

University of Oregon

SOLAR Pg 3 pg 5 pg 6 pg 10 INCIDENTS

In this issue:

pg 1 Green Architecture

pg 3 Solar Journey

pg 5 Pacific Party

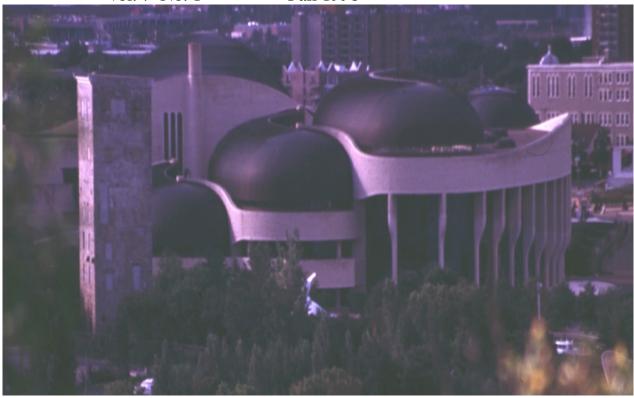
pg 6 Solar Showcase

pg 10 Sunshine School

The Newsletter of the Solar Information Center

Vol. 7 No. 1

Fall 1996



Green Architecture: A Definition

By Jason Frederick McLennan

Most people nowadays have heard the terms *sustainability, green architecture* and *ecological design*. But what really do these terms mean? In the architecture world it is currently politically correct to design buildings that are 'green' or sustainable. Unfortunately, many of these buildings are far from being sustainable or earth friendly. These buzzwords are incorrectly used and this stems from a lack of knowledge of what these terms really mean.

So, what is ecological design or green architecture? According to Sim Van der Ryn it is "any form of design that minimizes environmentally destructive impacts by integrating itself with living processes". This description is a good one but it still leaves too much to the imagination. On the following page I have formulated what I believe to be the components of green architecture. The key word that I have chosen in all of these components is respect. Our current system of building lacks respect for the natural environment as well as for individual people and society as a whole. There is not a single building component used in current construction that can be labeled safe, earth friendly,

(continued on page 4)

Solar Information Center

SOLAR INFORMATION CENTER

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FRANK VIGNOLA

SPECIAL THANKS TO **EWEB** FOR THEIR CONTINUED SUPPORT!



What is the Solar Information Center?

The Solar Information Center is a student run organization sponsored by the Associated Students of the University of Oregon (ASUO) and Eugene Water and Electric Board (EWEB). The purpose of the center is to serve as a research, education, and information base on solar energy and alternative energies, and their applications in architecture and technology.

One of its vital functions is to sponsor a lecture series on local, regional and global energy issues to promote a higher awareness toward conservation and renewable energy. The center also provides an in-house information source of books, periodicals, abstracts, proceedings, topic-files, product-files and a world wide web site.

SIC Attend Summer Events

The Solar Information Center joined Energy park at the Oregon Country Fair once again, for a weekend of public outreach. The booth displayed the newly landscaped eco-dollhouse and a sampling from our library. We also passed out our first ever summer newsletter, with new graphics and a modified layout. Talking with the hundreds of people who have solar visions for their living environment was our ultimate purpose. Hopefully some of you have been inspired, and will add solar water heating or a passive solar sun space addition to your home. We were looking sharp this year with our freshly painted sign courtesy of Natelie Whitson. The summers festivals were finished off by our attendance at the Eugene celebration in EWEB's open house. Thanks to Sandra Leibowitz for coming out of retirement to staff the table. If you missed us this summer, we hope to see you next summer at the festivals or maybe sooner.

Mailing List

If you live in Eugene, you may have recently received a postcard advising you of a hearing at EWEB to discuss the future of the electric utility industry after deregulation. We have been asked for our mailing list by several groups. We felt that the Northwest Conservation Act Coalition (NCAC) could really use our help with this very important issue, so we supplied them with our Eugene list for this one time mailing. If you would not like us to give your name out for such mailings as this hearing alert, please send us a card. Also, we are compiling an e-mail list to announce our lectures and other significant events. Send a note to sic@aaa.uoregon.edu if you would like to receive these announcements.

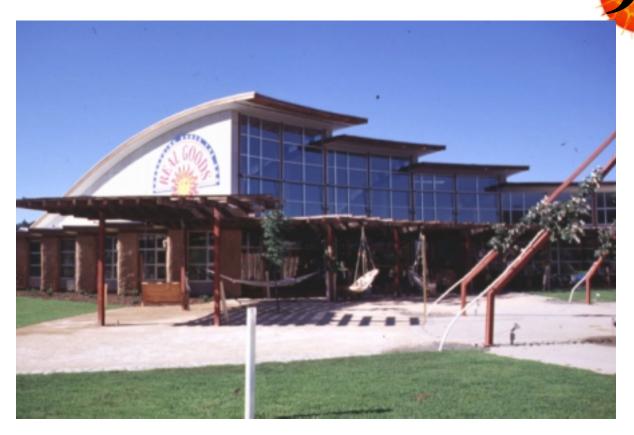
Tour of Solar Homes

The Solar Energy Association of Oregon (SEAO) Is sponsoring solar home tours in Portland and Eugene on Saturday, October 19th. ASES (American Solar Energy Society) has coordinated the local chapters such as SEAO to conduct tours across the nation on this day. There are a limited amount of tickets. Cost of the self guided tour is \$10 a carload and will run from 11-5. For more information contact the Solar Information Center.

Solar and Sustainable Design Showcase

The Solar Information Center will once again showcase student's work in our winter newsletter, in the Hearth, and on the Web. Submissions for fall term are due December 7th.

Northern California Solar Journey By Ross Leventhal



I took a ten day fossil fuel abusing journey this June that brought me to some exciting people and places exploring sustainable design. In San Francisco, I had the opportunity to visit the office of Architect Daniel Liebermann. Dan has redesigned his Oakland Hills home that was consumed by the fires several years ago. The office was in full swing, putting together the working drawings for this showcase of sustainable design. This design is very exciting both esthetically and in its comprehensive approach to sustainable design. Come to his lecture on November 14th to hear and see more.

My next stop was the new Real Goods store in Hopland, opened the previous weekend. Sim Van der Ryn and Associates have put together a beautiful piece of architecture that not only acts as an effective showroom for Real Goods sales, but also demonstrates many sustainable design strategies. The curve of the south wall is reminiscent of Frank Lloyd Wright's Solar Hemicycle in plan. The section of the building reveals a progression of increasing height segments that create exciting slits of light and interest-

ing interior volumes. The upper glazing has operable night insulation that act as light shelves when open and a large overhang on the exterior. The windows at human height are shaded with a grape arbor. They had temporarily draped the arbor with greenhouse cloth to fill the duty of the vines that have not grown yet, rejecting the intense summer sun. The straw bale walls are covered with shotcrete, adding to the mass contained in the colored concrete floors. I was there on probably one of the hottest days of the year, and it was warm inside, but not yet uncomfortable. The night ventilation of thermal mass cooling strategy seemed to not be able to handle the extensive traffic, due to the grand opening excitement, causing too many air changes. The site design has been integrated very well with the overall concept. Rainwater collection, flowforms, photovoltaics the memorial cargrove, the gardens, orchards, recycled water features and trellisses create the feeling of an oasis. The emphasis on the circle is powerful. The educational mission and excellent design of this site make this an important stop next time you are headed through the wine

3 • SOLAR INCIDENTS (continued on page 8)

Green Architecture

and low in embodied energy. A few materials meet one or two of these criteria but for the most part the majority of materials fail to meet all three.

It is important to note that nowhere in my list do I discuss specific building materials or styles. Green architecture is not limited to one material (although many materials should be avoided) but instead encourages the use of materials that are most appropriate for a particular place, climate and program. Green architecture is also not a 'style' such as post modernism, art deco, or gothic. A truly green architecture can be of any style. One of the biggest problems afflicting the green architecture movement currently, is that it is often viewed as a style. Many people are beginning to associate certain types or organic forms with green architecture thus alienating those people that do not find the so called 'style' appealing. Green architecture is a philosophy and an approach to design, not merely an aesthetic exercise. If we are to be successful, green architecture must be appealing to classicists, modernists and practitioners of the organic movement alike. In further understanding what sustainable really means, it is important to realize that every living thing has an impact on the natural environment. This is not a bad thing, in fact it is the whole basis behind the natural processes of the world. The goal then is not to eliminate our impact on the earth, which is not only impossible but undesirable, but rather to lessen our impact so as not to alter the earth's ability to sustain itself. For the last century or so we have ignored our duty to provide meaningful impact on the natural environment and have engaged in a cycle of destruction. I now outline the six components of green architecture.

1. Respect for Energy - Minimize a buildings requirements for energy consumption. Reduce the

need for electric lighting, air conditioning, and heating. Design to support renewable energy. Use materials that are low in embodied energy, both in manufacture and distribution.

- 2. Respect for Place- Work with local climate, context and materials to produce an architecture that fits comfortably into its man made and natural surroundings. This component helps maintain regional differences, which instill pride of place while supporting local economies.
- **3. Respect for Resources** Minimize the amount of natural and man-made resources used in a building. Build smaller and design for more efficient use of space. Remove elements of a program that are truly unneeded. Build for longevity. Use renenwable materials.
- **4. Respect for People-** Build with materials that are non-toxic and do not contribute to an unhealthy indoor air quality. Do not build with materials that, in any stage of their use from manufacture to installation, cause damage to people. Build to empower people in their daily activities regardless of age or physical abilities. Wherever possible, build beautifully.
- **5. Respect for site-** Preserve the character of both natural and man-made features of any site. Repair and restore damaged areas of the site. Maintain the local ecosystems ability to sustain itself in the future. Do not build in sensitive areas.
- **6.** Respect for the cycle of life- Abolish the use of any material that cannot be safely broken down by natural processes and used as 'food'. Abolish the use of any material that greatly endangers people or the natural environment. Build only with materials that are manufactured sustainably. Do not use materials that in their extraction, threaten species biodiversity.

Pacific Party Candidate; A Model Of Sustainability And Activism

By Jason Wilkinson

Using the six components of Green Architecture as a guide, it is easy to see that most buildings fail to be 'green'. Many buildings achieve some of the criteria, but very few meet all of them. When judging a building's success as an example of green architecture, I find it useful to categorize them into three phases.

Phase 1 Construction -This is the way most buildings are designed and built. Phase 1 construction has no respect for site, people, place, resources or energy. I would suggest that this phase also has no respect for beauty. This phase should be phased out.

Phase 2 Construction -This is how we should be building now, because it pertains to construction that does not cost much more, but instead involves making informed choices. This phase uses energy efficient appliances wherever possible, uses good design that responds to climate, place, and people. A phase 2 building is also generally smaller than a phase 1 building and uses less resources. Wherever economically possible the phase 2 home uses sustainably harvested and non-toxic materials.

Phase 3 Construction- This is how we should be building. Currently this phase is limited to the rich, (or very poor) or those who can substitute their own time to offset costs. The phase 3 home use materials only from sustainable sources that are low in embodied energy and non-toxic. The phase 3 home responds to climate, people, place, and site. □

Oregon's Pacific Party Candidate for U.S.

Senate, Gary Kutcher, lets action speak louder than words. Gary lives in a passive solar earth sheltered home five minutes outside of Eugene, with his partner Micheal Stroud. Gary's partner is responsible for the majority of the motivation and labor that went into the construction of their multiple dome concrete house.

Together they have also built a solar green house attached to an old barn they are currently renovating.

A large organic garden and composting toilet add to their self-sufficiency. Gary is working on "getting off the grid", and would like their farm to be a community model of sustainable living.

Gary has worked locally as an activist for fifteen years. With the Forest Conservation Council, he fought to protect endangered salmon runs and other fragile habitats from the massive clearcutting that is devastating Oregon's ecosystems. Gary sought an end to human rights abuses and the spread of nuclear power and weapons along side other members of Oregon PeaceWorks. He has also volunteered in causes such as youth education, ecological forestry, organic agriculture and with the Big Brother/Big Sister program. More recently, Gary helped to place Ralph Nader on the November 1996 ballot for president on the Pacific Party ticket.

Gary Kutcher is running for U.S. Senate against Democrat Tom Bruggere, Libertarian Stormy Mohn, Natural Law candidate Micheal Hoyes, Reform candidate Brent Thompson, Republican Gordon Smith and Socialist Christopher Phelps.

For more information on Gary Kutcher,
Ralph Nader or the Pacific Party call (541) 344-5406.
email: kutcher@efn.org or
http://www.enf.org/~kutcher

Solar Journey

country, or looking for the Red Tail Brewery.

I then headed west to the coast to visit
Stephen Heckeroth. Stephen was a speaker at the '96
Eco-Design conference at the U of O. He is an Architect, activist and founder of MendoMotive, an electric vehicle company. His Homestead in the hills above the coast is a wonderful place with fruit trees, gardens, a house, barn, and shop for the electric vehicles. Stephen related stories of his many years as a solar advocate. One interesting story was how he acquired his photovoltaic (PV) array which covers the



The Heckeroth PV barn

south side of his barn roof. A local PV manufacturer, Advanced Photvoltaic Systems was producing these panels until Amoco, an oil company who purchased Solorex and their PV patents, sued until they had to declare bankruptcy. This is the story of greedy corporations wanting to use up all of the resources that work with the current infrastructure. This is not people working for a more sustainable future. Anyway...back to the journey. Stephen was able to buy up the stock of panels from the defunct manufacture. He now charges his various electric vehicles with the power of the sun. Stephen unplugged his Karmannghia type 34 and took me for a ride. My first ride in an electric vehicle proved to be exciting on the curvy road in a sports car. The motor is almost silent, the wind flying by and Stephens voice were the only

sounds as we headed up the coast. He explained to me technologies such as the two stage regenerative braking, which reverses the polarity of the motor to make it a generator, charging the batteries when coasting or braking. He said that this change has increased the range about 20% to 70-75 miles per charge. I also got to hear how the auto makers fought and were able to have California repeal their law that mandated that two percent of all vehicles sold be zero emissions vehicles by 1997. It was unreasonable and too expensive for them. An unnecessary hardship since they need to keep paying large dividends to their stockholders.

I arrived in Arcata, home of Humboldt State University and the Campus Center for Appropriate Technology (CCAT). The Solar Information Center has been working on securing funding and donations of materials for the Environmental Technology Center (ETC) which we hope will end up serving a similar function as CCAT. An old house on the edge of campus has been converted to a self sufficient showcase of sustainable technology and living. The three codirectors live in the house, and keep CCAT operating. The house has developed over the years to include many systems that can be incorporated into urban and rural environments. The mission of CCAT also extends into the community and beyond, much like the SIC. Marnin, one of the current residents, gave me a tour of the house. We started in the kitchen with the worm bin composting, recycling, and the Sun Frost supper efficient refrigerator. Outside the kitchen is a pipe entering a basin that is the first filter of the greywater system. Here the large particles and oil are removed from the water before it is piped to the constructed wetlands which finish off the process of purifying the water. We walked through the flower gardens to two large poles. The old utility pole still

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CCAT at Humbolt State

stands, but the wire to the house was removed in a ceremonial act in 1991. Future plans for the pole include carving it into a totem pole, paying tribute to the sun. The other pole is for the dead wind generator. The roof gutters channel the water into three large cisterns which store the water for irrigating the gardens and filling the toilet. The hill around CCAT is terraced and covered with organic gardens, producing fruits, vegetables and herbs. The water comes from the rain, the nutrients come from the compost. There is a greenhouse along the south edge which serves as an indoor garden for plant starts and year round crops. Heat is transferred into the living spaces through windows at the top of the greenhouse, which open into the house. The roof has an array of 22 PV panels and two water heating panels. In the basement, they have a bank of 12 Lithium batteries to store the electricity from the PV array. There is a shop in which they have designed and utilize such tools as the human powered drill. One person needs to ride a bike, while the other person operates the tool. In the back are vented chambers which receive the waste from the bathroom above, and decompose it for use on the ornamental plantings. The chambers were being retrofitted with heating coils and more insulation to speed up the decomposition, so I did not have the opportunity to turn the compost. Upstairs is an office, a library and reading area, three bedrooms, and a bathroom. Other details inside the house demonstrate

weatherization techniques and compact flourescents for efficient lighting. CCAT is an excellent organization that is serving as a great resource. We hope that the ETC will demonstrate many of the same systems. The vision of designing and building this structure from scratch, will allow the use of sustainable and non-toxic materials such as straw bales for the walls. Our vision for the ETC is also for a larger facility to bring together the various groups on campus that are working on environmental issues.

The rest of my journey was not as directed, but a visit to the redwoods and the Smith River, the last undammed river in California rounded out my experience. As I drove through Ukiah California, a Chevron station was proudly displaying their gas prices of \$1.82 and \$1.72. Not yet the real price of the resource, but enough to maybe make people concerned again, and start looking at some of the alternatives.



Gas prices still too low

Sunshine Schooling



Sharing and teaching come naturally in the garden

At recess, they run outside to the paved, bark-o-mulched and grassed playground. They run over the uniformly cut grass, across the hard flat black top, climbing on their metal jungle gyms, swinging on their plastic swings, until the bell rings and like industrial workers they return to class.

Nature, like everything at school, is under strict control. It is only a green grassy backdrop to their hermetically sealed classrooms. The only life that they encounter are the withered geraniums on the classroom window sill or "Fred" the overstarched rat in a cage in the back of the room.

With measure five budget cuts, this deterioration may seem an inevitability. But there is boundless energy out there waiting to change the lives of children, and it comes from the sun!

Kids like to do things that are important, productive and that make a contribution. What better activity than gardening. The garden is a place to learn about sunshine, seasonality, growth, life cycles, soil, food production, planning, care giving, weeds, bugs, nutrition, and work - to list a few things. Kids can be involved in gardens in a variety of levels. If they produce things they are rewarded with good food. If not, they are rewarded by whatever learning their garden has offered them, even if its just playing in the dirt.

Its not that expensive really. We know, we did it at Whiteaker Community School. Everything we needed was already there: air, water, soil, and sunshine. We wrote up a grant request to the 4-H foundation, and voila \$500! The local community pitched in; a shovel here, a bag of seeds there, some extra compost. Then we went to work! From age 5 to 75, we turned the soil and nurtured the plants. It was magic happening.

All summer, it was harvest, harvest, harvest! And talk about welfare work. These second and third graders were bringing home their science experiments and making dinner salads! Not to mention their daily snack of fresh beets, spinach, kohlrabi, green beans, and tomatoes. They actually beg to eat more vegetables! Its a nutritionists dream!

The garden gave way to all sorts of community involvement. Americorps
Streamwalk volunteers pitched in to help organize a Cinco de Mayo Pot Luck Garden Party.
We featured solar cooking of cookies by
Aprovecho, a single snake petting zoo by Bob
Barzee, piñata's, a compost workshop and more!

On a smaller day-to-day scale, volunteers from OSPIRG and Nearby Nature lead nature activities in the park and at the river. Our very own Solar Center's Jason Wilkinson brought out his Solar Energy to help make a school Solar cooker out of a cardboard box. We steamed up an artichoke and some broccoli! And volunteers keep on coming to play with, teach, mentor, and love these needy kids!

Todd Farris is a recent graduate of the University of Oregon's Landscape Architecture department. He is presently preparing to move to Niger to work with the Peace Corps for two years. For more information on the Garden Project check out Todd's web page: http://ursula.uoregon.edu/~tfarris/

Solar Information Center

FALL LECTURE SERIES & EVENTS CALENDAR



"INDEX: Software for Measuring Community Sustainability" by Elliot Allen

Thursday, October 17, 7:30 pm, room 123 Pacific Hall, U of O

Elliot Allen is a principal of Criterion Planners/Engineeers, a Portland, Oregon consulting firm that designs and measures resource sustainability and environmental quality in the built environment. He has prepared community plans for over 100 cities and regions in North America and has developed a variety of computer modeling tools for resource efficient urban design. He will introduce Index, a desktop GIS computer model that measures community livability with user-defined indicators and benchmarks, and talk about his work of helping to engage citizens in these efforts to create a more sustainable future in their communities.

Tour of Solar Homes Sponsored by Solar Energy Association of Oregon and ASES Saturday, October 19, 12-4

This self guided tour of homes will showcase 5 homes in Eugene demonstrating passive solar design, photovoltaics, solar water heating, and sustainable materials. A tour will be occuring in Portland at the same time. Contact the SIC for more information on the Eugene tour. Contact SEAO at 503-224-7867 for the Portland Tour.

Energy Hearing Wednesday, October 23, 6 pm, State of Oregon Office Building, 800 NE Oregon St.

Come speak or show your support for the future of energy policy in the Northwest. For more information, contact LeeAnne Tryon at NCAC 206-621-0094 or the SIC

"Sustainable Organic Architectural Engineering" by Daniel Liebermann

Thursday, November 7, 7:30 pm, room 177 Lawrence Hall, U of O

Dan will present some of his past and current works. As a student of Frank Llyod Wright, he pursued his interest in organic architecture. He has developed his style over the years using natural materials and passive solar design to create beautiful buildings. He is now in the process of rebuilding his Oakland Hills home lost in the fires. This centerpiece of sustainable design will exhibit everything from rainwater collection, and integrated recycling, to passive solar design.

"To Balance the Ecological With the Economic: Is This Possible? Lets Answer This Together."

by James MacDonald

Thursday, November 14, 7:30 pm, room 177 Lawrence Hall, U of O

James is a general contractor in Eugene. His 28 years in the building industry have awakened him to the ecological destruction caused by the industry. He now strives to incorporate solar design, sustainable forestry, energy efficiency, radiant floor heating, recycled products, plant based products, water saving fixtures, and healthy natural products whenever he can in each house he builds. He has been frustrated by the unconscious attitude of this culture that makes balancing the ecological with the economic reality of building, a difficult process. Optimism is in his voice when he says, "the future is crying out for us to do more than we are."

For more information, please contact us at 541-346-3696.

CALENDAR

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I	S	M	TU	W	TH	F	S
	13 October	14	15	16	17	18	19 Tour of homes
	20	21	22	23 Energy Hearing	24	25	26
	27	28	29	30	31	1 November	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16

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