THE MARKETING OF SUSTAINABILITY

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ABSTRACT

Expectations and sensitivities are changing in the industrialized countries, with an emerging awareness of the limits of advancing civilization. The challenge is to translate awareness into action. EcoSystems is developing communities (subdivisions) for sustainability. In so doing, we have learned that design participation is crucial to users' acceptance of the novel design resulting from commitment to sustainability. This paper describes experiences we have had in overcoming resistance and gaining support for sustainable development with design participation.

KEYWORDS

Sustainability marketing; fleet-miles to exhaustion; participatory design; life-style changes; parkways.

INTRODUCTION: ATTITUDES AND PERCEPTIONS

We have encountered many quaint viewpoints in the process of developing our approach to sustainable development:

"There is plenty of oil!" Economic and political commitment to wide development of solar energy technology is hampered greatly by popular and gross misunderstandings about the extent of oil and other fossil fuel resources. The term of seemingly vast proportions, "billions of barrels," is very misleading. A billion barrels might just as well be expressed as 159 trillion cubic centimeters -- the gigantic numbers would be no less impractical. So we have created simple marketing terms to explain fossil fuel reserves. For example, total fleet miles to exhaustion expresses how many miles an entire national fleet of cars can travel until national resources run out. Resources can be measured in cubic miles (cubic kilometers), dimensions that can be grasped readily.

For example, the USA, which once had about 10 cubic miles (40 cubic kilometers) of recoverable oil, now has only about 2 cu mi (8 cu km) of proven reserves (Science, 1989). Mexico has slightly more than 2 cu mi (8 cu km) of proven reserves. Canada, on the other hand, has less than 1/3 cu mi (1.4 cu km) of proven reserves (Fortune, 1990). The USA has 4% of global reserves, produces 12% of all oil, and consumes 24% of global production.

Canada exports 4% of its proven reserves every year; Mexico exports 1%; Saudi Arabia ½% (World Resources Institute, 1990). At such rates, which nation is most vulnerable? (Hall, 1981)

> Total fleet miles to exhaustion. A USA fleet-average automobile consumes about 100 barrels of oil in 100,000 miles. (100 barrels will fill a volume roughly equivalent to a typical family-sized van: 15.6'x6'x6'.) If the 130+ million cars in the USA (MVMA, 1985) travel 100,000 miles at fleet-average mileage (less than 24 mpg), they will consume oil equivalent to their aggregate "van" volume of ½ cubic mile. Thus, with its proven reserves of 2 cubic miles of oil, the USA can propel its fleet approximately another 400,000 miles.

We have been spoiled. We have experienced the illusion that technology can always pull us through. The impression is that technology can spare us now just as easily as it did in the past. ("They will think of something, I'm sure.") However, even in a best case scenario, with gigantic leaps in technology, we will need decades of production to replace existing energy conversion equipment. Conclusion? We must convert the old and design any new communities with on-site jobs to minimize the need for cars.

"Not everyone will want to live in such a unique project." Would enough people choose to live in our project with all of its environmental constraints? How many people do we need? With 150 units * 4/unit we can accommodate 600 people. This is 600/220,000 = 1/367 in Santa Cruz County, 1/50,000 in California, and 1/400,000 in the USA. Does one person in 367 want to live in a community not dominated by cars? One in 50,000? One in 400,000?

"Only the experts can do it." The conventional political decision-making apparatus entails design regulation (staff review), environmental mitigations (EIR), and project advocacy (public hearings). The parties are the government agency's staff (recommendations), a developer (and the developer's mercenaries as paid advocates), NIMBY's ("Not In My Back Yard") and environmentalists. The recent surge of interest in "Co-Housing" is evidence of self-development's advantages. With self-development, the new political decision-making apparatus has an additional element -- the developer associated with personally committed project advocates who are going to actually live there, and a theme of sustainability leading to cooperation with environmentalists.

"Solar is too expensive!" Pollution is waste. It is not a separate phenomenon in and of itself, but rather a manifestation of inefficient design. Sustainable, non-polluting technology can often be inherently less expensive, especially when as all costs are included in our fiscal mechanisms:

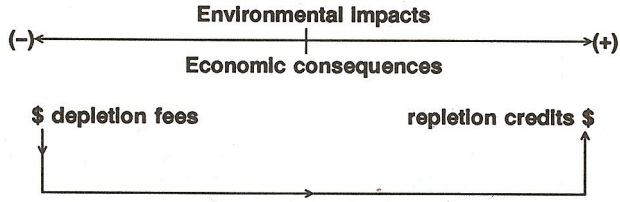

Figure 1. From depletion to repletion

Large scale solar energy cannot compete with an oil industry which must sell oil. With predatory pricing and short range outlook, oil producers can simply undercut the competition, as happened in the time of John D. Rockefeller, and still occurs with OPEC today. It does not serve the public to convince the public that there is a "free market" in energy.

In the second case study which follows we have discovered a remarkably ample budget to produce sustainability by avoiding depletion technology and instead installing repletion technology.

SELLING SOLAR ENERGY: SACRIFICE OR BETTER LIFE?

As we examine the sales rhetoric of the solar energy marketplace, we find that there are several methods of selling solar energy as a solution to the needs of our times:

Guilt. One form of solar energy marketing is the guilt trip: use solar energy because it is politically correct. Not to do so is unclean, uncool, sinful. Fossil fuel users are wasteful and they are polluters. Solar users are "good guys," willing to sacrifice.

The problem is, nobody likes "do-gooders." People don't appreciate being told that they are wrong. You are resistant to an appeal by people who think they are better than you are.

Economics. Another appeal can be made on the basis of economics: By Life Cycle Costing, solar energy is cheaper. How logical!

Then all you have to do to sell solar is explain what life cycle costing means. Tall order!

Tax Incentives. Proponents of solar energy who are active in the political arena make the claim that solar isn't competitive because other energy technologies are heavily subsidized. The automobile is subsidized by roads, garages, police forces, etc. Fossil fuels are subsidized by the pollution endured by non-users, by war, by animals which suffer from oil spills, by depletion tax allowances, etc. The challenge, then, is to convince politicians to level the playing field by approving solar tax credits.

The last time this was done in the USA, the result was that hucksters came into the field to exploit the tax credits with equipment that was often faulty, or inappropriate for the designated application (e.g., active solar space cooling) where cost effectiveness was out of the question absent the tax credits. In the late 1970's, the solar energy industry had to spend an inordinate amount of effort self-policing its ranks, developing quality controls. This method entails dependence upon politicians, decidedly unreliable and difficult to hold accountable for their actions.

SOFT TECH, SOFT TOUCH

Fossil fuel energy exploitation was and is propelled by greed. The taking of resources from the earth has gone unchallenged, has even been rewarded handsomely. The "going has been slow" for solar energy while heavy handed tactics have been used to push oil and nuclear energy. The "hard path" involves a "heavy hand." The soft path requires a soft touch.

Implementing solar energy involves something other than cramming a new solution down people's throats. Sustainability is a softer way, and it follows that the marketing of sustainability must also entail cultivation, not "mining." Participation in the design process is an inherent part of that implementation.

UC DAVIS "INNOVATIVE HOUSING"

In its first multi-unit housing project (begun in 1971 and completed in 1972), EcoSystems used participatory design and self-help building techniques. The project consisted of 14 "foam dome homes" built on an "L"-shaped plot at the intersection of two streets on the University of California's Davis campus. The student participants were given the external constraints of site layout imposed by safety and economics, and simple tools were provided to set the stage. Information was presented on thermal mass, insulation and building (window) orientation, based on the works of UC Davis Professor Loren Neubauer (1975) an unsung hero and pioneer in passive solar energy design. The initial exercise led to several options, out of which emerged a simple but elegant design, which created a very attractive series of private and semi-public spaces interwoven between the units, and a variety of orientations which took advantage of site conditions.

The EcoSystems project management team instinctively gravitated towards the residents' participation in design and construction, while being presented repeatedly with the temptation to take more money for the project to allow for bringing in "professionals," which was sold on the basis that it would reduce our risks but turned out rather to be a way to reduce risks to the "powers-that-be." In the process we discovered that the stability of the project resulted not from the economics, but from our commitment to participation, a method which enabled people to gain pride of authorship (the concept of ownership) and the self-confidence borne of real accomplishment in the face of difficult challenges.

GREENFIELD

EcoSystems is currently project manager in the development of a 10 acre site slated for approximately 50 units of housing in Greenfield, California. The developer called upon us to assist in bringing back together a group of disgruntled limited partners. We resisted pressure from the city to do a tentative map submittal until we had established rapport with the constituency of farm worker families. After numerous meetings and confidence-building exercises, we organized a design committee.

At the first meeting of the committee, we introduced the basic concepts of passive solar design (thermal mass, insulation, window orientation, etc.) and showed videos of houses being built with the self-help method.

At our next meeting, we provided simple tools to develop a concept of lot layout. This included a board with site boundaries delimited and pieces of colored paper to depict lots (pink), houses (yellow), roads (grey) and parks (green) -- all to scale. We presented external constraints (street circulation required by

the city, lot sizes, drainage, etc.), and reviewed the importance of solar orientation for all the houses in the subdivision. We encouraged the participants to identify community-wide needs, and discovered that a place to work on cars ("grease-pit") was an important use of extra space. With environmental concerns about recycling waste oil, etc., a central location for this type of work seems very appropriate, and would not have been discerned by a design team working at an engineer's office 100 miles away.

The old section of the city of Greenfield has alleys behind the houses, so out of this exercise emerged (again) a simple design providing for access of cars to all units on the "back side" via alleys. On the "front side," the proposed roadway for guest parking and emergency vehicle access is very narrow (ten feet) and meanders through a 40' easement which is otherwise available for gardens and play areas. With "cobblestone" porous paving, cars will be forced to go slow and will not impose extraordinary dangers. Children will gravitate to the natural area between houses for play, without danger of being run over by speeding cars. The one major street in the subdivision provides access to alleys and parkways, but it is kept to a minimum.

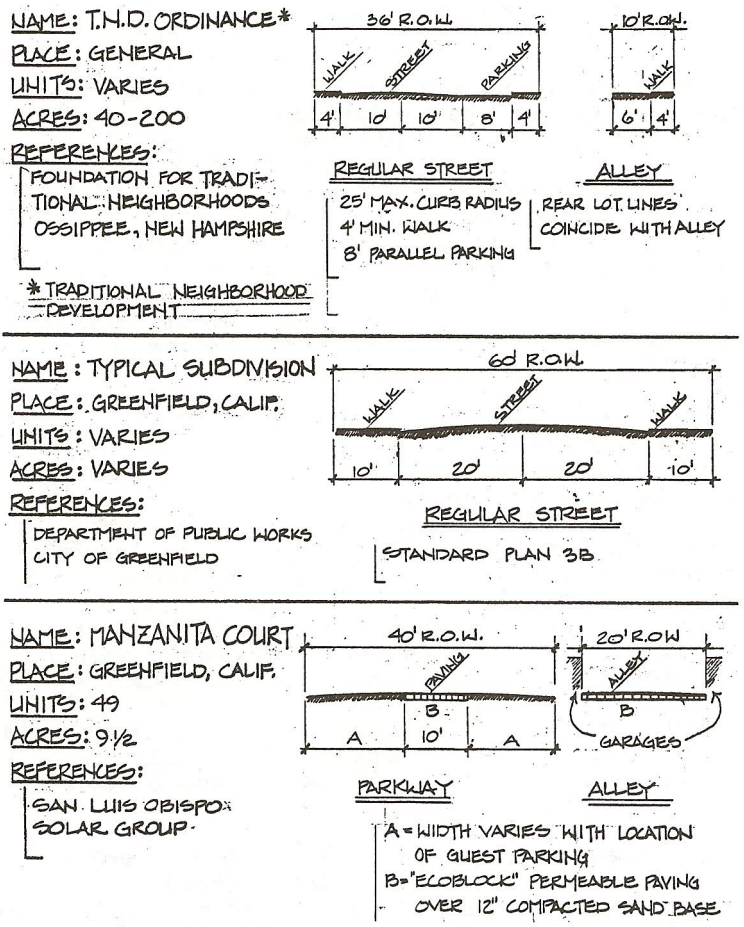

Fig. 2. Parkways or speedways?

After we completed the tentative map design with the newly constituted design committee, the disgruntled limited partners reappeared to review the design. Their objections to the design reinforce the premise that participation in design is critical to acceptance of sustainability's novelty. To rectify this, we are currently in negotiation with the city and the limited partners.

NATURAL BRIDGES

In addition to the incentive of design participation, substantial cost savings can make a considerable difference in the acceptability of a new product. Subdivisions in California typically require automobile accommodations which cost on the order of $20,000 to $40,000 per unit. This is a significant budget for accomplishing energy conservation and transportation mitigations. Even if cars are not eliminated altogether, but merely relegated to a position subordinate to humans, a portion of this can be saved and as such can be a very significant sum. Savings from $20,000 to $40,000 per unit for this project of 150 units amounts to a portion of $3,000,000 to $6,000,000!

After the earthquake of 1989, we lost our option on a parcel slated for 150 units of housing in Santa Cruz, California, but we are now back in contract. The political climate has improved as well, thanks to a referendum declaring that, in Santa Cruz County, the 1990's will be the "decade of the environment." We have begun building a local constituency for the design stage. By way of example, when presented with the option of a unit located near parking versus the unit most removed from parking (by some considerable distance), one potential resident picked the latter, stating it was the best unit in the whole development!

CONCLUSIONS

We are beginning to define the circumstances which will draw out those who are prepared, even anxious, to live in a community which has relegated the automobile to its proper place in the scheme of things. With substantial savings through passive solar design and a car-offset budget for innovation and quieter living, we can achieve lasting value for our community.

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