

Future Direction for Research and Management

Human Habitat at the Fringe of the Forest: The Character of the Place¹

Richard L. Meier ^{2/}

William Ewald ^{3/}

INTRODUCTION

The fringe of the forest is like the edge of the sea -- an interface between life-ways. The sea is more robust by far than the forest, however, and therefore more impervious to insult.

Edges attract the eye; they frame the image; they challenge the imagination. On one side of the boundary lie the shadowy depths, on the other a morphology easily converted to human scale. Individuals seeking places in these ecotones are generally non-conformers.

The edge-of-the-biome is usually more dangerous. Predators may come from both directions; natural hazards likewise. Any number of forces may cause the boundary to shift, thus stranding anyone rooted to a site. The human dwellings that fit the forest boundary zone best must nowadays be more secure than any peasant cottage appearing in Grimm's Fairy Tales. People live much longer now, and they have more demanding expectations than mere survival. If there is to be a greater investment in personal security, the structures must also last much longer -- they must withstand a wider range of threats.

We introduce here some of the major features of the new thinking about the design of dwellings in human settlement on the fringes of the forest. If people feel the need to be there, what are the most reasonable ways to live?

^{1/} Presented at the National Conference on Applied Techniques for Analysis and Management of the Visual Resource, Incline Village, Nevada, April 23-25, 1979.

^{2/} Professor of Environmental Design, College of Environmental Design, University of California, Berkeley.

^{3/} Planner and Designer, President of ACCESS, Inc., Santa Barbara, California.

FORCES AFFECTING CHANGE

Since World War II human settlements have been invading the beaches, the deserts, the forests, and even the chaparral, partly as a result of campaigns to save well-drained fields and orchards. Former suburbanites, having learned early how to live much of their life on wheels while otherwise occupying a landscaped plot, very often seek to buy more space (fig. 1). They wish to put their backs to the wilderness and defend

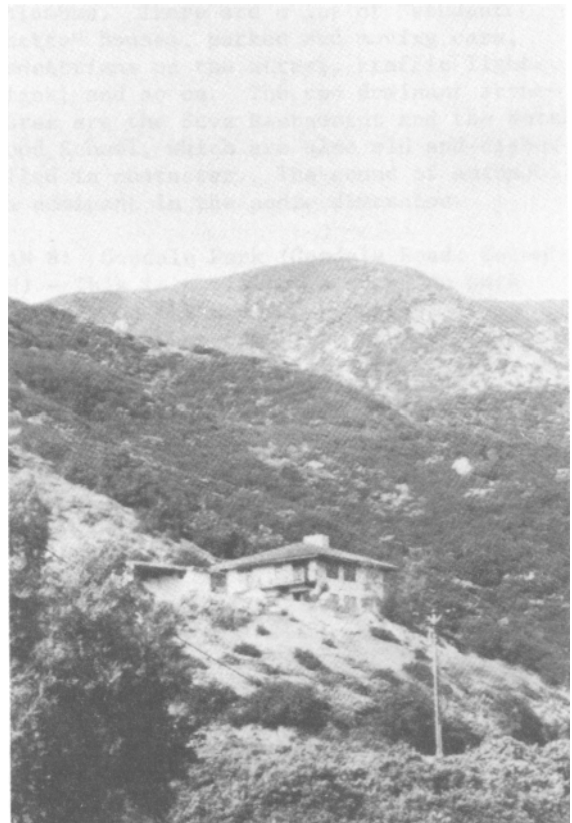


Figure 1--Habitat at the fringe of the forest, perched high in canyon chaparral.

their privacy in front by building on back lanes or introducing discreet green cover. In order to "get away from it all" they expect to spend only a little more time and fuel than before. Along the open coast line regulation has frustrated these would-be settlers; the vulnerability of the desert to assault by wheeled vehicles is expected to halt the infiltration there very soon. That puts extra heavy migration pressure upon the chaparral and the forest.^{4/}

Simultaneously we see that hydrocarbons are on their way to becoming scarce. Gasoline and low pressure gas are expected to be in dwindling supply and probably rationed well before the latest mortgages are paid. If people were guided by purely economic considerations, the population on the fringe should thin out and the pressure on it would be relieved. However, it seems more likely that the flow of refugees from the suburbs will swell in volume, and those that arrive will establish themselves more solidly, living less of the time on wheels. The high value they put upon being at the edge, residing within sight, sound, and smell of the brush, and within viewing distance of the trees, makes them appear unreasonable. Yet they insist upon spending their life savings and personal attention on these out-of-the-way sites, while fuel scarcity is a problem. They see easily resolved by drawing upon the resource at their back (fig. 2).

Many of the settlers are fearful of street crime in the cities, so they will accept other, more natural, risks instead -- the most serious of which is fire. When effective Provisions are made to stop the fires, we all have learned that the fuel accumulates on the land. Then, when environmental conditions are most suited to ignition, a very serious fire results, possibly

even a firestorm.^{5/} The new post-war wave of settlers is responsible for stricter fire prevention, and therefore for the buildup of the threat. Insurance companies seem to be more worried than the residents themselves -- except in those places which have already experienced fire losses.

Regulation of both building materials and native brush is the first line of defense from wildfire at the fringe. The table shows the benefits of regulation applied to a chaparral canyon if site conditions there were similar to those that pertained before Santa Barbara's horrendous 1977 wildfire in Sycamore Canyon.^{5/}

SIMULATION SUMMARY	Total Houses	Houses Burned	%
Sycamore Canyon Conditions	287	115	40
Roofs Fireproofed <u>or</u> Brush Cleared	287	55	19
Roofs Fireproofed <u>and</u> Brush Cleared	287	2	1

^{4/} In the first half of this decade net migration to the empty areas of the United States was greatest for places known for their recreation and retirement amenities. In the edge-of-the-forest category only the Southern Piedmont Region and the Cotton Belt failed to show a complete turnaround in population flow. The most impressive movements are directed to California-Oregon, Michigan's upper peninsula, upper Florida, and the Intermountain Region from the Rocky Mountain range to the west. K.F. McCarthy and P.A. Morrison, *The Changing Demographic and Economic Structure of Non-Metropolitan Areas in the United States*, Rand Corp. R-2399-EDA, Santa Monica, Jan. 1979.

^{5/} USDA Forest Service, Symposium on the Environmental Consequences of Fire and Fire Management in Mediterranean Ecosystems, Palo Alto, August 1977, General Technical Report WO-3, U.S. Department of Agriculture, Washington, 1977. See especially the contributions of Zivnуска, Biswell, Green, Lee, Taylor, Omi, and Philips.

^{6/} Prepared for a series of animated color computer simulations by the ACCESS Project in Santa Barbara. Three graphic simulations were run based on 1) the Forest Service's FIREScope program, 2) ACCESS estimate of Sycamore Canyon (an unusual extent of shakeroof houses), and 3) another Santa Barbara canyon. The two prime variables, roof type and brush clearance, were taken from an analysis of the 1961 Bel Air fire Decision Analysis of Fire Protection Strategy for

People on the move annually 1977-1979

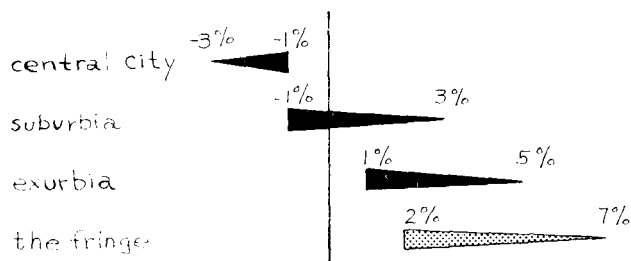


Figure 2--Whether the general trend away from central city continues at current rates or not, any more people will be moving to fringe areas.

Another important growing influence often remains unnoticed -- the ever more economical capacity for telecommunication, computation, remote sensing, and automatic control. The most valuable land, urban or rural, is the hilltop or peak best suited to micro-wave relay installations. "Smart" instruments can now be put out to sense a threat, whether fire, flood, or earthquake, and the whole population at risk can be alerted in time. Therefore a disaster will destroy property much more than it causes loss of life; this shift will continue into the future.

The communications-computing revolution now under way is responsible for one other rising trend. A greater variety of professional-type urban jobs can be carried out in fringe-of-the-forest sites. It is easier to get to an airport or a freeway twice a week than to commute regularly, and a handy computer terminal attached to telephone cots much less than operating a second car.^{2/} People then have time to make community ties face--to-face, and keep them up via the telephone. As this immigration accumulates, many more people are finding it possible to make a living as jack-of-all-trades or jilt-of-all-jobs, operating and maintaining the equipment on this frontier.

THE NEW CONSTITUENCY AND ITS NEEDS

Any civil servant will recognize that we are identifying a new vested interest in the forest landscape (fig. 3). It has already become more important, in the American West at least, than the traditional forest-based constituencies: (1) the lumber and paper communities, (2) the tourist-serving entrepreneurs, or (3) the pilgrims to forest shrines registering as day visitors.

The new population is attracted to the fringe by its quiet, its greenness, and its privacy. Its members are educated and they know how to organize (fig. 4) Their networks of contacts are more regional than local. Although

the Santa Monica Mountains: An Initial Assessment, prepared by Stanford Research Institute for Forest Service, U.S. Department of Agriculture, Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1973.

^{2/}It appears now that documents-manipulating occupations, such as insurance, can be almost fully disconnected from the Central Business District of R. Johansen, R. De Grasse, T. Wilson, Group Communication through Computers, Institute for the Future, Menlo Park, California, Feb. 1978.

College Educated in millions

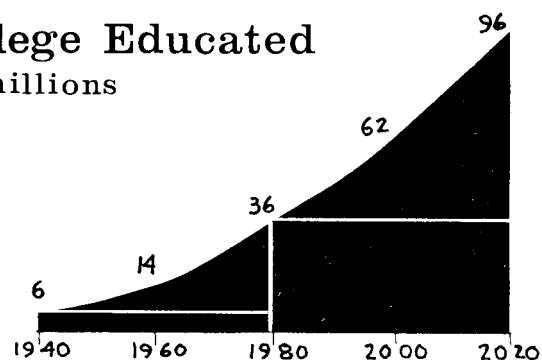


Figure 3--Large increases in college. educated persons of all ages in the United States are a primary force increasing population pressure on the fringe.

Education of people at the fringe

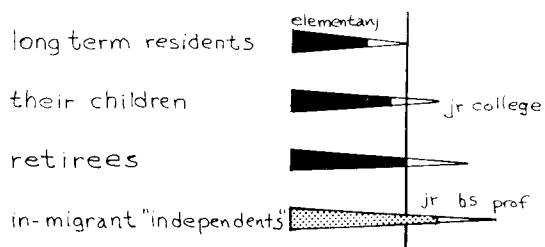


Figure 4--People moving to the fringe areas have had more college education than original settlers at the fringe. They bring with them new types of "independent" living.

the choice of locale in which to resettle is heavily influenced by its external. appearance, these values are soon displaced to something, people often refer to as the character of a place. Cultural meanings are attached to the landscape based upon its history, uses in daily activities, and the backdrop for special occasions of significance to the communities, such as the deer hunt or a Pioneer Day.

Being literate and well-connected, the new settlers will refer their problems bank to their city contacts. They go to the media more often than they go to their Congressman. They will write an increasing volume of letters-to-the-

editor which attempt to generalize upon local complaints. They are led by spokesmen with an astonishing range of competences, manual as well as intellectual. At present we can gauge much too little about the kind of consensus they are likely to achieve regarding what is essential to "character." What are these new meanings now being introduced into the landscape (fig.5)? We will have to listen closely to the specialists in popular expression and the artists among them -- the novelists, journalists, advertising copywriters, camera masters, poets, composers, dancers, athletes, animal breeders, landscapers, historians, and others.

Life Styles at the Fringe

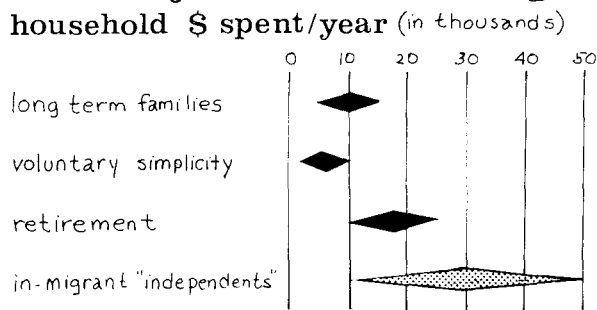


Figure 5--The new mix of life styles at the fringe will undoubtedly affect the politics and the character of the place.

Which of their concerns become items on the agenda of old and new organizations? Listening is the only way that the planners for the forests can learn, so they can be ready to act before situations explode or disaster strikes. The new publics, the bodies of appreciators of things to be preserved, and the subscribers to campaigns are expected to be quite different from elsewhere. Their images of what the forest landscape should be like are likely to come out on top.

FORCES FOR CONSERVATION

Between now and 1990 the Department of Energy is counting upon the forests for the principal "solar contribution" to the energy budget. The half of the tree that has not been harvested has become too valuable to leave behind. Because the salvaged biomass will follow the paths of the logs at least part of the way to the market, it will use personnel already

living in communities based upon wood technology, thus extending somewhat the range of their activities. The immediate effect upon the forest landscape should be small. In the long run the interior of the forest may become more parklike, but the change will probably be too gradual to notice.

But the salvage of waste is only the beginning. A demand for energy plantations will arise to deal with longer run problems. A current study in California suggests that the chaparral and marginal forest can be harvested, chipped, and converted into a variety of solid fuels with a harvest cycle of 8-12 years (fig. 6). Should it be allowed to grow back as is, be replaced by more valuable species, transferred to guayule or euphorbia to produce high-valued hydrocarbons, or held in reserve until conditions become more desperate? ^{B/} The new people at the fringe of the forest will have a strong influence upon the decision, and it appears that they will assert themselves on the basis of what they expect will happen to the "character" of their environment.

The other practical use of solar energy is domestic. Passive solar designs, based upon heat storage inside the house and flow controls at the windows, will be economic for heating,



Figure 6--Ecological redesign at the fringe on a regional scale, yielding new energy fuels, could occur around 1990 in areas such as the chaparral country of Southern California (shown in black on the Kuchler 1977 vegetation map).

^{B/} Bart Lucarelli, "The Energy Potential of California's Biomass Resources: 1976-2001," Ph.D. Dissertation, Expected Completion Date Dec. 1979.

and sometimes for cooling also. Wood stoves will be depended upon for back up heating for the dismal, cloudy periods of mid-winter. Obviously the forest should not overshadow the energy-collecting windows. So the fringe of the forest is trimmed to fit the needs of dwellings.

People who are "solarizing," or building anew in the solar way, must play games against the weather. Even today one can manage a standard house and save up to 50% of the energy required for heating, hot water, and food preparation, if the game is played smartly.

At this point a revelation occurs -- a house with 3-10 feet of soil over it will allow a 70-90% savings. Space does not cost energy in an earth-sheltered house.^{2/} Those people

who go this way for security against disaster --- to avoid the costs of fire when living at the edge of the forest, the threat of tornados when living on the plains, and of hurricanes when near the shoreline -- can vouch for the ease with which comfort and convenience can be sustained with these extraordinary economies (fig. 7).

These high levels of conservation in the dwelling itself, matched by the need to economize on liquid fuels for transport, will put continuing strains upon the consensus about the desired character of the environment at the fringe of the forest. Very likely the communities will be demanding that quite different things be done for the visual character of the forest as they learn more about the possibilities.

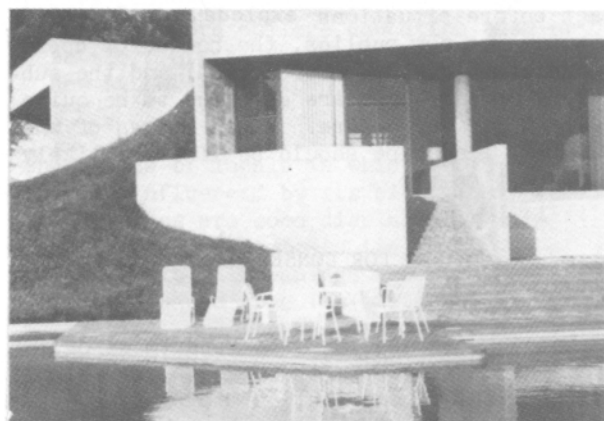
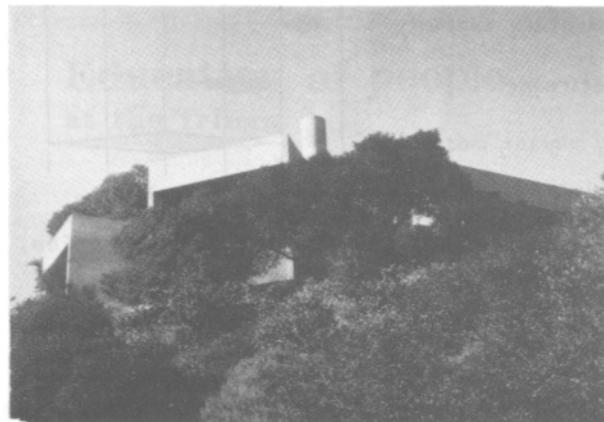
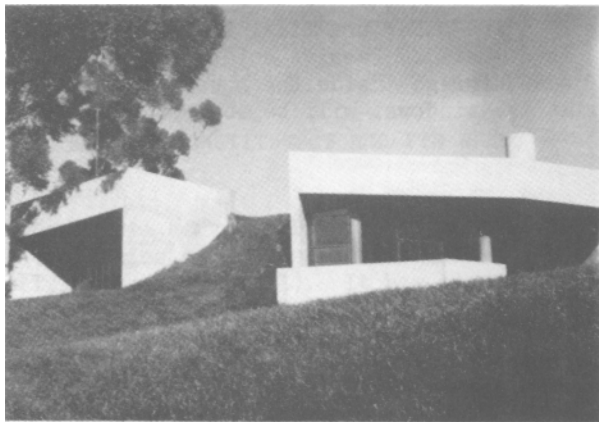


Figure 7--Earth-sheltered habitats are fireproof, conserve energy and blend into the landscape. Photographs show perhaps the most elegant one to date, the Alexander House by architect Roland Coate, built into a Montecity, California, foothill.

^{2/}Underground Space Center, Earth-Sheltered Housing Design, University of Minnesota and Van Nostrand Reinhold, New York, 1978.

CONCLUSION

The kind of regulation introduced in coastal planning, with its emphasis upon ecological preservation, viewsheds, and day visitors, is inappropriate for the fringe of the forest, despite the ecological similarities. A new kind of human population is occupying this zone, and feelings about the visual character of locales in the face of the demands for the salvage of wood waste, the need for energy conservation, and national planning for energy self-sufficiency with the aid of energy farms in the most accessible (therefore the most easily settled) regions, will probably determine which program will be undertaken. Add to this the observation that the new interest group determining the image of the forest will possess high competence in the various media, and will be well-connected with State and Federal political institutions.

The forest planner and manager is best advised to listen for the themes of the artists, specialists--in-expression, and propagandists which are picked up by organizations in the communities and can be amplified through the media. Their selection of imagery for treating underground construction solutions and planting alternatives should be closely watched.

LITERATURE CITED

- Johansen, R., R. De Grasse, and T. Wilson
1978. Group Communication through Computers.
Institute for the Future, Menlo Park,
California.
- McCarthy, K.F., and P. A. Morrison
1979. The Changing Demographic and
Economic Structure of Non-Metropolitan
Areas in the United States. Rand Corp.,
R-2399-EPA, Santa Monica.
- Stanford Research Institute
1973. Decision Analysis of Fire Protection
Strategy for the Santa Monica Mountains:
An Initial Assessment. USDA Forest
Service, Pacific Southwest Forest and
Range Experiment Station, Berkeley,
California.
- Underground Space Center
1978. Earth-Sheltered Housing Design.
University of Minnesota and Van Nostrand
Reinhold, New York.
- USDA Forest Service
1977. Symposium on the Environmental Con-
sequences of Fire and Fire Management in
Mediterranean Ecosystems, Palo Alto,
August 1977. U.S. Dept. Agric., General
Technical Report WO-3, Washington.