s and Bradbee’s two-storey suites on either side. Liefhebber made models and faxed blueprints to Bradbee; she would then white out the parts she didn’t like, draw in alternatives and fax the plans back. Trying to establish what materials Northrup could tolerate, Liefhebber and Northrup would wrap samples of wood or tile in foil, leave them on a windowsill to “cure,” then note if she developed headache, fatigue or difficulty breathing.

Some decisions came quickly. To accommodate solar panels and provide natural air conditioning, the exterior required a peaked roof with a deep, shade-producing overhang. Liefhebber would have oriented the house away from the street and slightly to the south to get

more sun, but that would have made the building too conspicuous in the conservative neighbourhood. His clients were committed to spending money on pioneering processes: their benefactor, Northrup’s grandmother, had environmental sympathies, so they feel she would have approved. As a result, Liefhebber was able to compensate for the conventional orientation by laminating Uni-solar strips to the roof—an expensive but efficient American technology that works in



Made in the shade: a peaked roof provides natural air conditioning

the shade. The strips provide up to one-third of the house’s power, while regular solar panels heat the water. Partly because of the cost of innovative technology and some non-allergenic materials, the finished house rang in at \$1.2 million, not including the land. A considerable sum, Liefhebber admits, but no pricier than many custom-made conventional houses of that size.

He encased the house in concrete blocks and Wisa board, an east European marine-quality plywood. To unify inside and out (and because once they found a material Northrup could tolerate, they tended to capitalize on it), Liefhebber used the concrete blocks for the interior walls and Wisa for bookshelves, window seats and cabinets.

The straw bales (“like wrapping a down jacket around the house,” in Bradbee’s words) symbolize much that Liefhebber and his clients hold dear. They’re inert and non-toxic. Beyond that, they’re cheap (a 30- by 18- by 18-inch bale costs \$1), low-tech and what Bradbee calls

“empowering.” Translated, that means they’re light enough for women, children and grandparents to stack. Over two weekends, they did just that, then sewed them with binder twine to an enveloping skin of chicken wire.

Conceived a century ago in tree-poor Nebraska (where some of the first straw-bale buildings still stand), a house stuffed with densely packed straw is better insulated and ventilated than a fibreglass-insulated one. Less flammable, too—the straw smoulders rather than burns. Still, this old-school technology wasn’t good enough for Mississauga, which, in Liefhebber’s words, “masquerades as an environmental town.” While he and his clients waited for a permit (it eventually came from the Ontario Building Code Commission, which trumped Mississauga’s building department), the roof went on before the walls, producing a temporary but romantic-looking pavilion.

Northrup is allergic to drywall, so the straw bales are enclosed in concrete and then plastered, except for a square-foot-sized opening on a living-room wall, which allows a glimpse of straw and chicken wire. Called “the truth window,” the cut-away is standard in straw-bale houses, purely as a design feature. Because straw bales do not stack with geometric precision, the plastered walls are slightly irregular, rounded and adobe-like.

In a house filled with out-of-the-ordinary elements, what’s remarkable is just how ordinary and casual it all appears. Except for the truth window and plaster walls, this could be any contemporary living and dining area, with heated concrete floors, felt-covered daybeds, mulberry paper panels on doors, and low-slung upholstered chairs from the mid-20th century. The materials and fabrics, including the industrial felt, have been carefully chosen for their non-allergenic qualities. Carpets, gas-emitting paints and synthetic fabrics were banished whenever possible. The mid-century chairs—family furniture from one of the owners—were hailed as a godsend since older upholstery fabrics tend to be less allergenic.

The main kitchen, which had to accommodate three people simultaneously cooking three different meals, was a particularly fraught design challenge. (Each suite has a minimal galley kitchen.) The finished product is such a happy harmony of blond Wisa cabinets, stainless steel appliances and tiles in various shades of

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turquoise that it takes a while to count the three sinks, two stovetops, two ovens and two islands at differing heights to accommodate different-sized cooks.

Although the three owners had to agree on materials in the common rooms, each woman did exactly what she wanted with her own quarters. For instance, the living room-work area dominates in Bradbee’s two-storey suite. Sun pours through triple-glazed windows onto a slate floor, plants and a chaise longue. The only eccentric touches are the curving concrete wall and staircase that envelop the breakfast nook while echoing the organic, adobe look of the straw-bale walls. In such a small space, storage is key, and it’s inventively tucked in here and there, sometimes camouflaged by willow doors. The impression is calm, comfortable and appealingly frugal. The exception—perhaps the house’s most sybaritic space—is Bradbee’s sizable bathroom. With a glass shower and separate tub, it’s lined with tiles in jolly ’50s shades of green, blue, beige and yellow.

ALTHOUGH IT WAS THE VISION OF PRISTINE wilderness that drew Liefhebber to Canada in the 1970s, now he sees our relationship to nature as problematic. Invoking *American Gothic*, the Grant Wood painting of the grim couple plus pitchfork, he says, “They’re afraid of nature, and that’s part of our culture. We need to manage nature, but be with it.”

Managing nature while protecting it has driven Liefhebber’s career, and he inspires a corresponding enthusiasm in his clients. John Wilson and his wife, Leigh Geraghty, who live in Mono Mills in another of Liefhebber’s straw-bale dwellings, have produced a book, a video and a CD-ROM about their house and sustainable living. An open house they held last fall drew 1,800 people eager to see straw walls, photovoltaic solar panels and a wind turbine.

For Bradbee, planning her straw-bale house was literally life-altering. Philosophically, she loved the communal process of the evolving design. “It was a real challenge to the architectural culture of the master builder,” she says. “The owners, tradespeople and Martin designed all the way through—it was like a third-year design studio for me.” The logical follow-through was to enroll in U of T’s architecture faculty in 2000. She designed the house’s garden, with native grasses and stone walls that provide year-round interest, and she now works as a landscape design consultant. As Liefhebber likes to say of mutually advantageous relationships, “It’s a loop!”

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