

ROCKY MOUNTAIN INSTITUTE

NEWSLETTER

GOOD SOLUTIONS

The Art of Solving for Pattern

Wendell Berry's 1981 book, *The Gift of Good Land*, contains an essay that should be required reading for everyone concerned about the environment. And even for those who think they aren't.

Berry titled the piece "Solving for Pattern," but he might just as well have called it "How to Solve Problems without Making Things Even Worse." Ostensibly about farming practices, it amounts to an all-encompassing manifesto for right action.

Berry's gripe is with the modern tendency to define problems narrowly, without bothering to understand their causes or connections, and then blow them out of the water with indiscriminate technology. Shoot first, ask questions later. Nuclear power and nuclear bombs, dams and DDT, urban renewal and suburban zoning—each answer, initially a breakthrough, brought with it a host of unforeseen new problems.

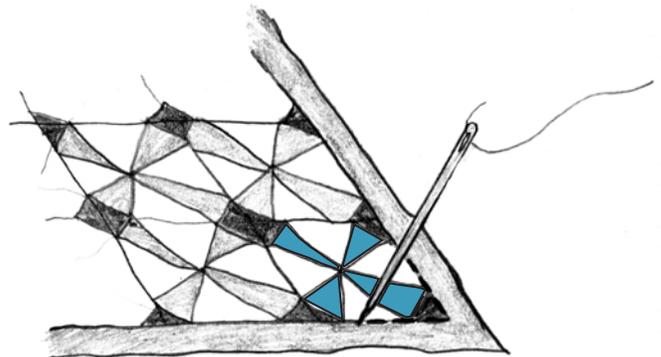
"The whole problem must be solved," Berry cautions, "not just some handily identifiable and simplifiable aspect of it."

GOOD AND BETTER

A pattern, in Wendell Berry's parlance, is a system: a farm, a family, an ecosystem, an industry, a community, an economy. Solving for pattern, then, means finding solutions that don't just fix the problem; they understand and work harmoniously with the entire system that contains it, and promote the well-being of all parts of the system (not

just the part that seems to be a "problem").

"Good solutions," according to Berry, solve more than one problem while not creating new ones; they're of an appropriate and manageable scale; they're affordable, resilient, healthful, and beautiful; they're "good in all respects."



Jen Uncapher

That is, to be sure, an unattainable ideal. The patterns in which we operate are so complex that we can't possibly understand all the ramifications of our actions. A solution that seems good now may look less so in the light of new information. DDT was (and in many parts of the world still is) a life-saver for millions threatened by malaria-carrying mosquitoes. When it was invented, who was thinking about waterfowl?

So the goodness of solutions is relative, and evolutionary. As more information is discovered, the solutions get better (though not necessarily more complicated, since better understanding of natural systems often

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THE VISIBLE HAND

By L. Hunter Lovins, Executive Director

For years, RMI has been developing “good solutions” (see cover story) and quietly feeding them to policy-makers, corporate decision-makers, regulators, and the like. This behind-the-scenes work has been effective, but it rarely makes the evening news. Most of our neighbors here in Colorado don’t even know what we do.

That’s OK—we’re not rock stars here. Playing the role of the invisible hand suits us just fine.

But there’s something to be said for speaking also to the mainstream. Just imagine if energy-efficiency became as popular as, say, the Budweiser frogs. What if people said “I’d rather be driving a Hypercar” instead of “Yo quiero Taco Bell”? That would add new leverage to our high-level work.

This spring, a strategic planning process initiated by our Board identified the need for more focused publicity and marketing. Serendipitously, two things happened this summer to make this idea a reality.

First, we learned that we’d received a two-year, \$200,000 grant from the Educational Foundation of America to publicize RMI’s climate and corporate sustainability programs and our forthcoming book (coauthored by Paul Hawken), *Natural Capitalism*. And second, a longtime friend and professional marketer, Norm Clasen, decided to devote the rest of his professional life to promoting the kinds of solutions RMI specializes in.

Since taking the reins as RMI’s first publicist/marketer in July, Norm has been applying the same smarts and creativity to moving the Institute into the mainstream as he formerly did selling everything from ski boots to cigarettes to real estate.



PERSPECTIVES

Norm says his goal is simply to “tell the story of RMI and what it’s doing.” It sounds obvious when you hear someone say it, yet we haven’t been very good at telling our own story for a mass audience.

Norm’s first week at RMI illustrates the point. To bring himself up to speed, he asked all the researchers for simple descriptions of their projects, and they dutifully busied him with stacks of technical papers. As his reading pile grew, Norm found himself no wiser, lamenting, “Can’t anyone just give me a simple, one-paragraph definition of a Hypercar?” Then he asked, “What’s the story of the Hypercar? People like to hear the story behind the facts.”

Norm is right: the way to sell difficult concepts to laypeople is by telling stories, and RMI has some fascinating ones to tell. We get so immersed in the details of our specialist fields that we tend to forget what an amazing group of brilliant, eccentric, creative, and cantankerous minds we’ve assembled here, 7,100 feet up in the Rockies.

With Norm’s guidance, RMI will increasingly be taking this story to the media—particularly the broadcast media, whom we’ve never actively courted before. The mission to work at the cutting edge of resource efficiency remains unchanged, but repackaging our findings in more user-friendly ways, and marketing our publications and consulting services more widely can only strengthen the outcomes.

So expect to see more of RMI in the popular media. But we promise: no talking chihuahuas.

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leads to *simpler* solutions). Solving for pattern, then, is really a process of understanding how things work. It’s a search for what the philosopher Gregory Bateson called “the pattern that connects.”

AQUEOUS SOLUTIONS

You’d be surprised how often “problems,” when solved for pattern, turn out to be opportunities. Stormwater, for instance.

In urban and suburban settings, water runoff is typically regarded as a nuisance—something to be gotten rid of as quickly as possible through a system of concrete drains and conduits that channel it into the municipal sewage system. Aside from being expensive, this engineering-intensive solution creates a significant new problem: in big storms, the runoff overloads the treatment plant, and so the rainwater, now mixed with sewage, overflows into streams.

This fall, RMI will coordinate a process to help architects, landscape designers, and municipal planners devise better ways to manage runoff in a Pittsburgh watershed. The approach is textbook solving for pattern: minimize pavement and impervious surfaces that compound the runoff problem, and use swales and other natural drainage features to handle the rest. By mimicking nature, the solution eliminates sewage concerns, produces beautiful landscaping, and costs a lot less to build and maintain than conventional storm drainage.

It worked like a charm for Village Homes, a pioneering green development in Davis, California. As described in RMI’s recent book *Green Development*, designing narrower streets and incorporating natural drainage techniques saved \$200,000—enough to pay for extra parks, walkways, and landscaping. Those amenities in turn keep the neighborhood cooler than surrounding areas in the summertime (reducing the need for air conditioning), foster a strong sense of community, and contribute to substantially higher property values.

“You know you are on the right track when your solution for one problem accidentally solves several others,” notes Village Homes developer Michael Corbett. “You

decide to minimize automobile use to conserve fossil fuels, for example, and realize that this will reduce noise, conserve land by minimizing streets and parking, multiply opportunities for social contact, beautify the neighborhood, and make it safer for children.”

Corbett probably didn't think of it as such, but he was solving for pattern.

INDUSTRIAL ECOLOGY

What does solving for pattern look like when applied to industry?

Berry's principles stress the need to accept limits, to work with what is at hand, to be of appropriate scale, and to minimize the need for inputs. The growing “industrial ecology” movement embodies these ideas by (again) mimicking nature: turning the normally linear process of extraction/manufacture/disposal into a closed loop, where the waste from one process is reused as the feedstock for another.

In a freelance consulting project, a trio of RMI staff are advising a certain carpet company that's trying to eliminate the very concept of waste. The company has developed a new kind of carpeting that's 100-percent recyclable—its fibers and backing can be easily separated, then sent back to the factory for remanufacturing into new carpeting. “Waste” is turned into “food” (as green architect Bill McDonough would say), reducing both disposal and raw-materials costs. Moreover, the manufacturing process is entirely solar-powered, decoupling energy as well as materials use from the “lithosphere” (the earth's crust).

The new product (code name: “Amory”) is to be launched this fall. The company expects to make a fortune from it. That's a pretty good solution, in large part because it works with the prevailing economic “pattern.”

Likewise, the recognition that greenhouse gases are a costly form of industrial waste—and that reducing or reusing them is profitable—is inspiring good solutions in a number of sectors (see page 4).

But natural systems do more than eliminate waste: they bring seemingly disparate forces together. The industrial ecology village in Kalundborg, Denmark, for example (“Durable Enterprise,” fall/winter 1997), creates unlikely bedfellows, linking fish farms with pharmaceutical plants, wall-board makers with power generators.

As the biologist Lewis Thomas wrote, “There is a tendency for living things to



Drainage swales at Village Homes.

join up, establish linkages, live inside each other, return to earlier arrangements, get along wherever possible. This is the way of the world.” These linkages and arrangements are the patterns that good solutions solve for.

TRANSIT PATTERNS

In a way, all solutions, however short-sighted, solve for *some* pattern. But which is the right pattern? Patterns—systems—exist at all levels; they're nested one inside another. Everything, as they say, is connected. You've got to know where to draw the line, otherwise you'll get bogged down and never solve anything.

For example, RMI's Hypercar concept solves or reduces some problems (oil depletion, smog, greenhouse-gas emissions) but may make others (congestion, road-building) worse. It's the application of a technological solution (a better type of car) to what is inherently a social problem (people trying to get around), and since the solution is mismatched to the problem, it isn't as good as it could be.

Yet RMI also has to match its solutions to its own resources. Transforming the \$1-trillion global automotive industry is enough of a challenge; changing the way people choose to get around is more than the Institute can take on, at least for the time being.

Fortunately, others are working different angles. Perhaps the best example of solving transit problems for pattern comes from Curitiba, Brazil. The city has created axial development layout, dedicated bus avenues, and bus “boarding pods” that provide all the advantages of a subway system at a tiny fraction of the capital cost. That translates into greater convenience and lower fares. Result: buses provide three-

fourths of the city's total transportation, helping to cut per-capita energy use by 30 percent. Because it paid attention to the need for access and mobility, not for driving cars,

Jen Uncapher

Curitiba has the highest car ownership—and the lowest car *drivership*—in

Brazil.

ZEN AND THE ART OF PROBLEM-SOLVING

There's a kind of Zen to solving for pattern. If you design a new product, for instance, you're introducing a new thing into a very complicated existing pattern. Does it fit? What will be its effects? To design a boat, you must understand the lake.

As Christopher Alexander counsels in his book, *A Pattern Language*: “When you build a thing, you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the large world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.”

Searching for connections, seeing the hidden pattern—understanding the entire system, and the systems it contains and the systems that contain it—these are hard tasks that take designers and policymakers outside the realm of familiar formulas. But this is what we must do if we're to begin treating causes instead of symptoms, and truly solving our problems instead of shifting and compounding them.

—DAVE REED

CLIMATE

CLIMATE PROTECTION HAPPENS

How Smart Companies are Turning Lemons into Lemonade

Last year, to reduce greenhouse-gas emissions, DuPont installed a converter on the smokestack of one of its plants that makes adipic acid (the key precursor of nylon). By transforming nitrous oxide to nitrogen and oxygen—components of air—that one retrofit reduced climate-altering emissions by as much as taking 3 million cars off the road.

Clever, but not clever enough.

Why? *It didn't make money.*

Now, DuPont's competitor Solutia has developed a process to use "waste" nitrous oxide to convert benzene profitably into phenol, a common commodity chemical. Bingo! Such lemons-to-lemonade stories illustrate what Rocky Mountain Institute has been saying all along: climate protection need not be costly, and can usually be profitable.

The journey to profitable climate protection typically has three stages. First, business realizes it's affecting climate. Next, pioneering companies spend money to address the problem. Finally, the smart ones learn how to *make* money from it. Paradigm shifted.

RMI is currently engaged in high-level private discussions on climate strategy with several leading firms in the oil, chemical, automotive, and semiconductor industries. Each client has found scores of opportunities for profitable climate protection, many of which are already being implemented.

FOSSIL-FUEL ENDGAME

An increasing number of companies are getting wise to the possibilities, and the carbon-trading framework established by the Kyoto protocol ("After Kyoto," spring 1998) promises to accelerate this trend.

In the energy sector, major players are realizing that the fossil-fuel endgame has

arrived as a result of competitive pressure, climate issues, or both. This implies rapid diversification into energy efficiency, renewables, and hydrogen. For example:

- British Petroleum and Shell are building solar businesses—a sensible move, considering the market for photovoltaics is projected to grow at an annual rate of 15–30 percent indefinitely.

One major semiconductor company is considering close to factor-50 reductions in carbon-dioxide emissions per chip by as early as 2008.

- Enron Corp.—one of the world's biggest natural-gas companies—is moving aggressively into renewable power, which it views as increasingly competitive. It has installed more than 3,200 wind turbines, and with Amoco has created a joint-venture partnership that is now the world's second-largest solar-cell manufacturer.

Developments like these are probably only precursors of bigger things to come. Consider, for example, just one opportunity presented by the emerging market in hydrogen fuel cells for buildings and vehicles ("Fuel for Thought," summer 1997).

Natural gas can be chemically processed into hydrogen. As demand for hydrogen increases, it will make sense to do the conversion at the wellhead and then ship the hydrogen via existing natural-gas pipelines. Carbon dioxide produced in the conversion, suggests Princeton physicist Bob Williams, could then be reinjected into the well, a process that about pays for itself in methane recovery. (Pressurizing the field forces out more methane—a technique long used in oilfields.) Then, under the Kyoto protocol, the gas company could sell

credits for the carbon dioxide it had sequestered underground. Get paid twice for carbon-dioxide reduction and suddenly it doesn't seem like such a ball and chain. Norsk Hydro recently announced such a plan.

ECONOMIC SELF-INTEREST

Once considered the domain of do-gooders, climate protection is now becoming part of corporations' fiduciary responsibility. *Fortune* magazine recently reported how many firms are cutting emissions, almost unintentionally, by focusing on savings. An 11 May article, "Turn Down the Energy, Turn Up the Profits," quoted an energy manager at a DuPont facility that has cut energy use by a third: "Who knows what will happen to energy prices six months from now? Whatever happens, improving the way we use energy reduces our cost in the long run."

In the semiconductor world, one major company RMI is advising is considering close to factor-50 reductions in carbon-dioxide emissions per chip by as early as 2008. (Such reductions look feasible and profitable, though it might be tough to get it all done so soon.) In an industry where saving one watt adds about \$10 of present value to the bottom line, carbon reduction is a natural byproduct of economic self-interest.

Insurance companies have emerged as some of the most vocal evangelists for climate protection—not surprising, considering how much they stand to lose from a greenhouse-induced rise in extreme weather events ("Risky Business," spring 1996). In a recent *Atlantic Monthly* article, Ross Gelbspan pointed out that annual insurance losses due to storms in the 1980s were \$2 billion. In the 1990s they were \$12 billion. Is the increase largely a result of global warming? Responsible scientists won't yet assert causality—but insurance companies can't afford not to hedge their bets.

ADDING CREDIBILITY

As the industrial giant stirs, nonprofit and government initiatives are under way as well. This spring, the Pew Charitable

TRANSPORTATION

Trusts gave \$5 million to found the Pew Center on Climate Change, a policy group designed to add credibility to the climate-protection movement. Run by Eileen Claussen, the former Deputy Assistant Secretary of State for Environmental Affairs, the center is endorsed by a consortium of solution-oriented corporations.

In May, the Pew Center took out a full-page ad in *The Washington Post* featuring a statement titled "What Do We All Agree On? Answer: Taking on the Challenge of Global Climate Change" and signed by such corporate Goliaths as Boeing, Lockheed Martin, Toyota, United Technologies, and 3M. (This highly successful campaign eclipsed a similar but more modest RMI-brokered statement described in the previous newsletter, which is likely to be reactivated this fall.)

Two other major projects are the World Resources Institute's Climate Protection Initiative and the U.S. DOE/EPA-sponsored Climate Wise program. Both partner with businesses to identify profitable emissions-reduction strategies with an eye toward meeting the Kyoto protocol's goals and building a corporate constituency for this new source of profit. (The more firms behave as

if the protocol were already ratified, the more likely—and less necessary—ratification becomes.) Climate Wise is helping to lead the way: with more than 300 partners, including heavyweights like Weyerhaeuser, AT&T, and Johnson & Johnson, it influences over 7 percent of U.S. industrial energy use.

Bottom line: a revolution is occurring across a fairly large range of industry. As with any revolution, there's a split between those that "get it" and those that don't. In this case, early adopters will derive decisive competitive advantage. Those that dawdle—let's just say we're not buying their stock.

—AUDEN SCHENDLER

SEEING THE (ULTRA)LIGHT

A 10-Step Program to Complete the Leap to Hypercars™

The previous newsletter described how the auto industry may be "halfway to Hypercars." Automakers are now exploring hybrid-electric drivesystems for their next generation of vehicles, but they're missing the other half of the picture: ultralight, ultra-low-drag design.

automakers have used them, they've done so in a piecemeal fashion—say, adding a composite fender to a mostly steel body—which tends to produce compatibility problems with the surrounding metal parts.

Yet RMI's research indicates that advanced composites offer the greatest potential for building automobiles that aren't just ultralight, but also ultrasafe, rugged, luxurious, and recyclable.

To inspire an ultralight automotive revolution, Brylawski and Lovins advise the advanced-composites industry to get away from trying to make car parts that mimic metal ones. Instead, they urge, emulate the metals *industries*, which are rapidly developing techniques for lightweight automobiles.

The aluminum industry has been aggressive in partnering with automakers. For example, Alcoa teamed up with Audi to create the luxury A8, which boasts 40 percent less mass and one-third fewer parts than conventional autobodies. In 1996, Alcoa's chairman pledged \$1 billion to any automaker willing to produce a high-volume aluminum vehicle. Thanks in part to such efforts, the use of aluminum in automobiles has nearly doubled since 1978.

Steel has fought back. In 1995, more than 30 steel companies got together and hired Porsche Engineering to build an experimental five-seat "UltraLight Steel Autobody" (ULSAB) that's 25 percent lighter, five times stiffer, and \$150 cheaper to build than conventional autobodies. Rather than optimizing individual parts or existing designs, Porsche designed an entirely new autobody from the ground up.

And what of the composites industry? Nada, zip.

Like so much of RMI's recent Hypercar work, Brylawski and Lovins's paper speaks as much of business opportunities—and the

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Hypercars on the Web



Percepticon

Hypercars have hit the Information Superhighway—check out www.hypercar.com to find out everything you ever wanted to know about Hypercars (and more)!

How to get them to make the whole leap? One way is to light a fire under the folks who stand to gain most from a shift to ultralight materials: the makers of advanced composites.

RMI's Michael Brylawski and Amory Lovins did just that in a paper delivered to a major advanced-materials conference in June. Their message: get going, folks, or steel and aluminum are going to eat your lunch.

MOVE IT OR LOSE IT

Advanced-composite materials are widely used in sporting goods and spacecraft, but rarely in cars. They're perceived as expensive and exotic, and historically when

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risks of inaction—as of technical feasibility. Show the car companies you can make advanced-composite autobodies and you'll create a vast, lucrative new market for your industry. Don't, and watch your already small market share shrink. (That's right, shrink: Ford's 40-percent-lighter P2000 experimental vehicle, supported by three aluminum companies but no composite firms, contains fewer pounds of polymers than a 1997 Taurus.)

HOW TO DO IT

To ensure the composites industry's future, the paper advocates adopting seven strategies used by the metals industry:

1. Build a car—then show it off.

2. Take a whole-systems approach.

Focus not on making materials metals-compatible, but on the advantages of whole-car applications.

3. Integrate. No inventions needed here: carefully combining proven technology should do the trick, as ULSAB showed.

4. Partner with automakers. Don't leave your customers out of the loop—they need to be enthusiastic adopters of your product. Just ask Audi.

5. Collaborate. If 30-plus highly competitive steel companies can put their differences aside to advance their collective interest, so can you.

6. Be ambitious. Even if you can't offer a billion-dollar carrot, make no little plans.

7. Act now. Steel and aluminum have head starts. Catch up, before automakers tool up to non-composite materials.

In addition, the industry can blaze a new trail in three respects:

8. Foster up-and-coming automakers.

A variety of high-tech firms have most of the skills needed to make Hypercars, with few of the traditional automakers' inhibitions about new materials. Court them.

9. Seek synergies. Composites fit ideally with hybrid-electric propulsion. Work on capturing the design synergies with hybrid systems and components in ways metals can't.

10. Rewrite the rules of competition. Don't just compete—set new standards. One composite part for the new Lotus

Why Composites Matter

What if the composites industry doesn't answer the challenge? Will there still be Hypercars? Probably. It's possible to foresee, say, an aluminum-intensive Hypercar. The P2000, for example, has a body structure 55 percent lighter than an equivalent steel vehicle. This is well within the mass-reduction targets RMI's Hypercar Center has used in its computer modeling. Thus, it seems, aluminum could get automakers "all the way" to Hypercars.

But mass reduction is only one part of the picture. Safety, durability, ride comfort (a function of stiffness and acoustical performance), and recyclability also are important factors for success. Advanced composites perform better in all of these areas. For example, they can absorb three

times as much energy per pound as aluminum, and crush more smoothly. With increasingly heavy SUVs filling up the roads, which material would you rather have your ultralight car made of?

Composites also capture other strategic advantages, such as "lean" manufacturing, fast product cycles, lay-in-the-mold color (which eliminates the paintshop), and low-cost tooling.

While the metals industries' recent efforts at cutting weight might make metal Hypercars possible, any car built out of metal would, ultimately, be a compromise. Advanced composites alone offer the complete package of benefits needed to make Hypercars superior to other vehicles on the road.

—MICHAEL BRYLAWSKI

Elise serves six different functions, including absorbing all the energy of a 30-mph crash into a fixed barrier.

Of course, none of this will be easy. But it may be necessary for the industry's long-term survival—not to mention the success of the Hypercar revolution.

—CAM BURNS & MICHAEL BRYLAWSKI

Editor's note: With Hypercars now so close to becoming reality, it has become an unfortunate legal necessity to protect RMI's intellectual property by trademarking and capitalizing the word "Hypercar." (A generic equivalent is "ultralight hybrid car.") Similarly, RMI has applied to protect "The Hypercar Center" as a service mark (SM).

GREEN DEVELOPMENT

READ THE MANUAL

A Simple Idea for Keeping Green Buildings Green

When you buy a \$40 toaster oven, it comes with a 30-page owner's manual. Buy a \$10-million office building and you get diddly. While there may be a book for the facility manager, the individual occupants get no explanation or instructions.

You can imagine the sort of foul-ups that can produce even in conventional buildings—overloaded circuits, stuck air vents, and the like. But ignorance is arguably even

worse in green buildings, whose high performance depends on the correct operation of finely tuned systems.

That's why RMI's Green Development Services (GDS) and its partners are writing "occupant's manuals" for a number of buildings they're designing or retrofitting for Monsanto on the biotech giant's St. Louis corporate campus. Each manual will describe the building's design philosophy, identify the materials and components

used, explain how things work, and give tips on how to optimize employees' individual spaces for comfort and efficiency.

GDS's relationship with Monsanto began in 1996, when RMI helped lead the company in a process to decide how to upgrade its office buildings and chemical plants. Out of that process emerged a five-year plan to renovate 1.5 million square feet of offices on the St. Louis campus according to sustainable design principles. Monsanto retained GDS to ensure that its various specialist contractors capture all the green opportunities possible.

The first project, completed last November, was the conversion of one floor of a classically inefficient older building into sleek and comfortable executive offices. The so-called A3 renovation has received rave reviews for its use of daylighting and the control occupants are given over their immediate environments. It's intended to serve as a model for all future projects, setting the standards for indoor air quality, daylighting, materials use, energy performance, and sustainable sourcing.

Of projects currently in the works, perhaps the most exciting is the Monsanto Incubator Facility, a new building that will provide leased space to scientists and entrepreneurs from outside the company. New GDS staffer Alexis Karolides has been given a mandate to push the green envelope with an integrated package of techniques that will cut energy use in half—a remarkable reduction for a laboratory facility, which must meet strict (and energy-intensive) air-handling requirements.

Innovative air handling, along with biological waste treatment and other resource-saving design concepts, are expected to earn the project one of the first platinum awards in the Leadership in Energy-Efficient Design rating system just announced by the U.S. Green Building Council (of which RMI is a member).

Other upcoming projects include the renovation of a large warehouse into a high-tech lab and computing center for genetic sequencing, and the construction of



Bill Browning

Monsanto A3: note the use of clear office dividers to allow daylight to reach farther into the building.

a new plant sciences institute. GDS is also helping Monsanto evaluate concepts for overhauling the entire campus electricity infrastructure to make it more efficient.

UPDATES

- The redevelopment plan for Highlands Gardens Village, in which Green Development Services assisted with initial visioning, received unanimous approval from the Denver City Council in May amid overwhelmingly positive public comment. The mixed-use, intergenerational project's relatively painless review illustrated one of the tangible benefits of green planning and citizen involvement.

- GDS has begun work on a second edition of its acclaimed *Green Developments* CD-ROM. The new edition is expected to feature 200 case studies—twice as many as the current disk. If you'd like to nominate a green development for inclusion, please email Jen Uncapher at jenu@rmi.org.

—DAVE REED

ECONOMIC RENEWAL

THE KANE MUTINY

A Timber Town Tests the Limits of Collaboration

One of the cornerstones of RMI's Economic Renewal process is collaboration. Collaboration—in the sense of working together to achieve common goals, not conspiring with the enemy—is one of those manifestly Good Things, like motherhood and apple pie. What's not to like? But ER staff recently found there's another side to that coin.

RMI was doing fieldwork in Kane, Pennsylvania in March as part of a larger project to tailor Economic Renewal for timber-based local economies ("Falling Off a Log," spring 1998). Kane was an excellent candidate for a collaborative economic-development process: heavily reliant on income from the surrounding Allegheny National Forest, it was polarized between those favoring continued resource extraction and those seeking new economic alternatives.

But Kane was also on the front line in a war raging nationally over the appropriateness of logging on public lands. Local environmentalists had successfully blocked a major timber sale on the Allegheny National Forest; the timber industry responded by turning up the heat on the Forest Service. Forest activists felt intimidated. Both sides were circling their wagons.

And along came RMI saying, Let's all be friends.

One Kane-area activist, Bill Belitskus, accused RMI of being duped by timber interests into giving its "green stamp of approval" to an economic-development plan that would (he believed) inevitably endorse more logging. His accusation, circulated by email to many environmental organizations and foundations, caused quite a stir in cyberspace, although few

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A LITTLE HELP FROM ITS FRIENDS

By Mike Villa, Windstar Land Manager

Why does the Windstar land need to be managed—surely it can take care of itself without help from its human friends?

—Malcolm Wells, Brewster, Mass.

I would agree with you, Malcolm, except for one fundamental thing: we humans have altered this particular landscape too much for it to recover naturally from disturbance.

Before I elaborate on that, though, I'd like to briefly explain why this question is a really important one, and what it has to do with RMI's overall mission.

Land is a precious natural resource. There was a time when we could squander it—as we squandered other resources like energy, water, and timber—but there are too many of us now. As the human population increases, we have to make better use of each unit of resource, including each acre of land. In order to coexist with nature, we'll need to apply just as much ingenuity to creating efficient land use as to creating, say, efficient cars or buildings.

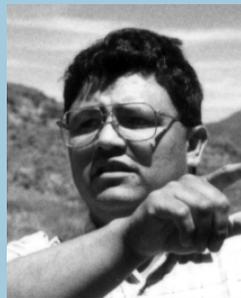
Much of the land in our country is not being "used," and I for one hope it never will be. I want my kids and grandkids to be able to enjoy wilderness just as I have. One of the keys to preserving wild lands is using the other lands more efficiently.

Now let's consider the situation at Windstar. It was ranched for about 100 years, then basically allowed to rest for the past 20. Has that rest enabled it to return to its original state? Hardly. It's now overrun by invasive plant species (weeds), and erosion and loss of wetlands has if anything increased. And given more rest, I believe, the situation would only get worse. Here's why.

A healthy ecosystem will recover from

disturbance through a natural process called succession, where one community of species gives way to the next until a climax community is achieved. This is not happening at Windstar because the *processes* that drive succession have been permanently altered.

Humans have removed natural predators (wolves), introduced non-native plant species, suppressed fire, cleared and drained bottomlands for agriculture, and, more recently, fragmented the surrounding land with real estate development.



DEAR ROCKY

Development has eliminated all but a few areas of winter range in the valley bottoms, so the large herbivores—elk and mule deer—concentrate in these refuges, putting unsustainable pressure on them. Windstar is one such refuge. Additionally, because the herds are no longer chased by predators, they don't run and churn up the soil as much. Native grasses, which coevolved with the herbivores, depend on that churning to prepare the soil for seeding. Similarly, periodic fire promotes natural succession.

To return Windstar to its original state, we must restore—or at least replicate—the ecological and biological processes that created it. Thus the Windstar Land Conservancy has reintroduced fire (we had a small prescribed burn this spring) and will begin a small-scale hunting program this fall, allowing about 10 elk to be taken each year. These are long-term strategies aimed at treating causes, not symptoms. In the short term it's also necessary to redress some of the symptoms of past mismanagement by restoring wetlands, controlling erosion, and eradicating invader species.

In closing, I'd like to add something to my earlier point about land being a pre-

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folks in Kane were aware of it.

Now, several months later, process results speak for themselves. Actions proposed by the Kane Area Renewal Effort emphasize economic diversification as a way to reduce timber dependence. They include tourism promotion, a new community center, a new post-secondary votech school, enhancement of the downtown area, and the creation of a pre-school environmental program.

Yet some of Bill Belitskus's underlying concerns were valid, and remain so. Collaboration is a contentious concept in forest circles these days. A local group in Quincy, California used a collaborative approach to rewrite the management plans for parts of three national forests, and last year sought to have Congress make those revisions law. National environmental groups have denounced the Quincy process as setting a dangerous precedent. This sort of collaboration, they warn, allows logging companies to circumvent national regulations, win greater concessions from (presumably) less savvy community representatives, and then "green-wash" the result by calling it the will of the people. Quincy participants counter that their process achieved a realistic balance of local stakeholder interests.

Whatever the merits or otherwise of the Quincy process, that's *not* what Economic Renewal is about. Its purpose is to facilitate collaborative solutions to economic development, not forest management. In the case of timber communities, that means strengthening the local economy *regardless* of how the surrounding forest is managed.

Still, the Kane controversy has reinforced our understanding that collaboration doesn't work so well when one party has (or is perceived to have) disproportionate power; and even when it produces a solution that all the participants are comfortable with, *non*-participants might still raise a stink. The episode suggested new wording in the recently reprinted *Economic Renewal Guide*, and will provide grist for RMI's forthcoming book, *Beyond Timber Dependency*.

—DAVE REED

CORPORATE SUSTAINABILITY

TAKING IT TO THE BANK

The World Bank, That Is

Count on the semiconductor industry for a time crunch. Not two weeks after RMI staff and colleagues completed an efficiency assessment of three European facilities for STMicroelectronics (“And for Our Next Trick...” spring 1998), the chip manufacturer wanted them back for another series of visits.

So RMI team members Amory Lovins, Chris Lotspeich, and Auden Schendler, along with fellow consultants from Supersymmetry and Chris Robertson & Associates, packed their bags and dove back into the world of chillers and cleanrooms. Then, in late June, with the first 100-plus-page report on efficiency opportunities finished and the second nearly done, they were off to an American plant for more of the same. To date, the team has assessed a half-dozen sites in Europe, North America,

and Asia. RMI is also discussing a variety of related issues with senior management at ST, including greenhouse-gas reduction and energy efficiency.

The ST work is one of two major projects in the pipeline for RMI’s new Corporate Sustainability consulting arm. The other is an environmental assessment of internal operations at the World Bank’s Washington headquarters. In June, RMI’s team, which included colleague Gil Friend, looked at procurement, energy and water use, transportation issues, waste management, communications, and ergonomics.

The visit coincided with the Bank’s first celebration of World Environment Day—a two-day educational bazaar in the Bank’s main complex, where RMI hosted a booth. There, Bank President James Wolfensohn told RMI team members: “Find problems.



Auden Schendler

In the World Bank boiler room: (from left) RMI’s Chris Lotspeich, World Bank operations and maintenance chief Carlos Reyes, fellow consultant Gil Friend, and RMI’s Alexis Karolides and Bill Browning.

Beat up on us. If we’re meeting a given environmental standard, set the standard higher.” Clearly a mandate from the top.

Though the project is limited in scope and time, RMI and the Bank hope the report will spark major environmental change in an organization that is becoming increasingly proactive. The World Bank employs roughly 8,500 people and disbursed close to \$20 billion in 1997—high leverage indeed. —AUDEN SCHENDLER

RMI NEWS

ANNUAL REPORT

RMI’s 1997 annual report is now available. It highlights the Institute’s work in 1997, profiles staff members, describes the special niche RMI fills in the nonprofit world, and summarizes its finances. If you would like a free copy, please contact Judy Moffatt in Development.

PUBLICATIONS NEWS

The following new publications may be ordered from RMI:

- “**Advanced Composites: The Car is at the Crossroads**” (T98-1). See page 5. 14 pages, \$5.00 plus shipping & handling.
- “**Putting Central Power Plants out of Business**” (E98-2). Paper printouts of

overhead slides from a presentation to the Aspen Institute. 12 pages, \$4.00 plus shipping & handling.

Please note that our supply of free *Green Developments* CD-ROMs is now gone. The CD may still be purchased for \$7 plus shipping and handling.

Those of you who donated more than \$100 to RMI, please note: we are unfortunately unable to extend the customary donor publication discount to the books *Factor Four* and *Green Development*.

THANKS, BOOGIE

Hearty thanks to Leonard (“Boogie”) and Pepper Weinglass of Woody Creek, Colorado, for their donation of gym equipment for RMI’s staff housing.

A LITTLE HELP

(continued from previous page)

cious resource. Obviously there are too many humans causing too much impact on the environment; I’m sure you understand that reducing those impacts is what RMI is all about.

But that said, it would be a mistake to think that humans are separate from the environment and to despise ourselves for our impacts. We are part of the web of life—an unbalanced part, to be sure, but still a part. I feel that the notion of letting nature run its course in ecosystems shared by us fails in some way to acknowledge our being a part of nature. We will inevitably change the ecosystems we inhabit. Maintaining them—or better yet, restoring them—is our highest calling.

1997 FINANCIAL RECAP

Another Financially Sound Year for RMI

Rocky Mountain Institute achieved a \$485,000 operating surplus in 1997, the largest in its history. It was RMI's tenth operating surplus in 16 years, and its third in a row.

Here are audited key financial indicators compared with 1996:

- Operating net income was \$416,000, exceeding the target by \$123,000, or 38 percent.
- Operating expenses—65 percent for people—rose by only 2.7 percent, from \$2.47 million in 1996 to \$2.53 million in 1997. Fundraising accounted for 6.7 percent of RMI's total expenses, or 5.8 percent of total revenues.
- Total accrued revenues rose by 7.1 percent to \$2.95 million, surpassing increases in expenses by \$131,000.
- Foundation grants provided 49 percent of revenue in 1997, up from 39 percent compared with 1996, due to two one-time \$300,000 grants accrued in 1997. Excluding the effect of a \$325,000 gift trust accrued in 1996, individual contributions increased 27 percent, or \$66,000.

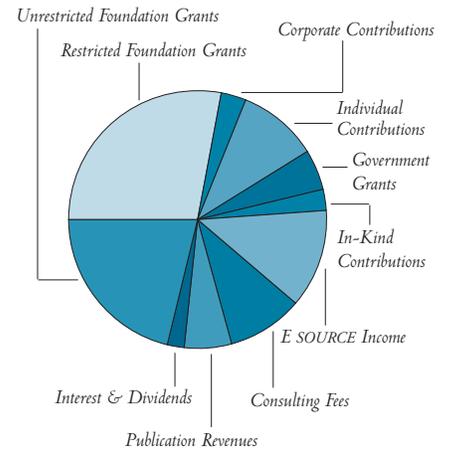
• Earned income decreased by \$124,000, mainly due to reduced revenue from consulting and the Systems Group on Forests. Earned income (including the latter) fell from 39 percent to 33 percent of revenue.

• Total assets rose from \$4.66 million to \$5.06 million; net worth, from \$1.08 million to \$1.57 million.

RMI purchased a staff house in 1997, financed mainly by a bank loan that increased facilities debt by nearly \$400,000. RMI is currently seeking lower-interest loans to replace this debt.

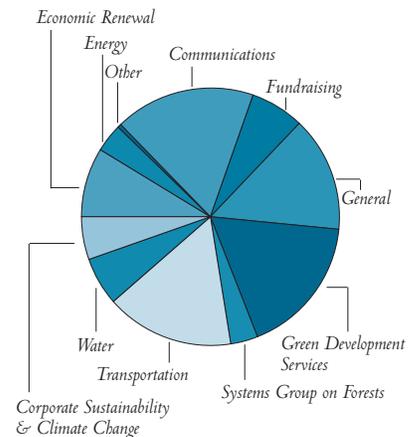
Meeting daily expenses of about \$7,760 remains a challenge, particularly during the normal summer cash drought. A Cashflow Stabilization Fund established in 1994 by the Joyce Mertz-Gilmore Foundation had provided a welcome safety net, but expired in mid-1998. RMI is seeking loans or gifts to replace its collateral. The Institute borrows only for capital purposes, not for operations, and finances these facilities improvements through private notes arranged with its supporters.

SOURCES OF REVENUE



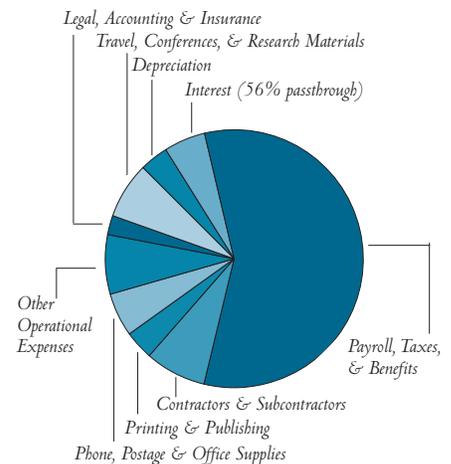
Total Accrued Revenue: \$2,948,664

EXPENDITURES BY PROGRAM



Total Accrued Expenditures: \$2,532,753

EXPENDITURES BY CATEGORY



Total Accrued Expenditures: \$2,532,753

New Staff



Dan LeBlanc

Back row (left to right): summer groundskeeper Jeán Harp, intern Zack Merritt, volunteer Nick Weil, publicist/marketer Norm Clasen, intern Chris Trevisani. Front row: intern Iona Hawken, groundskeeper Heather Kelly (seated), intern Ingrid Råde, GDS specialist Alexis Karolidis, intern Monica Hauk. Not pictured: Marty Hagen, Judy Moffatt. Thanks and farewell to departed staffers Scott Chaplin, Lee Novak, and Amy Seif.

INSTITUTE SUPPORTERS

Our sincere appreciation is offered to these friends who have contributed to RMI. Please let us know if your name has been omitted or misspelled so it can be corrected in the next issue. Donations received between 1 January and 30 April 1998 are listed. Numbers in parentheses indicate multiple donations.

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Rocky Mountain Institute is an independent, nonpartisan, nonprofit research and educational foundation with a vision across boundaries.

Seeking ideas that transcend ideology, and harnessing the problem-solving power of free-market economics, our goal is to foster the efficient and sustainable use of resources as a path to global security.

Rocky Mountain Institute believes that people can solve complex problems through collective action and their own common sense, and that understanding interconnections between resource issues can often solve many problems at once.

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