

**Twenty-Sixth
Annual
Conference
of the
Environmental
Design
Research
Association**

Proceedings

Editors

Jack L. Nasar

Peg Grannis

Kazunori Hanyu

The Ohio State University

Omni Parker House Hotel
Boston, Massachusetts

March 1 - 5, 1995

© Copyright 1995 by The Environmental Design Research Association (EDRA)
P.O. Box 24083
Oklahoma City, OK 73124

All rights reserved. No part of this book covered by the copyrights herein may be reproduced or transmitted in any form or by any means--graphic, photocopying, recording, taping, or information storage and retrieval systems--without written permission of the publisher.

ISBN: 0-939922-19-3

ii • **EDRA26/1995**

Introduction

In the EDRA26/1995 call for proposals we adopted the broad theme, "Environmental Design Research." We alluded to a sub-theme "evolutionary and revolutionary changes" and several topic areas. These included: psycho-social issues in design, teaching environmental design research, housing, neighborhood, community and public facilities, design for a pluralist society, ecological and sustainable development, methods development, and public policy. We chose the theme, sub-themes and topics to encompass the wide variety of research, practice and teaching in environmental design research.

The call for proposals produced a bounty of more than three-hundred proposals, including more than two hundred fifty proposals for papers. Of those, eighty-one arrived as full papers for peer review. Each paper received blind reviews by two or more reviewers. We accepted twenty papers for publication (an acceptance rate of only twenty-five percent). Although some fine papers did not get accepted for publication, we hope that the papers published in this proceedings show quality as well as some of the diversity of the field.

This proceedings has four parts: 1) Summaries of plenary speeches, 2) Peer-reviewed papers, 3) Abstracts of sessions, and 4) Abstracts of presentations. Regrettably, the proceedings may not include abstracts for all of the conference presentations. To have the proceedings at the conference, we include only those abstracts that arrived in the correct form by an early January deadline.

The proceedings open with summaries of the keynote and plenary speeches. In previous conferences, participants have bemoaned the gap between research and practice. "Why don't designers heed research findings," some ask. "Why don't researchers address questions relevant to practice," others ask. Research directed at public policy bypasses the applicability gap. It addresses a client (whether public or private) interested in using the results. It can lead to design guidelines and controls that designers and others must follow. We were pleased to have a distinguished group of keynote and plenary speakers who have played an vital role in making public policy through their research. Oscar Newman, architect and city planner, author of *Defensible Space*, is the Keynote speaker. As Principal at the Institute for Community Design Analysis, he has been actively engaged in designing and retrofitting communities nationwide. His work has prompted large-scale housing policy changes around the world. Plenary speakers include Gayle Epp, Planner and Principal, Epp Associates, Jacqueline Vischer, Principal, Buildings-in-Use, Kenneth T. Pearlman, land-use lawyer and professor of City and Regional Planning at The Ohio State University, Deborah Poodry, Architect/Planner, Vice President Wallace and Floyd Associates, Inc., and John Zeisel, principal Hearthstone Development, Research and Management Company. These speakers have also had significant impacts on public policy for design. The keynote and plenary sessions center on the public policy aspects of environmental design research. The talks highlight successful implementations of

environmental design research and they point to fruitful directions for future research.

The peer-reviewed papers follow. Arranged in eight sections, they report developments in: 1) measuring the physical environment, 2) environmental cognition, 3) environmental aesthetics, 4) place preferences, 5) responses to natural disasters, 6) residential satisfaction, 7) elderly care, and 8) design planning methods.

Environmental design research stands out for its emphasis on the physical environment. This emphasis requires rigorous and clear measures of human-relevant objective features of the physical environment. The first section has five papers that describe the development of such measures. Margulis reports on the still-present neglect of the objective environment in many theories, and he reiterates the calls from Archea, Wohlwill and others for the inclusion of the objective built environment in our theories. The next two papers (Kadar, Flascher and Shaw and Flascher; Kadar, Garrett, Meyer and Shaw) offer Gibsonian perspectives on both movement through the environment and body-centered scaling of the proximate physical environment. Echoing Archea, they describe the physical environment in terms of its functionalities (or affordances) to humans. The last two papers of this section center on specific places. Moore presents the development of scales for the description and evaluation of the physical environment of child-care centers; and Boehm presents a typology for classifying commercial developments.

The next sections turn to human responses in relation to the physical environment. Humans exhibit cognitive, emotional and behavioral responses to their physical surrounding. As for cognition, physical arrangements can affect individuals' ability to orient and find their way around. The second section of papers has two papers on orientation and wayfinding indoors. Fishbein examined spatial orientation in relation to single vs. multiple frames of reference. He found decrements in orientation associated with the presence of more than one frame of reference. Sharkaway and McCormick observed wayfinding in relation to the presence of environmental cues. They found improvements in wayfinding associated with the presence of vistas and landmarks. The two sets of findings suggest that indoor vistas and landmarks, without exterior frames of reference may facilitate wayfinding and orientation.

Research on emotional appraisals in relation to physical arrangements of the urban environment can be broadly characterized as dealing with urban design aesthetics. The next section presents a series of empirical papers on urban design aesthetics. Stamps describes four studies aimed at discovering the source of environmental preference. Is beauty in the eye of the beholder or in the environment? His results confirm environmental features as accounting for most of the variance. Zacharias examined environmental simulation. Adding to earlier studies on simulation, he looked at the specific ways in which responses to two simulations differ. Like Stamps, he found consistent patterns of response among

the respondents. They preferred photos to pictorial counterparts, when the latter had large undifferentiated areas, but they preferred pictorial representations when they suppressed visual nuisances in the photographs. The last three papers address specific urban design questions. Stamps demonstrates a method to examine compatibility. He found evidence supporting contextual principles. Respondents liked homogeneous blocks over blocks with different buildings; they liked infill houses with attributes of neighboring houses; but they exhibited decreases in preferences associated with the first large building on a block. Smith, Heath and Lim tested evaluations of skylines by architects and non-architects. Building spacing and height influenced evaluative response. Respondents preferred tall buildings with wide spacing or low buildings with medium spacing to other configurations. Some differences between architects and non-architects emerged. Amster, in an evaluation of images of capitol buildings, found that the buildings conveyed shared symbolic meanings to respondents, but that architects and non-architects had some differences in response.

Other research on emotion and environment looks at place preferences. The section on place preference includes two papers. Devlin, Trudeau, Zaff, Mendex, Weir, Broadbear and Slasor looked at the relationship of residential environment and personality to environmental preference and stress reducing activities. Their study found that childhood environment (urban, suburban or rural) affected environmental preferences and stress reduction in a fashion consistent with adaptation level theory. Bechtel and Korpela present findings on the places students from the U.S. and Finland describe as happy and places they describe as depressing. They report similarities and differences across the groups. Students in each country selected institutional settings for both their most-happy list and their most-depressing list. The adjectives chosen to describe the places by each group did not yield statistically significant correlations.

Natural disasters have intense effects on human responses to places. The next section includes descriptions of responses to two major disasters. Chea and Wapner characterize the dimensions of response in retrospective accounts of the experience of hurricane Hugo. Respondents showed regression at the time of the disaster, but with time, a return to functioning at a more advanced adaptation level. Schwarz, Brent, Phillips and Danley present qualitative reports on the experience of disruption of place attachment following the big flood of 1993. The self-reports show differences in the capacities individuals have for place attachment.

The next section reports two studies on residential satisfaction. Potter identified four predictors of residential satisfaction for dwellers in renovated apartment buildings: furniture/space, laundry, safety and friendship. Taylor looked at aging in place in relation to both the dwelling unit and the neighborhood. For her sample of elderly and near-elderly respondents, she found the physical aspects of the dwelling as the most important predictors of dwelling satisfaction, and the social contextual variables as the most important predictors of residential satisfaction.

The next section reports two studies on elderly care. Devlin interviewed staff, patients and visitors to evaluate the Planetree model of hospital care. The results revealed some strong impacts of the physical environment on the delivery of care. Kalymun addressed a public policy issue—Residential Care Facilities considering conversion to Assisted Living Facilities. Through qualitative methods, she identified six factors influencing the decision to convert: capital, regulation, location, managerial philosophy, architectural modification and service.

The final section of papers describes some advances in design and planning methods. Sanoff reports a case study on participatory programming and design of an elementary school. A post-occupancy evaluation showed that the participation process helped achieve the educational goals. Lee reports a user evaluation of three-dimensional computer-aided design software. Three-dimensional features emerged as important in the schematic and design development, while work-support emerged as important in the final design phase. Educators and practitioners had some differences in response.

The papers present a rich set of ideas and findings moving from theory and descriptions of the physical environment, to human responses to specific physical features of their surroundings, to human responses to broader aspects of their surroundings, to the concerns of a special population (the elderly), to the development of methods for helping individuals and groups achieve solutions to their environmental problems. Although the papers neither encompass the field nor the diversity of papers submitted, they show some of that diversity. The abstracts of sessions and presentations reveal more of that richness.

In closing our introductory comments, we acknowledge all of the participants who submitted work, reviewed work, attended the conference, and helped in other ways. Many of your names are listed in the index and the inside of the front cover. Thank you.

Jack L. Nasar
Peg Grannis
Kazunori Hanyu

City and Regional Planning
Austen E. Knowlton School of Architecture
The Ohio State University

Table of Contents

Introduction	iii
Part 1: Plenaries	1
Part 2: Selected Papers	7
Measuring the Physical Environment	
<i>The Status of the Objective Built Environment in Environmental-Psychological Theory</i> Stephen T. Margulis	9
<i>A Field Theoretic Description for Navigation through Cluttered Environments: Consequences for Environment Design</i> Endre E. Kadar, Oded M. Flascher, and Robert E. Shaw	13
<i>Perceptual Scaling of Doorways: An Investigation of Perception for Design Principles Development</i> Oded M. Flascher, Endre E. Kadar, Steven R. Garrett, Joachim Meyer, and Robert E. Shaw	18
<i>Early Childhood Physical Environment Scales for the Assessment of Child Care Centers</i> Gary T. Moore	23
<i>The Form of Commerce: A Typological Investigation</i> William Boehm	28
Environmental Cognition	
<i>Critical Variables in the Built Environment: Effects of Alternative Views on Spatial Orientation</i> Sanford Fishbein	38
<i>Wayfinding in Complex Health-Care Environments: Linking Design to Research</i> M. Atef Sharkawy and Molly McCormick	43
Urban Design Aesthetics	
<i>Beauty is in . . . ?</i> Arthur E. Stamps, III.	48
<i>Testing Public Preferences for Urban Scenes Using Visualization</i> John Zacharias and Soukwan Chan	54
<i>Dolan, Daubert & Contextual Urban Design Principles</i> Arthur E. Stamps, III.	60
<i>The Influence of Building Height and Spacing on the Evaluation of City Skylines: A Comparison Between Architects and Non-Architects</i> Sandy G. Smith, Tom Heath, and Bill Lim	65
<i>Capitol Buildings as a Reflection of the Governments That Build Them</i> Jennifer Amster	69
Place References	
<i>Environment Preference, Personality and Stress-Reduction in College Students</i> Ann Sloan Devlin, Kimberlee Trudeau, Jonathan Zaff, Nigel Mendez, J. M. Weir, Adrienne Broadbear, and Liana Slasor	75
<i>Most Happy and Most Depressing Places: A Finnish-U.S. Comparison</i> Robert B. Bechtel, Andhrea Fox, Kalevi M. Korpela, and Sari Parkkila	80

Responses to Natureal Disasters

Retrospections of Bahamians Concerning the Impact of Hurricane Andrew
William E. Chea and Seymour Wapner 87

Disruptions in Place Attachment Following the 1993 Big Flood
Benyamin Schwartz, Ruth Brent, Ronald Phillips, and Margaret Danley 92

Housing and Neighborhood Satisfaction

Predicting Residential Satisfaction
James J. Potter and Kathryn E. Speicher 98

Social and Environmental Contexts of Aging in Place: Two Geographical Scales of Residential Satisfaction
Patricia S. Taylor 107

Elderly Care

Staff, Patients and Visitors: Responses to Hospital Unit Enhancement
Ann Sloan Devlin 113

Factors Influencing the Conversion of Resident Care Facilities to Assisted Living Facilities: A Case Study
Mary Kalymun and Elizabeth Adotte Adam 117

Design/Planning Methods

Participation, Programming, Design & Evaluation of an Elementary School
Henry Sanoff 124

Software Options for Support of Three-Dimensional CAD in the Architectural Design Process: A Critical Evaluation by Practitioners and Educators
Kwanghee Lee and Larry O. Degelman 129

Part 3: Session Abstracts 137

Intensives 139

Symposia 141

Workshops 145

Working Groups 153

Part 4: Presentation Abstracts 155

Presentation Papers 157

Design 191

Films and Videos 193

Author Index 195