XD-APM-659

CENTER FOR ENVIRONMENTAL DESIGN RESEARCH

CENTERLINE

VOLUME 7, NUMBER 1 NOVEMBER 1982

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Research Notes

. *Housing Training for Asian Government Officials*

This fall three individuals active in public housing policy and implementation in their home countries came to Berkeley for a three-month training program sponsored by the Agency for International Development (AID). A total of 9 or 10 people from all over Asia are expected to arrive this year for this pilot program, which provides technical skills in areas such as construction management for the visitors.

AID sponsors loan guarantee programs in several countries for the purpose of constructing low-income housing. While the mechanisms and housing types are up to the countries involved, the agency requires that the projects be geared for the 10 to 50 percentile income groups. Generally, the lower the income of the inhabitants, the more anxious AID is to help. The College of Environmental Design's role in the pilot program is to pro-

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Top: A farm house on a Sri Lanka rubber plantation which is to be replaced in a nearby "model village."
Bottom: The new house being stuccoed by the owner: part of a government program in which all family members participate.

CEDR News

. *New Name/New Mandate*

We have a new name: *The Center for Environmental Design Research.* This change more closely reflects the nature of the work being done in the Center, and comes after a year of major re-examination of the Center's role in the College and the University.

After extensive discussions and reports by various oversight committees, a new set of objectives has been defined as the basis for a research plan to be followed during the next five years. Underlying the discussions was a common recommendation that the Center should increase faculty and student involvement, and that rather than pursue research in a wide spectrum of divergent areas, the Center should concentrate and emphasize activity in a convergent approach to one program area: environmental design. As part of the five-year plan for the Center, three areas of emphasis have been defined

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The Center for Environmental Design Research (CEDR) is an organized research unit of the University of California. It is based in the College of Environmental Design and is intended to serve as the research arm for faculty and students within the three departments—Architecture, City and Regional Planning, and Landscape Architecture. It is also intended to serve researchers within other units of the University of California at Berkeley interested in problems of the built environment.

For information about the projects mentioned in this newsletter, or any of the other activities of the Center, please contact us at the address given above.

CEDR Executive Director: Henry J. Lagano

Centerline Editor: Jeffrey M. Chusid

vide individually tailored courses and other activities in areas of perceived need to visiting officials involved in these low-income housing programs.

In the fall quarter, two of the visitors have come from Sri Lanka, and one is from Thailand. Conrad de Tissera works in the Center for Planning, Building and Construction in Colombo where he provides in-service training to other government agencies. Also from Sri Lanka is Chitra Weerawardana, an assistant commissioner of housing for policy. Chitra is studying property management, an especially critical concern in Sri Lanka since the government owns all the low-income housing which is built in the country for either rental or sale to the poor (through a complex sale and lease-back arrangement). Bancha Rangartna, from Thailand, is overseeing the construction of Bang Plee new town outside of Bangkok. One of nine projects currently underway in Thailand, Bang Plee consists of 5000 housing units. Rangartna is studying Critical Path and other methods for improving and expediting large scale building projects.

Since each of the people who come to Berkeley under this program are in positions of responsibility at home, it is expected that the training they receive will be 'passed along' to others in their governments. Another implication to their importance in the government heirarchies, is that the material which they learn in the program must be specific enough, and worth enough, for them to justify a three-month leave from their jobs to come to the United States.

To assist them in their work, each visitor is paired with a graduate student. Then, individual curricula are worked out for each official which allows them to take courses of relevance to their areas of concern These courses may be given in the College, elsewhere on the Berkeley campus, or through the University Extension program. Each week there is a seminar for the visitors, students and other interested people, which focuses on various topics. At the end of their stay, the three officials will 'host' a feed-back seminar on the program and their experiences.

There are several concurrent programs on the Berkeley campus funded by AID in areas such as nutrition and planning.

Another reason Berkeley was chosen to participate was its location on the Pacific. The people who come are selected by AID on the basis of a proposal written by the applicant, which then becomes the basis for their training. The programs for the visiting officials are developed and coordinated by Margaret Woodring, Associate Research Specialist at the Center. Sandy Hirshen, Architecture Department Chairman, and Richard Bender, CED Dean, help coordinate activities with the College and translate the specialized experiences of the training program into benefits for the school itself. In particular, the program is seen as strengthening the College's involvement in issues in international development and housing policy.

Full-Scale Testing for Seismic Performance

For over a decade, the US's National Science Foundation and Japan's Building Research Institute have conducted a joint program of simulated earthquake tests on full-scale building frame structures. Research engineers from all over the United States and Japan have joined in the research.

The actual testing is conducted at the new town of Tsukuba, Japan. For the past few years, a seven story reinforced concrete building has been the test subject. Now a six story steel structure is under construction. Marcy Wang, an Assistant Professor in the Architecture and a practicing architect and engineer, is responsible for designing and testing of the architectural components on the steel structure under a two-year research grant received from the National Science Foundation. These components include the cladding, interior partitions, mechanical systems and other non-structural elements.

The research has two aims: ascertaining the behavior of the building and its parts under seismic loads, and establishing a more precise correlation between small-scale model tests and the performance of the full-scale models. One of the primary pieces of information which will come out of the testing program is how well various building code standards minimize potential hazards.

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On Lok: Community Care for the Elderly

About ten years ago, a community group in San Francisco set out to build a nursing home for Chinese, Filipino and Italian elderly in the North Beach area of the city. When they approached UC Professor Roslyn Lindheim with the idea she suggested an alternative aimed at keeping people from the bed-ridden existance found in most nursing homes. The result was On Lok, a community-based day health care center for the frail elderly, with housing available.

The facility's users include people over 55 who are in need of long-term care according to criteria established by the State of California. The staff of On Lok includes doctors; nurse practitioners; nurses; occupational, recreational and speech therapists; health and social workers; dieticians, cooks, drivers; an audiologist, podiatrist, optometrist and dentist--all working together as a team to deliver a complete care plan.

The result is a unique program. With funding from HUD and Health and Human Services, and with individual patient expenses covered by Medicaid, a cheerful, positive environment has been created for those who otherwise might spend their remaining years in bleak, solitary inactivity.

The goal of the program has been to keep the elderly as active as possible, to keep them with their families whenever practical, and to ensure that the elderly remain involved in their community. Since 24-hour care is sometimes necessary, On Lok House provides 54 units of housing in addition to the day programs for members of the community and house residents.

Lindheim, who is on the faculty of the Architecture department at Berkeley, recently received a grant from the Commonwealth Fund of New York to study On Lok after a decade of operation. Specifically, how does the physical environment of On Lok House support or detract from the goals of the program? Since it is estimated that 2.4 million persons aged 65 or older require shelter and services if they are to remain out of institutions, it is hoped that the study can assist others in the establishment of similar community-based day health care with residence facilities.

Research began in Spring of this year with a course on "Day Health and Housing for the Frail Elderly" offered in the architecture department. The grant will allow the study findings to be published in a booklet for dissemination to all those interested.

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. *Indoor Pollution*

CEDR Research Specialist Hal Levin is spending a great deal of time this fall in Southern California working on a project for the State Architect's Office and the California Department of General Services that will assist in assessing and reducing indoor pollution in a new state office buildig currently in the final stages of construction. This is especially pertinent since the well-publicized problems with the new energy-conscious Bateson office building in Sacramento have focused attention on the potential hazards of air-tight structures with low ventilation and modern materials.

The current project has two parts. A team led by Levin and consisting of engineers and industrial hygienists are conducting air-sampling and other tests to develop information and provide advice for the completion and occupancy of the new building. Based on this and other work Levin has conducted over the last four years, a report will then be prepared on "Strategies and Procedures for Minimizing and Mitigating Indoor Pollution in Newly Constructed, Remodelled or Furnished State Office Buildings," which can be used by the State in the future.

. *Generating Site-Specific Weather Data*

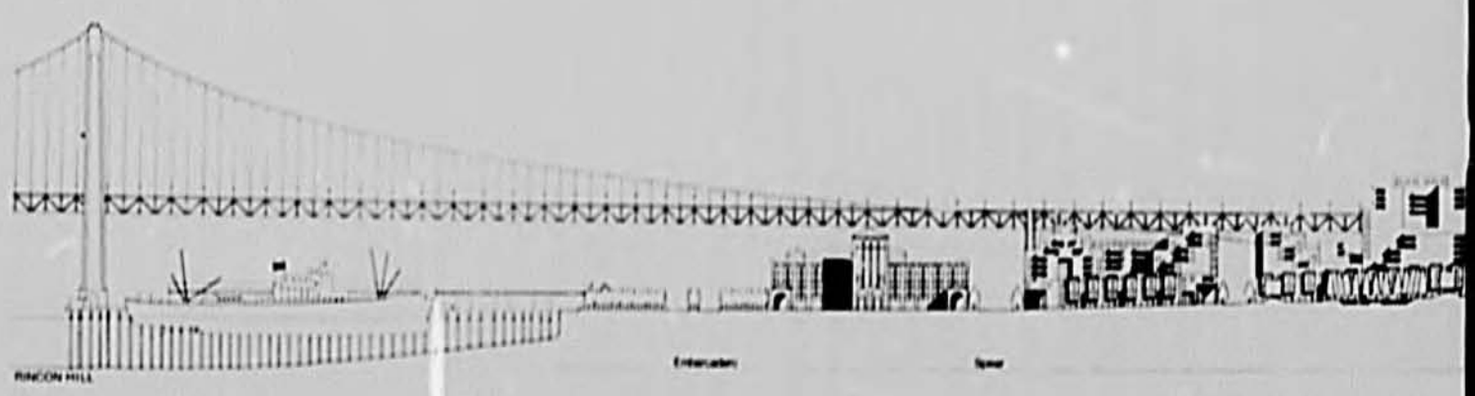
As designers and engineers make increasingly detailed analyses for building response to weather conditions, the discrepancies between regional weather tapes provided by the National Oceanographic and Atmospheric Agency and the actual conditions at the site under consideration become progressively more problematic. Human comfort, energy concerns, and even the structural implications of snow loads and wind forces, are being designed for using data collected at airports which may be located miles away from the building site. Surrounding topographical features, both natural and man-made, can radically alter the weather from one site to the next.

With the growing use of year-long weather tapes in the design and monitoring of entire building systems providing an impetus, Associate Professor Eward Arens is working on a project funded by the National Science Foundation to provide a method for translating these federally-supplied weather tapes into site-specific data. The project started about three years ago with comparisons between actual climatic conditions on a site and synthetic data generated by various forms of computer programs. Based on that work, an interactive program was designed using as its input information readily available to designers, such as that found on site plans and other construction documents.

The NSF project is a series of experiments to field test the algorithms used in the program. After the algorithms are validated individually in local tests, the entire program will be tested across large geographical distances, for example Sacramento to the Sierras, to see if the weather tapes can be modified to accurately describe the new site conditions in areas a considerable distance away. The analysis work will be carried out in the Center and the Architecture Department's Building Science Laboratory,

The project is scheduled for completion in 1984. The program being tested is written in Fortran and designed for use by anyone who currently uses the NOAA weather tapes.

Associate Professor *Joseph McBride*, from the departments of Forestry and Landscape Architecture, will be assisting in the project.



Seminars

Seismic Performance of Older Buildings

This summer, CEDR hosted a workshop on issues surrounding the seismic performace of older buildings. The sixty attendees represented a broad range of disciplines and interests, indluding architects, engineers, preservationists, developers, city and state officials, community designers, bankers and insurance underwriters. Most were from the San Francisco Bay Area, meeting to exchange views on the economic, social, political, architectural and planning aspects of rehabilitation structures which, as they currently stand, may not survive the next major earthquake.

The three-day workshop was funded by the National Science Foundation and had two major goals: First, to inspire new interdisciplinary research that would investigate novel directions for addressing the hazards of weak buildings, Second, to bring together people who had long wanted to meet and exchange concerns. Much of the discussion at the workshop focused on economic and social, as opposed to technical, problems. How does one preserve the architectural value of a historic structure while strengthening its resistance to earthquakes, within financial constraints? How can one avoid dislocating tenants while rehabilitating a building? What incentives are there for lowering the hazards posed by these buildings, sepecially since codes and laws are not retroactive?

The workshop was directed by Marcy Wang and Sami Hassid from the Architecture department. Proceedings, including the technical and working papers presented, will be available in early 1983.

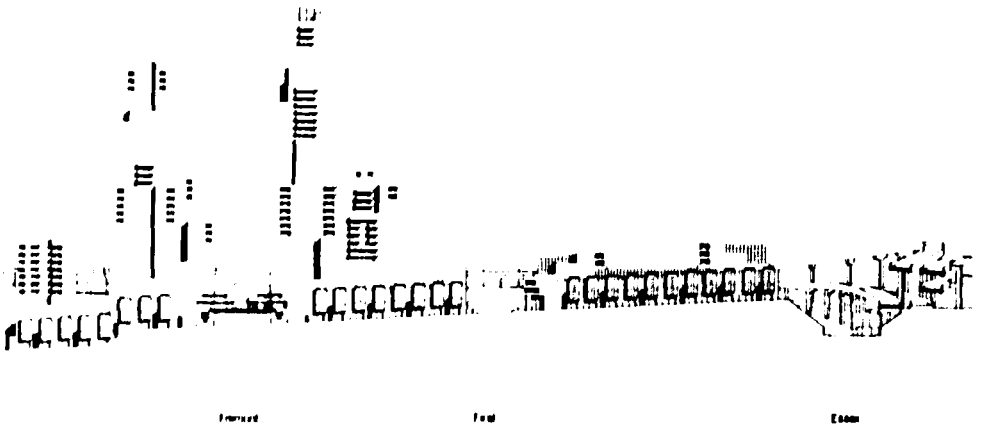
Ivan Illich: The Feminization of Poverty

CEDR is host this quarter to the internationally known writer and teacher Ivan Illich, who is a Distinguished Visiting Professor at Berkeley. He has been presenting a lecture and seminar series entitled "Vernacular Gender and Economic Sex" in association with faculty from across the campus. In mid-November, Illich will be joined by invited guests from all over the world to discuss the impact of appropriate technology and modernization in third world countries on women; in particular, the problems created when a traditional society is disrupted and women are forced into competition with men for dollars and other first world rewards.

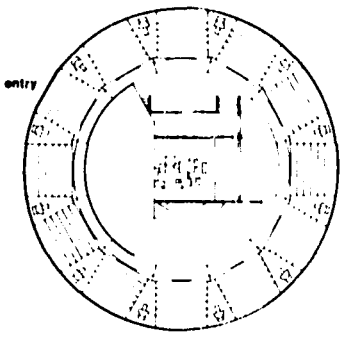
Among those attending the seminar will be Valentina Borremans, founder of the Center for Intercultural Documentation in Cuernevaca; and community organizers, teachers and writers from Germany, Holland, Mali and elsewhere. The seminar is being organized by Susan Hunt through CEDR, and proceedings will be available.

Illich was born in Vienna in 1926, and has received advanced degrees in Crystallography, Theology, Philosophy and History. He has lived as a Roman Catholic priest among Puerto Ricans in the slums of New York, has served as Vice Chancellor of the Catholic University of Puerto Rico, and since 1960, has been a resident of Cuernevaca. During the last 15 years, he has analyzed the common ideology underlying industrial-age institutions and has published the results of seminars he conducted at the Center for Intercultural Documentation in a series of books.

Rincon Hill



Extensively discussed in the August 1982 issue of Progressive Architecture, the final report of a major study of downtown San Francisco is now available from the Center. Rincon Hill: A Plan for Urban Transformation presents the results of a project directed by architect and UC Professor Daniel Solomon for the UC Housing Task Force and the SF Department of City Planning. The study was funded by the San Francisco Foundation and SPUR.



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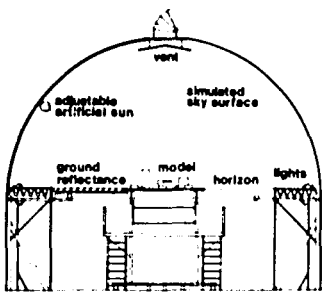

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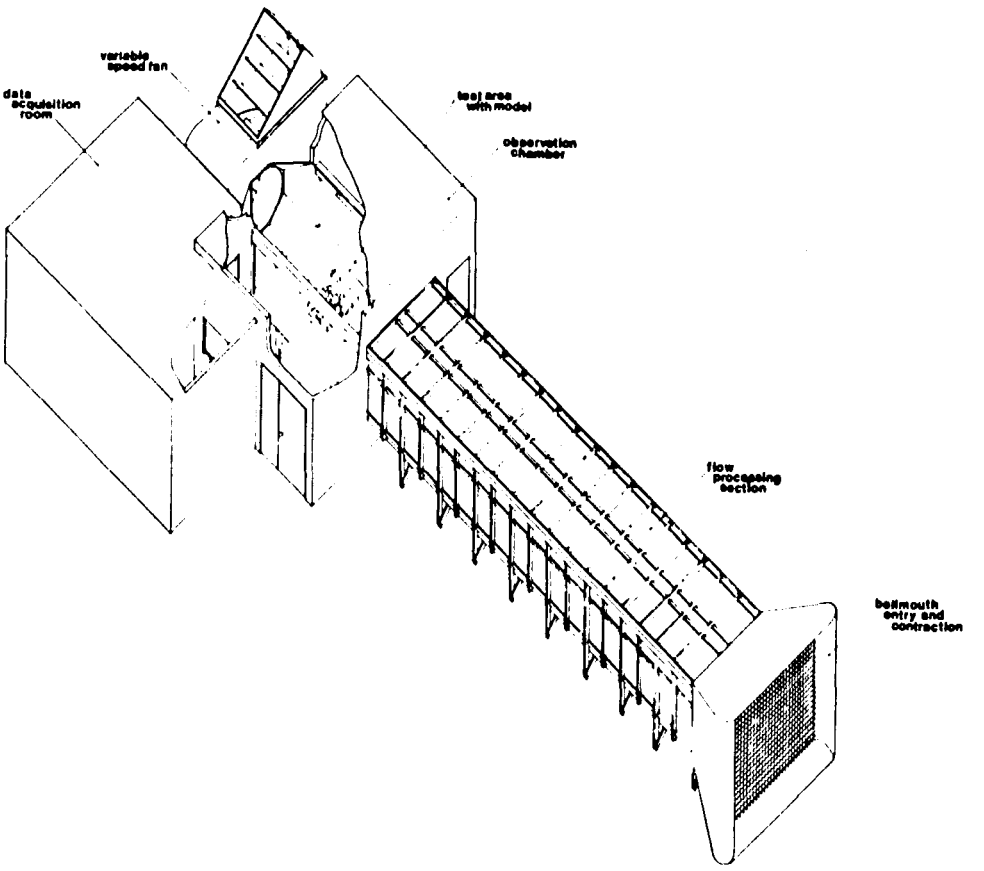
SKY SIMULATOR



BOUNDARY LAYER WIND TUNNEL

Update

Wind Tunnel and Artificial Sky

It is virtually impossible to anticipate, by intuition or mathematical analysis, the winds that will be caused by a structure, since they are determined by very complex interactions of forces. Fortunately it is possible to predict the wind patterns and pressures around structures by testing scale models in a wind tunnel.

Data from wind tunnel tests can be combined with climatological data to quantify the effect of a proposed structure on pedestrians in terms of human comfort.

Both ventilation and infiltration can be studied for energy and comfort inside a building as well.

Models are now being built for testing in the CEDR's new Wind Tunnel, which joins the Artificial Sky and Thermal Laboratory as resources in the Building Science area available to students, researchers and professionals.

Meanwhile, the Artificial Sky is seeing increasing use by private firms and people in the College. Among the current projects to make use of the new direct sun feature is research for the State of California in connection with the Title 24 energy codes.

Earthquake Advisory Service

Two publications are now available as a result of the work undertaken last year to develop a model for assistance to homeowners who wish to strengthen their residences against earthquake hazards. An Earthquake Advisor's Handbook is a reference guide for building officials and community design centers on earthquake hazards mitigation of dwellings. Earthquake Hazards and Wood Frame Houses, What You Should Know and Can Do contains recommendations to community groups and homeowners. Project Director Mary Comerio is now working with the City of San Francisco to develop a model program for the special circumstances of a dense urban community.

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People

The CEDR Executive Committee aids in the planning process and provides continuity for the Center, as well as ensuring liaison between the Center and the rest of the College. Members for this year include *Allan Jacobs*, *Mel Webber*, *Joseph McBride*, *Howard Friedman* and *Rostyn Lindheim*.

Besides his normal teaching duties at UC Santa Cruz and the project described in the Research Notes, *Hal Levin* has been increasingly in demand as a lecturer on the topic of indoor pollution as awareness of the problem grows. Recently, he delivered papers before two medical groups on the topic: a meeting of Immunotoxicologists in Utah, and a conference of Clinical Ecologists in Banff, Canada.

Vladimir Bazjanac will be teaching Winter quarter at UCLA. Recently Bazjanac has been involved in several 2-day AIA seminars on Architectural Energy Analysis in cities around the US. He delivered a paper in Denver in July on Energy Efficient Buildings in Sub-Tropical Climates.

Margaret Woodring, the Project Director for the AID Housing Training Program, is an architect and planner. She has served as a consultant in transportation and transportation investment, and local government co-development projects. Former Manager of Planning for the Metropolitan Transportation Commission, she is also currently working on two private housing projects and a house in Idaho.

Faculty in both Planning and Landscape Architecture are currently engaged in a great variety of research activities. City and Regional Planning Chair *Fred Collignon* is studying problems in urban infrastructure. *Robert Twiss*, Landscape Architecture Chair, is involved in several consulting projects.

CEDR Director *Henry Lagorio* attended the Ancona Conference on Health Care Facilities in Earthquake Regions in July 1982, where he presented a paper on the structural performance on hospital buildings in California. After the conference Lagorio was awarded a silver medal for Distinguished Service in Seismic Safety by the Regional Government in Ancona. In August, Lagorio was appointed Secretary/Treasurer and a member of the Board of Directors of the Earthquake Engineering Research Institute for a period of two years. Another recent appointment was to the Information Organizing Committee of the Eighth World Conference in Earthquake Engineering to be held in San Francisco in July 1984.

Sanford Hirshen, Chairman of the Architecture Department, is also involved with the Housing Training Program. Besides his teaching duties, Hirshen has an active practice specializing in public service projects, particularly housing for the elderly. The firm of Hirshen, Gammill, Trumbo, in conjunction with Mui Ho, recently completed "experimental" housing funded by HUD and NIMH which provides a group setting for people who have lived in half-way houses and are moving towards more independant situations.

Rincon Hill model in the Environmental Simulator.

The Center has a new administrative assistant, *Christine Williams*. Chris has worked for the University for six years, in architecture, engineering, space sciences and Lawrence Berkeley Lab. She has had extensive experience with grants and management, and we are extremely pleased to have her on board.

CEDR Associate Director *Randy Hester* and other faculty and students in the Social Factors area in the departments of Architecture, Landscape Architecture and Planning recently wrote a Humanistic Design Manifesto, which has been widely distributed to schools around the country. As an outgrowth of this project, Associate Professor *W. Russ Ellis* has initiated a campus-based discussion group, and proposed a future symposium, on the topic of Social Democracy and Public Places. Ellis has recently been appointed to the editorial board of Office: Technology and People, a new international journal on the impact of computers and other technical innovations in the workplace.

CEDR joins the rest of the Wurster community in a sense of loss at the death of *Donald Appleyard*. He was a teacher to many, a renowned author, and a major figure in enhancing the environment of cities and countries around the world. Appleyard was a founder of the Environmental Simulation Lab at Berkeley, and a co-editor of the forthcoming journal Places, jointly published by MIT and Berkeley. He will be missed.

New Name *continued*

for focusing CEDR's research during the immediate future.

Health, Stress and Environment: Study in this research area will focus on the performance of the deisgned environment in terms of human response to interaction with physical environments. Specific components of study include: habitability, productivity, inddor air quality, toxicity of building materials, comfort, high-density high-rise environments, use of parks and open space, physical health and stress of occupants and users of various facilities in the urban environment, resource extraction and land reclamation.

Building Science and Technology: Topics included in this area are building diagnostics, design failures, energy analysis of buildings, daylighting studies, building component testing and design, building preservation and conservation, life-safety implications, design-oriented computer methods, design methods, wind-tunnel experiments, artificial lighting systems, urban micro-climate determinations, urban hydrology and forestry studies, and other considerations related to the technical performance of buildings, building complexes, and the urban infrastructure. The various lab facilities in the College, such as the Urban Simulation Lab, the Artificial Sky and the Thermal Lab, engage in research in the Building Science area.

Community Design and Development: Research in this area is intended to complement the College's existing Community Design Center. Specific topics include community housing, environmental planning, third world development, socio-economic implications to development, social consequences of technology, urban risk analysis, urban environmental impact studies, self-help design, participatory design methods, neighborhood renewal, urban land recycling, and other community concerns.

Based on the re-definition of activities, results of a five-year review by a Campus Ad-Hoc Committee, and the new five-year research plan, the Chancellor of the University granted the Center a new 15 year mandate effective July of 1982.

Industrial/Professional Liaison Council

As part of the re-structuring associated with the development of the new five-year research plan, CEDR has been initiating liaison activity with a wide range of groups both on and off the UC campus for direct research support through the Center. Since it is a component of a public university, there is particular concern that research in the built environment be shared with public and private sectors, and that these groups have an opportunity to suggest projects for CEDR investigation which respond to specific needs.

Towards that end, an Industrial/Professional Liaison Council was established at the beginning of this year to foster research activity in environmental design. While such a group has been long overdue in its own right, one strong incentive for its creation has been the uncertainties associated with federally-sponsored research. To date, Kaiser Center, Inc., John A. Blume Foundation, Dow Chemical, ROMA and Associates, Ars Associated Foundation, K. T. Enterprises, Inc., and Pella Industries are among those who have joined the council.

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