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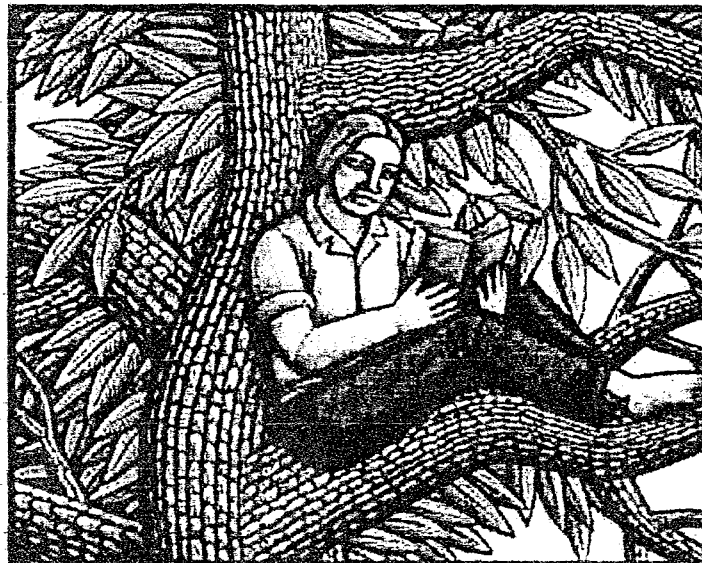
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on-line](#)[home](#)

Illustration: Clifford Harper

**Architects need to meet the challenge of ecology,
economy and equity. An interview**

from Resurgence issue 210

IN A WORLD where most of us just hope to do less harm to the natural environment, William McDonough says we can act beneficially. While we scurry to find ways to recycle, he promises to trash the concept of waste altogether. Named a Hero for the Planet by Time magazine and recipient of the first and only Presidential Award for Sustainable Development, this bright-eyed architect delights in turning accepted ideas inside out and inventing new language to express his philosophy of eco-effective design.

The buildings he has created speak for his revolutionary vision better than anything he can say about them. The Adam Joseph Lewis Center for Environmental Studies at Oberlin College has been described as one of the most environmentally intelligent buildings in the world. Then there's his work with chemist Michael Braungart to spearhead the Next Industrial Revolution, designing products - such as carpeting and shoes - that cycle back to their manufacturers instead of to the landfill. But McDonough's redesign of Ford Motor Company's huge River Rouge plant may be the ultimate demonstration of his vision for the built

environment, and the ultimate test of his principles of ecology, equity, and economics.

How rigid is the common definition of 'green' or 'sustainable' design?

Sustainable design and green design are not the same thing. Green design describes a process that honours the natural world to the optimal extent. The things that are green in the world celebrate diversity; they are powered by the sun. The whole notion of the single photosynthetic cell multiplying itself, transforming into new species, learning how to have sex, creating mammals and humans, for example, is the magic and wonder of a green world. Things are fecund. Growth is good.

But in the modern world, when commercial actors talk about growth being the engine of commerce and environmentalists talk about growth being the structure of the world, we realize that we've adopted a machine mentality. In green design we are now looking at the idea that there is such a thing as a living machine.

For example, at Ford's River Rouge facility, we are designing an assembly plant that will have 454,000 square feet of habitat for native species on the roof. We are using plants to absorb stormwater, make oxygen, sequester carbon, fix nitrogen, and so on. But if all we end up doing is taking plants and using them to serve human purposes, then we're using plants as machines. I think that the question of green design today is ultimately about how humans pick up tools of nature.

In that context I would say that the argument that growth is bad for the environment is a silly argument - because the real question is, What do you want to grow? You can grow a tree - that's good. We grow asphalt - that might not be good. But to grow things that are fecund and generative, that's good. If I can design a building that makes more energy than it needs to operate, then I'm designing a building like a tree. And it could be fecund - but only if, for example, I make sure the species on the roof are natural species that evolved through the place. On the roof of The Gap in California we planted the native grasses of San Bruno, so that the birds flying overhead look down and say, "Oh my god! It's our people. They're back!"

Now sustainable design is not green design. Green design is part of it, a third. The other two factors, equally important, and equally creative as zones in which to work, are the social equity issues and the economic issues. We don't really use the word sustainable very much in our work because sustainable is not that interesting. I mean, who wants to celebrate maintenance? We want to celebrate the abundance of the world and the generosity of spirit. So we are looking for a sustainING strategy. Then you can have all the hot water you want, so long as it's solar-heated. The philosophy of the work I do is really about

community. When we begin a project, we don't really think of ourselves as designing buildings; we think of ourselves as creating an environment for a community. And we start with the idea of all species in that community. Instead of simply saying, How can we begin loving our own children, even for seven generations, we ask? How do we love all the children of all species for all time? In that sense it's a fundamental act of restoration and regeneration.

And the next question we have to ask is, When do we become native to this place?, because that changes the way you think about community, and it changes the way you design. For example, this renovation at the River Rouge - it's a two-billion-dollar project with a twenty-year plan. And I realized that Ford had declared themselves native to Dearborn. By saying they are staying, that they are going to clean up their own mess - not just leaving it behind, but transforming it from an icon of the first Industrial Revolution to an icon of the next - what a phenomenal act! It's an indigenous declaration.

You put forward three components of sustaining design: ecology, social equity, and economy. How might a building honour all three equally?

Affordable, profitable things that build diversity and mixed use and connect to the natural world in ways that are fecund and healthy - that would meet the criterion.

One of the things we are looking at is how we can design communities with homes that are very, very low in toxicity, very high on the solar energy front, and still affordable. Affordable, say, for the carpenters who built them, who may come from cheap, terribly insulated, double-wide modulars set on three-quarters of an acre, and whose families need two cars costing them \$12,000 a year after taxes because they are so remote from culture. But maybe they could get alternative transportation so they don't need two cars, and end up with a solar-powered house that's worth twice as much. That's the kind of strategy we're developing on the affordable front.

I also think our communities need to enjoy much more diversity of provision. Our society focusses on just one part of the market, as if everybody wants to live in a three-bedroom house. Actually, young people want to go to cities and wear black clothes and find mates; young families might need some space where the kids can play outdoors; and then older people want to be part of a community again, maybe one that's pedestrian. If we don't engage all these people in a mixed-use way, we're not being socially intelligent. We're not even being economically intelligent.

The Herman Miller facility you designed seems to exemplify how architecture can build stronger ties between people, the buildings

they inhabit, and the landscape that surrounds them ...

When we designed the building, we thought about all these issues. We curved the building so that the water moving off the site created wetlands and travelled for hundreds of yards before it actually left the site. So it provided the optimal amount of habitat for as many species as possible. The people who work there really get to celebrate that. They get to look at this fecund place that is constantly changing colour. It's full of butterflies. They call the building "the greenhouse" now, and the gift they give visitors is honey made from the site.

Inside, we designed a street where all the office workers and the factory workers convene. The coffee and the training rooms and the bathrooms - all the places you go - are on a sun-filled street full of glare and plants and sculptures. Does it produce productivity? Well, yeah. The performance of the company went up 24% after they moved. This means that the building is being paid for about every three months by the increase in business.

The stories are quite astonishing. Sixteen people left for higher wages. If you're in business, you know that when you lose an employee, you've lost something that you've invested in, and you have to invest more to replace that person. Well, those sixteen people all came back. And when the President of the company said, "Why are you back?", they said, "We want our jobs back because we had never worked in another factory before. We couldn't work in the dark." In a market where there is almost no unemployment, Herman Miller has a waiting list. If we can design a landscape that becomes a life-support system for people who work, instead of a work-support system for people who don't have a life, perhaps we become the employer of choice. That's more valuable than just about anything in the economic sector. It's also phenomenally valuable in the social sector.

Is sustaining design currently an affordable choice for small businesses and nonprofits?

We actually work with lots of little organizations. The Oberlin Environmental Studies Center, the building we're doing with David Orr, is definitely a not-for-profit project. It's a research project, and was done with grants from foundations - and it's only 15,000 square feet. We're doing the new Woods Hole Research Center, with George Woodwell and his scientists - people tracking global warming, the carbon balance, and so forth. Their building again is small, and, like Oberlin's, will make more energy than it needs to operate. We do small schools, we do houses for families ...

But the larger commercial projects have the resources that allow us to experiment on a large scale, so what we do there appears dramatic to other people. When I put a grass roof over a whole building as habitat,

people think that's interesting. When we make our office buildings with windows that open, we get written up in the Wall Street Journal. I told their reporter that we had reached a low point of Western civilization when a window that opened was news. It's terrifying.

In Palm Pilot's new headquarters in California, we're designing the building to have outdoor offices. Here you are in San José, one of the most beautiful climates in the world - this is almond country, for heaven's sake! - and they've trapped these young software types in gas chambers. Everybody's sealed up, with the air conditioning running. So we're designing our building with windows that open and outdoor offices. Why not? Sit outside under a tree and do your work. Why is it that we have to lock everybody up in a gray rectangle to think that they are working?

In 1992 you created a list of nine principles of sustainable design for the 2000 World's Fair, including rules like "Insist on the rights of humanity and nature to co-exist," "Recognize interdependence," and "Eliminate the concept of waste." How can these principles serve organizations and communities as they consider their responsibilities toward the larger world?

The Hannover Principles are really meant to help someone understand their relationship to the natural world, to technology, and to hope. You see, there's a kind of fierceness here. When it says, eliminate the concept of waste, it doesn't say, minimize waste. It doesn't say, please recycle.

What's exciting is that once these protocols start manifesting themselves, you see that all sustainability is local. It becomes a system that divests itself to the local level. So the products that are preferred and the ones that have economic benefit are local products.

We're going to get back to the ability to have pedestrian communities and mobility services, and we're going to benefit from the multiplier effect of an urbane situation. We're designing a town now where there is a day-care centre, health-care centre, and elder-care centre, all connected in the centre of town, so that we bring these generations back together. And it's a transit point, obviously, so they can get wherever they need to go. Then it has a botanical garden where people, especially elders, can spend their winters in a beautiful greenhouse full of delightful plants, which are purifying the water of the public laundry, which is serviced by the transit system. And it's all solar-powered and the water is purified, so the community's effects on global warming and on water quality from their laundry are zero.

I think that sustainable development starts, though, with the restoration of our cities. The rebuilding of existing communities is our most urgent opportunity. The next level would be the regeneration of the

brownfields, for a lot of reasons.

I'm also concerned about our highway system. All these highways that slice through cities or cut off the waterfront really have to be looked at as some kind of strange detritus from a moment of high cultural amnesia. We're doing a project for the Fuller Theological Center in Pasadena where we're proposing that they actually cover over the Pasadena Freeway for a whole block. There's all this air over these stupid highways that could be fantastically viable as parks and all sorts of things. And it would knit the city back together, connect the two sides again.

As our transportation systems become pollution-free, all of a sudden the highways could be in tunnels. They can be buried, just like when New York City switched over to electric locomotives - they put the trains underground and they got Park Avenue, some of the most valuable real estate in the world.

Your work bespeaks a great optimism. Do you really believe we can design our way out of problems such as deforestation, toxic waste, social injustice, and mass consumerism, or are there limits to what human ingenuity can accomplish?

Well, we're all on the planet for a certain period of time, and you can decide what you want to spend your time doing. If the existing trajectories play themselves out, then we have huge tragedies in the making. All we're saying is that we'd rather spend our time on a strategy of change that allows our children a story of hope. And I don't know that we can stop it. Much of the past has already determined the future. Global warming is underway, bioaccumulation is a serious concern, persistent toxins are persistent.

There is no answer for everything. I just think that if we model ourselves on a system that's had 15 million years' experience instead of these 100-year-old experiments that are taking place without any control, the bet might be a little bit better. We say this very humbly because it took humans 5,000 years to put wheels on their luggage. So how smart are we?

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[^back to top](#)

[from Resurgence issue 210](#)

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