Towards A Community Food System

By Maren Tomblin

Solutions to the growing global crisis must include aspects of sustainability. Sustainability has various definitions, broadly speaking it is descriptive of a whole closed system existing in equilibrium. Therefore, sustainability encompasses all aspects of human beings and our interaction with the environment. Any serious discussion of sustainability requires a hard look at agricultural and food systems.

The necessary transition to sustainable communities cannot be made without sustainable agriculture. As Kenneth A. Dahlberg states in his essay, "World Food Problems: Making the Transition from Agriculture to Regenerative Food Systems"1, "The magnitude of this latter transition ranks with the other great transitions: from hunting and gathering to agricultural to urban to modern to industrial societies". Many problems have resulted from the development of our agricultural systems over the past two hundred years. Generally, current western agricultural practice relies on monocrops as a system of raising food. This makes mechanized care and harvest of the crop very easy. An individual plant or animal can be treated just like its thousand neighbors. Hand in hand with monocrops is the practice of planting only a few varieties of each species over the whole production area. Another tendency is that out of all the possible edible foodstuffs nature provides, we choose only a few...

(continued on page 5)
What is the Solar Information Center?

It is a student run organization sponsored by the ASUO and EWEB. The purpose of the Center is to serve as a research, education, and information center 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, video tapes, abstracts, proceedings, topic-files, product-files and a World Wide Web site.

We would like to heartily congratulate Hannah Wear for the citation she received "In Recognition of Outstanding Achievement in Design" in the 1997 Solar Energy in Architecture Kyongju High Speed Railway Station Competition. This was an international student competition sponsored by the Korean Solar Energy Society with 250 entries from thirty-four countries.

And to Ross Leventhal, whose tireless work, excellent potlucks and energetic devotion has blessed the SIC for over three years, "BRANDO!"

News from the American Solar Energy Society

Boulder, CO

This year’s National Tour of Solar Homes broke all the records of previous tours, according to the American Solar Energy Society. More than 12,000 people visited solar homes in 42 states from Maine to Florida on October 18, 1997. The homes on the tour represented diverse designs, prices, and building materials, demonstrating how renewable technologies can be adapted to local climates and architectural styles. Hundreds of solar homeowners voluntarily opened their homes to the public for the one day event.

The Solar Information Center helped facilitate a tour of homes in Eugene. Thanks to those who opened their houses for the day to more than 100 participants. The tour included a number of homes from different areas of environmental study under one roof will strengthen the University’s commitment to environmental issues, as well as draw public attention to a highly visible, working model of sustainability for the University and for the Northwest.

Cross-disciplinary collaboration in research, innovation and public service is essential to sustain the current momentum of interest at the UO in ecology and environmental issues. Bringing together groups from different areas of environmental study under one roof will strengthen the University’s commitment to environmental issues, as well as draw public attention to a highly visible, built example of sustainable technologies.

Current Activities

The Solar Center is coordinating with Polly Welch from the Department of Architecture, a Winter term “feasibility study” for the ERC. This will be an group research course looking into programming issues, possible sites, sources of funding, encouraging student support, and appropriate technologies and materials. The results of this course will be presented as guidelines for a charette during the 1998 HOPES conference (April 17-19).

We need your help! Your support for this project is crucial. If you would like to lend your support, please give us a call.

Environmental Resource Center Column

The Project

The Solar Information Center has been working for two years on a Capital Construction proposal, entitled the Environmental Resource Center (ERC). The proposal was submitted to the University Planning Committee on November 10, 1997. This building will provide students and community members with a facility that will encourage cross-disciplinary activity in environmental research, education, and public service. The facility would serve as a demonstration building for sustainable design as well as an educational resource for healthy systems and appropriate technologies. This monumental project will become a model of sustainability for the University and for the Northwest.

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Geothermal Applications in Greenhouses

by Eric Navickas

Direct use of geothermal energy for heating agricultural greenhouses is an attractive alternative to systems that rely on gas or electricity. Greenhouse heating has become a significant cost in agricultural production. The use of low temperature geothermal sources to meet these heating demands is gaining popularity where available due to its low impact and cost.

Geothermal heat originates from both geological and hydrological conditions that allow water to circulate deep into the earth, where the water is heated. A potential geothermal resource results when this heated water is carried back to the surface through a zone of faults and fractured rock. The two types of utilization available are electrical generation and direct use. Common greenhouse heating techniques take advantage of a direct use system.

Geothermal electrical generation, though a rich source of energy is often surrounded with controversy because of its environmental impact. It also requires very specific conditions that only exist at a limited number of locations. However, presently in Italy where geothermal energy was first converted to electricity, approximately one third of the electrical energy is supplied by geothermal plants.

In the United States, The Geysers, a geothermal electrical generation plant outside of Clearlake, California, produces enough power so that it could supply all of San Francisco’s electricity needs. This plant is presently working on a system to re-use waste water effluent from the community’s sewage system to recharge their steam fields. In comparison, direct use of geothermal energy has several advantages as radioactive emissions are common, especially in the western United States and do not require exceptionally
high temperatures; installation costs are relatively low and simple with minimal environmental impact; the resource can be transported with minimal heat loss, 0.1 degree C per kilometer; and the conversion efficiency is from 70% to 90% whereas geothermal electricity generation is only 5% to 25% efficient. Direct use systems tap the energy by drilling into a source of geothermal effluent. The effluent is either used directly to produce heat or is run through a heat exchanger. Many systems require little more than common well-drilling equipment.

Beyond agricultural uses, direct use has other applications in space heating and industrial applications including timber drying, milk pasteurization, and food dehydration. Direct space heating is taken advantage of in many places around the world. In Reykjavik, Iceland over 15,600 homes or 97% of the population receives heat from a centralized direct use system. In Klamath Falls, Oregon over 500 homes are heated geothermally utilizing single well systems to heat individual residences. Klamath Falls also uses a centralized system to heat much of the downtown, including a sidewalk snow melt system.

Geothermal systems heated by geothermal means, though only utilized at a small fraction of their potential, are found all around the world. Hawaii boasts over 13 million square feet of greenhouses heated with direct use geothermal energy and Japan over 157,000 square feet. Both production flowers and vegetables. A survey of geothermal greenhouses in the United States showed a total of 37 commercial operations active in 1997. The largest of these is owned by a total of 37 commercial operations active in thermal greenhouses in the United States showed...
**A NETWORK OF GATHERING PLACES**

**Strategies To Reclaim a Sense of Community Through Universal and Inclusive Design**

Prashant Gaba, Todd Matthes, Sophie Robitalle, Jason Wilkinson

This group project was submitted to the “Universal Design for the 21st Century” international competition. The purpose of the project was to look at ways of increasing density in a typical Eugene neighborhood, while increasing the sense of community.

### News from the American Solar Energy Society

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The Solar Information Center helped facilitate a tour of homes in Eugene. Thanks to those who opened their houses for the day to more than 100 participants. The tour included a number of examples from sun spaces to strawbale, showing us all how solar and sustainable design is used to provide pleasant, healthful, and economic dwellings.

Thanks for the great tour and we look forward to seeing you next year.

### Canoe and Kayak Manufacturing Facility Project

To design a small canoe club with manufacturing capabilities to produce and repair wooden canoes and small rowing shells. The site is on the millrace in the Riverfront Research Park, next to the University of Oregon.

The South facing sawtooth roof allows natural light to provide efficient and high quality light for the construction bay. This reduces electrical costs and lowers heat gain at the same time. Overhangs prevent hot summer sun from entering the space and allow winter sun. This helps warm the thermally massive concrete floor.

The building tapers to the north, thus reducing inefficient northern exposure. Clerestories in the showroom provide neutral north light for optimal viewing conditions while also reducing electric costs and heat gain.

### Intention

Universal Design must exist at many scales. It should consider not only ability but also race, income, gender, culture, sexual orientation, and life circumstance. In providing flexible responses to serve people’s needs, Universal Design can become the social aspect of sustainability.

### Goals

To provide a stage for building solidarity by treating opportunities for people to come together, and share at many scales.

To create a self-sustaining neighborhood by providing as many local services as possible, and reducing the export of waste materials.

To respond to and enrich the immediate context.

To encourage inclusive design meeting many of the needs of people of all income groups, cultures, and abilities throughout their lifespan.

* Solidarity...* "is a broader term than community. Solidarity implies mutual concern and responsibility on the part of people who may be socially or geographically distant"

S.M. Miller and Karen Marie Ferroggiaro - "Poverty and Race Action Council"
Towards A Community Food System
By Maren Tomblin

questions about his environment and about his urban behavior and thinking patterns... By being outside he will see his neighbors, have time to chat about their common work, share some of the harvest and thus contribute to a less alienated community.”7 Being in closer contact with the earth, their food source, and their neighbors, would enable people in a community to lessen the feeling of alienation so prominent in cities. Makela Mangrich, who participates in a city-sponsored community farm in Dubuque, Iowa had this to offer when asked about her experience of community in gardens: “When people are surrounded by something beautiful, like a garden, it is very easy for acquaintances to become friends.” She added that community gardens foster a sense of ownership, safety and common purpose between people.

In order to encourage urban farms, food production in cities should be designed to be both more efficient and appealing to a greater number of people. John and Nancy Todd of the Ocean Arks Institute, based in Cape Cod, Massachusetts, have come up with ideas for ways to incorporate farming into the cityscape. The Todd’s designs often make use of vacant or underused areas of cities which could be easily converted to food production. If realized their designs could be attractive, healthy, productive, and bring organized food production into the cities, thus avoiding the issue of large scale transportation. “Two spaces designed by the Todd’s are particularly innovative. The first involves converting empty warehouses into multitstory “food factories”. The are slated to be covered in solar cells in order to provide electricity to grow lamps, for the crops inside. Currently the efficiency rate calculated by the Todd’s for this energy transformation is about 10%, which they calculated to be an acceptable rate of conversion. However it is possible that advancements in the area of solar energy could raise this to a higher rate and thus be more efficient. Another solution given for the problem of lighting the growhouse is to replace the roof with a translucent material to allow six times more light into the building than with a non-translucent ceiling. However, the Todd’s do not give a solution to how the light is to penetrate all the different floors of the building. The problem of heat loss is discussed and solved by using insulating night curtains in the winter months.

The Todd’s call for at least three floors and a basement in order for the factory to function. The waste from one floor becomes nutrients for another and a balanced cycle is created. The basement contains fungi as well as compost to recycle all of the organic waste generated by the factory. The Todds have even designed bicycle powered rotating compost bins to speed the rate of composting. The first floor contains aquaculture tanks to raise a variety of high-protein fish as well as free-range chickens which forage in deep litter amongst the aquaculture tanks. Chicken waste feeds the compost, while vegetable waste from the higher floors feeds the chickens. The chicken population would need to be kept in check to avoid high ammonia levels from their waste. It would also be beneficial to incorporate the heat retaining features of the aquaculture tanks if possible, depending on the location and design of the warehouse. The nutrient rich water from the aquaculture tanks is pumped up to the next level and used to grow hydroponic climbing crops such as

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Solar Access Discussion Panel
January 21, 7:30 - 9:00 PM, Lawrence Hall room 177

The Eugene Planning and Development Department is in the process of updating the city’s Land Use Codes, included in this proposal is the elimination of solar access in most districts. According to staff the existing solar code is difficult to implement and conflicts with the city’s desires to have a more compact downtown area and neighborhoods. The updated code draft limits solar access to the residential districts.

With the rise of the solar industry, and practical advances in solar technology we need to look at creative ways of protecting solar access in all districts and all buildings. Please join us for a discussion with representatives from Eugene’s Planning Office, UO Architecture Dept, local solar energy professionals, Lane Co. Homebuilder’s Assoc, and EWEB.

We hope to provide a wide-ranging discussion that will lead to possible solar regulations that can “work”. The Solar Information Center believes that there needs to be city laws that allow easy protection of solar systems while encouraging appropriate density. The panel discussion will be an opportunity for people with various views to collaborate and find a solution that can propel Eugene into the solar age.

Evolutionary Architecture
with Eugene Tsui
January 29, 7:30 - 9:00 PM, Lawrence Hall room 177

This Bay Area designer, a graduate of the UO Architecture program, will discuss his vision of the future of architecture. He will present “nature” as a basis for design and show how his firm uses alternative materials, and energy efficiency in their projects. Eugene will also discuss individuality versus conformity, and evolutionary attitudes versus conventional attitudes. Please join us for this presentation from an exciting and controversial designer.

Dos and Don’ts of Thermal Mass in Solar Applications
with Dean Stills of the Aprovecho Research Institute
February 20, 12:00 - 1:00 PM, Lawrence Hall room 206

The Aprovecho Institute in Cottage Grove, Oregon hosts a diverse group of interns that conduct research in appropriate technology. Dean will present information on the latest projects including, studies of solar energy absorption into mass, cob as a building material, and much more. Please join us for a hands-on discussion.

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

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tomatoes, beans, and cucumbers. Carbon dioxide-rich air filters up from the first floor and basement to supply the vegetables of the upper floors. The third floor is used for leafy crops such as lettuce and spinach. The Todds do not discuss water collection, but it may be possible to collect water on site from rain runoff or treated city gray water. If designed to include passive solar heating, this warehouse could produce food year round. Not only does this increase food production, but it also creates jobs. Skilled gardeners would be needed to operate the facility, they could be paid workers, or work voluntarily for shares of the crop.

The other large scale food factory designed by the Todds is a bioshelter surrounding a public park. This would most likely be a community garden, perhaps sponsored by the city. The Todds suggest building these structures on vacant lots. The farm takes the form of a circular donut around a central park and wading pool. The shelter provides a safe, enclosed place for children to play, as well as providing a year round garden space for the neighborhood. The Todds’ bioshelter design usually includes flat crop space to the south of the space and multi-tiered growing space to the north to maximize the area lit by the sun. This seems like a positive step in community garden planning to encourage gardening by citizens. Parents could let their children play safely in the park while they work, as the structure would have good visibility of the park. Neighborhood markets could be located near or even in the bioshelter to allow gardeners to sell their produce to nonparticipating neighbors.

It is vital that these food producing areas be designed as an efficient and attractive addition to the community. Planners would want to work with people in the neighborhood to be sure the space suits their needs and environment. The goal of bringing food production into cities is to encourage sustainable systems and strengthen communities by allowing more people to reclaim their own food supply. This will not happen if urban farms are allowed to develop haphazardly. For these types of projects to function well, many skilled people will be needed to plan and run them. In addition, the general public’s involvement will also be vital. Through a strong grass roots movement, these systems could gain mainstream support, and provide a more sustainable lifestyle within our cities.

1Urban Agriculture: Food, Jobs, and Sustainable Cities. UN Development Program, NY NY 1996
2Goldsmith, 1996, as quoted on the City Farmer Homepage
3“Lean Cuisine” Rocky Mountain Institute, Summer 1991, vol. VII, no. 11
4“Permaculture in a Nutshell” Patrick Whitfield
5USDA, 1994
6UN World Population Demographics
7This figure includes energy used in production, transportation, processing, cooking and refrigeration.
8“1979 City Farmer’s Vision of Urban Agriculture” from the City Farmer Homepage
### CALENDAR

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**SOLAR INFORMATION CENTER**

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