LOOKING BACK TO THE FUTURE
SE RETOURNER VERS L'AVENIR
II
Voorzieningen in de nabijheid van het bed
LOOKING BACK TO THE FUTURE
SE RETOURNER VERS L’AVENIR

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Herbert van Hoogdalem
Niels L. Prak
Theo J.M. van der Voordt
Herman B.R. van Wegen

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Niels L. Prak (programme organizer)
Herbert van Hoogdalem
Theo J.M. van der Voortd
Herman B.R. van Wegen
Ankedien Hemmes-Naaborg (coordinator)

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editor's preface</td>
<td>11</td>
</tr>
<tr>
<td>List of referees</td>
<td>13</td>
</tr>
<tr>
<td><strong>a. PLENARY SPEAKERS</strong></td>
<td></td>
</tr>
<tr>
<td><em>Continuité dans discontinuité: vers un nouveau mode de complexité sociale</em></td>
<td>17</td>
</tr>
<tr>
<td>Jean Rémy, Belgique</td>
<td></td>
</tr>
<tr>
<td><em>Instrumental and spiritual views of people-environment relations: current tensions and future challenges</em></td>
<td>29</td>
</tr>
<tr>
<td>Daniel Stokols, USA</td>
<td></td>
</tr>
<tr>
<td><strong>b. PRE-ARRANGED SYMPOSIA</strong></td>
<td></td>
</tr>
<tr>
<td><em>1. Aspects phénoménologiques du chez-soi</em></td>
<td>47</td>
</tr>
<tr>
<td>Gilles Barbey, Suisse</td>
<td></td>
</tr>
<tr>
<td><em>Esquisse de la relation affective au chez-soi</em></td>
<td>49</td>
</tr>
<tr>
<td><em>Towards a phenomenology of being at home</em></td>
<td>56</td>
</tr>
<tr>
<td>Carl F. Graumann, Germany</td>
<td></td>
</tr>
<tr>
<td><em>La phénoménologie sensorielle comme référence du projet d’architecture</em></td>
<td>66</td>
</tr>
<tr>
<td>Maurice Sauzet, France</td>
<td></td>
</tr>
<tr>
<td><em>Le chez soi: espace et identité</em></td>
<td>74</td>
</tr>
<tr>
<td>Marie Villela-Petit, France</td>
<td></td>
</tr>
<tr>
<td><strong>2. Ecological psychology</strong></td>
<td>83</td>
</tr>
<tr>
<td><em>Introduction</em></td>
<td>85</td>
</tr>
<tr>
<td>Lenelis Kruse and Gerhard Kaminski, Germany</td>
<td></td>
</tr>
<tr>
<td><em>Back to the future... again. A perspective on ecological psychology</em></td>
<td>87</td>
</tr>
<tr>
<td>Robert B. Bechtel, U.S.A.</td>
<td></td>
</tr>
<tr>
<td><em>Learning how to act in behavior settings: the case of newcomers</em></td>
<td>92</td>
</tr>
<tr>
<td>Urs Fuhrer, Germany</td>
<td></td>
</tr>
<tr>
<td><em>The psychological experiment as a behavior setting genotype</em></td>
<td>98</td>
</tr>
<tr>
<td>Gerhard Kaminski, Germany</td>
<td></td>
</tr>
<tr>
<td><em>Behavior settings, cognitive scripts, linguistic frames</em></td>
<td>106</td>
</tr>
<tr>
<td>Lenelis Kruse, Germany</td>
<td></td>
</tr>
<tr>
<td><em>Jeopardizing patterns of settings: deviations an deviation-counterings</em></td>
<td>114</td>
</tr>
<tr>
<td>Volker Linneweber</td>
<td></td>
</tr>
</tbody>
</table>
3. Environmental Stress

**Introduction**
Rikard Küller, Sweden

**Crowding and social support**
Gary W. Evans, USA; Madan N. Palsane, India; Stephen J. Lepore, USA and Janaea Martin, USA

**Environmental activation of old persons suffering from senile dementia**
Rikard Küller, Sweden

**Colour and physiological arousal**
Byron Mikellides, England

4. Defensible Space

**The spatial representation of insecurity**
Jean Chaquiboff and Yvonne Bernard, France

**Returning to our civilised roots**
Alice Coleman, England

**Factors influencing crime and instability in government assisted housing developments**
Oscar Newman, USA

**A checklist on crime prevention through environmental design: usefulness and limitations**
Theo J.M. van der Voordt and Herman B.R. van Wegen, the Netherlands

**Fear of crime in residential areas: defensible space and beyond**
Adri van der Wurff, the Netherlands, and Peter Stringer, Ireland

5. Post-Occupancy Evaluation

**Advances in post-occupancy evaluation: knowledge, methods and applications**
Wolfgang F.E. Preiser, Mexico

**Advances in POE methods**
Robert B. Bechtel, USA

**Advances in post-occupancy evaluation applications**
Jay Farbstein, USA

**The uses and boundaries of post-occupancy evaluation**
Harvey Z. Rabinowitz

**Post-occupancy evaluation and implicit theories of organizational decision-making**
Craig M. Zimring, USA
6. Esthétique et technostructure

Introduction
Marion Segaud, France

La qualité architecturale en Belgique: anciennes et nouvelles tendances sociales
Catherine Mougnot, Belgique

Technostructure et architecture: l'exemple Corbuséen
H. Raymond, France

Compétence esthétique et architecture
Marion Segaud, France

c. PAPERS

7. Architectural and psychological theory

Place, ideology and postmodernism
Kim Dovey, Australia

Form and content in contemporary architecture – Issue of style and power
Howard Harris and Allan Lipman, USA

Expert systems in environmental psychology
Joost van Andel, the Netherlands

Environmental psychology in Europe. A socio historic study through analysis of IAPS conferences and his context
Enric Pol, Spain

8. Residential environments

Resident participation in neighborhood programs: some issues to be resolved
Arza Churchman and S. Neaman, Israel

Psychological bonds with types of settlements
Roberta M. Feldman, USA

The Barcelona district's look
J. Freixes i Martines, M. Juanola i Codina, J. Molleví i Portoló and S. Valera i Pertegás, Spain

9. The home and its meanings

Territorial organization of domestic space in different types of households
Maria V. Giuliani and Giuseppina Rullo, Italy
Transformations in domesticity, household demography and dwelling designs
Roderick J. Lawrence, Switzerland
363

A study of residential preferences and choices
Erik Lindberg, Tommy Gärling and Henry Montgomery, Sweden
373

A methodological model for studying families in dwelling environments
Toomas Niit, USSR
382

A cross-cultural analysis of the domestic privacy: from the gender point
Vana Tentokali, Greece, and Sandra C. Howell, USA
392

10. Environments for special groups

Opportunities for environment and behavior research on falls among the elderly
Bettye R. Connell, USA
399

Pink Palace to Rosa Park towers
Clare Cooper Marcus, USA
401

Mother's cognitive representations of 1, 2 and 3-years old children's accident risks in the home
Anita Gärling, Tommy Gärling and Eva Mauritzson-Sandberg, Sweden
411

Institution and home: linking physical characteristics to perceived qualities of housing
Julia W. Robinson, USA
421

Participatory programming of a campus child development facility
Henry Sanoff and Joan Sanoff, USA
431

11. Public environments

Personalization of narrow office room space in a research institution
Satoshi Kose and Toshimoto Miyata, Japan
441

The effects of exhibit signage on visitor behaviour
Jon A. Sanford and Ted Finlay, USA
453

12. Gardens, landscape and townplanning

Changing notions of the landscape - The avenue in the new world, its social and spatial implications
Helen Armstrong, Australia
463

473

475
A pitoresque tour of landscape sociology
Michel Conan, France

The fear of the new landscape. Aspects of the perception of landscape in the German bourgeois youth movement between 1900 and 1933
Joachim Wolschke-Bullmahn, Germany

Gardens in the mind and in the heart
Mark Francis, USA

Evaluative differentiation of riverscape
Yoichi Kubota, Japan

13. Perception, cognition and memorizing

Language and orientation: memory for route elements in verbal descriptions by children and adults
Giovanna Axia

The role of perspective in recognition of real-life scenes
Anders Book, Sweden

A survey of water imagery with respect to the environment of Lake Union in Seattle
Nobuhiro Suzuki, Yoshihiro Kondo and Toshio Tsushima, Japan

14. Perception and symbolism

Perception tactile des sols
Marc Crunelle, Belgium

Body image and graphic representation of the environment
Carlamaria del Miglio, Anna M. Nenci, Silvestro Paluzzi, Daniela Pastore and Giorgio Testa, Italy

Time perception and the processing of environmental information
Tom C. Mitchell, UK

The effects of the salience and typicality of objects in natural setting upon their recollection
Erminieda M. Peron, Maria R. Baroni and Gesualdo Zucco, Italy

Artificial lighting interpreted as a system of symbols
Thomas Rhomhild, Germany

d. EPILOGUE

Looking back to the future
Niels L. Prak, the Netherlands

INDEX OF AUTHORS
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Editors' Preface

Looking back to the future

In a park near Arnhem in the east of the Netherlands exists a very popular attraction called "De bedriegertjes", literally: The Little Cheaters. Visitors, lured by its nice pavings, little statuettes and beautiful flowerbeds, are quite unexpectedly sprinkled by waterfalls springing from jets artfully hidden in the ground. The first reaction of thrill mixed sometimes with anger unvariably ends into hilarious laughter. A typical Dutch reaction?

Living in a country, which for a large part, lies below sea level, Dutchmen don't like to be surprised by water.

In their history an enormous lot of technical ingenuity and organization was and is put in the control of water. To keep it away behind dykes, to pump it by (wind)mills through canals into the sea.

On the other hand dutchmen feel very much attracted by water: they are fond of sailing, swimming, surfing, skating and even skiing. Wherever there is water in the world, there is almost certainly a dutchman around. Some of this ambivalent, amphibious attitude to water must have been transferred by us, the dutch organizers of this conference, to paper. We thought that just sending a 'call for papers' into the world, was asking for unpredictable paperstreams, flooding some important fields, and leaving other equally important ones dry. What we envisaged was a typical dutch landscape of ditches, dykes and canals, circumscribing a number of fields and some powerfull windmills to regulate the paper level in this orderly system. As our windmills acted well-known experts invited in an early stage to organize a symposium on their particular field, by selecting in turn some specialists in that field to contribute papers.

In doing so we hoped for a rich crop from as many fields of the Man-Environment Studies Area as possible.

Fortunately most of our windmills have performed very well. We were happy to see that our sense for order also spread to others. Quite a number of contributors became the windmill of their own self-initiated symposium - coordinating the contributions and preparing the conditions for a fruitful exchange during the conference itself.

In this way more than half of all papers and contributions have been presented within the context of 15 pre-structured symposia. For the other, smaller half of individual papers, we have done our best to group them into papersessions with a clear communal theme. These papersessions have been prepared by invited chairpersons, whose task was to lead the discussion around that theme. In this way 13 paper sessions were added to the 15 symposia. Altogether about 180 contributions, either as abstract or full length paper were received in Delft. Except for the ones in the invited symposia, all these papers and abstracts were each refereed blindly by two independent referees. Their comments were returned to the authors, who could and most often actually did revise their drafts into final shape.
Our referees indicated also which paper under what conditions could be published. We, the editors, followed their suggestions in most cases and want to express our gratitude, for their effort and good advice.

At the beginning of May 1988 all the material for the Proceedings, was in our hands, fit to print, a rather unique event in the history of IAPS-conferences.

Volume I, containing the abstracts of all the contributions and the detailed program appeared just before the conference to serve as a guidebook to the participants.

Volume II, containing the keynote addresses and a selection of full-length papers has been released at the end of the conference.

As a consequence of our decision to publish Volume I and II before the conference was held, discussion are not included. We hope that the efforts of the organizing committee in structuring the conference will stimulate the participants to publish their experiences in Newsletters and Journals, thus giving shape to an imaginary third volume.

Delft, May 1988

Herbert van Hoogdael
Niels Prak
Theo van der Voordt
Herman van Wegen
**LIST OF REFEREES**

<table>
<thead>
<tr>
<th>Andel J. van</th>
<th>Lambert D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbey G.</td>
<td>Lans W.</td>
</tr>
<tr>
<td>Bernard Y.</td>
<td>Lawrence R.</td>
</tr>
<tr>
<td>Blauw W.</td>
<td>Lee S.</td>
</tr>
<tr>
<td>Bollerey F.</td>
<td>Lee T.</td>
</tr>
<tr>
<td>Bovy P.</td>
<td>Lipman A.</td>
</tr>
<tr>
<td>Burgers J</td>
<td>Lubke Ch.</td>
</tr>
<tr>
<td>Coeterier J.</td>
<td>Maas F.</td>
</tr>
<tr>
<td>Deben L.</td>
<td>Máccl O.</td>
</tr>
<tr>
<td>Deelstra Tj.</td>
<td>Menzel M.</td>
</tr>
<tr>
<td>Draak J. den</td>
<td>Nijs L.</td>
</tr>
<tr>
<td>Drewe P.</td>
<td>Pennaerz P.</td>
</tr>
<tr>
<td>Duin L. van</td>
<td>Priemus H.</td>
</tr>
<tr>
<td>Ellis P.</td>
<td>Reverda J.</td>
</tr>
<tr>
<td>Gārling T.</td>
<td>Smets G.</td>
</tr>
<tr>
<td>Grivel F.</td>
<td>Steffen E.</td>
</tr>
<tr>
<td>Guttinger V.</td>
<td>Stoppelenburg P.</td>
</tr>
<tr>
<td>Hamel R.</td>
<td>Symes M.</td>
</tr>
<tr>
<td>Hansen A.</td>
<td>Tacken M.</td>
</tr>
<tr>
<td>Heijmans A.</td>
<td>Tjallingii S.</td>
</tr>
<tr>
<td>Houben P.</td>
<td>Turpijn W.</td>
</tr>
<tr>
<td>Hulsbergen E.</td>
<td>Tzonis A.</td>
</tr>
<tr>
<td>Jansen B.</td>
<td>Vaart D. van der</td>
</tr>
<tr>
<td>Jockusch P.</td>
<td>Verloo M.</td>
</tr>
<tr>
<td>Jong T. de</td>
<td>Verwer D.</td>
</tr>
<tr>
<td>Jonge D. de</td>
<td>Vrielink D.</td>
</tr>
<tr>
<td>Kempen E. van</td>
<td>Wagenberg D. van</td>
</tr>
<tr>
<td>Kroes H.</td>
<td>Weggemans T.</td>
</tr>
<tr>
<td>Kropman J.A.</td>
<td>Westra H.</td>
</tr>
<tr>
<td>Kruse L.</td>
<td>Wurff A. van der</td>
</tr>
</tbody>
</table>
A. Plenary speakers
SE RETOURNER VERS L’AVENIR

CONTINUITE DANS LA DISCONTINUITE : VERS UN NOUVEAU

MODE DE COMPLEXITE SOCIALE.

Jean REMY - Sociologue -
Université Catholique de
Louvain - Louvain-la-Neuve.
(Belgique)

Se retourner vers l'avenir suppose un mouvement complexe, à la fois regard vers le passé et ouverture sur le futur, l'opération corporelle et mentale est d'autant plus délicate qu'il s'agit de réagir sur un passé et un futur immédiate dans lequel on est soi-même affectivement impliqué. Mais c'est une situation fréquente en sciences humaines, et particulièrement en sociologie. Dans cette discipline, on peut faire l'hypothèse comme en médecine ou même en psychologie, que le sujet à observer et à comprendre est stable dans le temps. Face à l'évolution de la vie sociale, l'observateur est pris dans un jeu affectif personnel : nostalgie ou rejet, espoir ou désenchantement ... D'où la vigilance méthodologique et le dédoublement critique doivent devenir l'attitude de base. C'est particulièrement vrai dans le cadre de cette analyse qui voudrait se centrer sur l'évolution sociale. Nous caractérisons la situation actuelle par les termes : continuité et discontinuité - nouveau mode de complexité sociale. Tout cela se déroulant à un moment qui n'est pas encore une période de stabilisation, mais qui est marqué par la transition et donc par l'indétermination quant aux modalités concrètes que l'avenir va revêtir.

Dans ce cadre, nous excluons l'analyse du tiers-monde marqué par des pressions démographiques, des concentrations de populations, des évolutions dualistes qui posent les problèmes à une échelle sans commune mesure avec la nôtre. Nous nous limiterons donc à l'analyse de la société occidentale en ayant comme point de départ l'Europe avec une ouverture sur les États-Unis. Le point d'ancrage de l'observation est décisif, si l'on veut préparer une étude comparative qui permettrait de détecter les similitudes et les différences de chaque entité. Cette préoccupation méthodologique est plus centrale en sociologie qu'en psychologie, vu que l'on doit faire l'hypothèse que la société n'est pas plus homogène dans l'espace qu'elle n'est stable dans le temps.

Dans le regard vers le passé et l'ouverture vers l'avenir, on pourrait caractériser le changement par une inversion de la conjoncture socio-affective. La période antérieure se caractériserait par un moment d'optimisme, d'audace, qui rejette le passé pour expérimenter sans trop de prudence des nouvelles. Depuis quelques années, on serait dans une période marquée par le pessimisme, la prudence, le repli passif ... Nous serions dans un temps de digestion, de bilan, en vue d'améliorer les opérations ultérieures tout en restant dans la même logique sociale. Si le bilan nous paraît indispensable et nous nous y livrerons de temps à autre, le changement ne nous paraît pas relever uniquement d'une inversion de conjoncture réversible de plus ou moins long terme ... L'hypothèse sous-tendant l'analyse est que nous sommes
pris dans un mouvement long. La rupture et la discontinuité en sont la caractéristique mais elle n'est pas telle qu'on la rêve dans certains groupes alternatifs. Il y a une continuité qui a accentué la complexité sociale. Mais celle-ci se fait selon des modalités nouvelles. D'où, il y a beaucoup de chance que les trente prochaines années ne seront pas simplement une reprise des cinquante dernières années en améliorant les procédures et les critères.
Cette évolution vers plus de complexité ne nous paraît pas s'interpréter d'abord en terme de différenciation fonctionnelle ou de remise en cause de celle-ci. Il s'agit plus d'une articulation nouvelle entre une pluralité de dimension qui entre en tension en devenant plus autonome l'une par rapport à l'autre : le fonctionnel et l'existential, l'existential voêtu en terme de symbolique collective ou d'affectivité personnelle.
Cette tension entre une pluralité de dimension se combine avec une évolution des morphologies de l'habitat, où il ne s'agit pas simplement de revaloriser la petite échelle par rapport à la grande – le mot échelle étant pris au sens de l'architecte et non du géographe. Le diversité des échelles et des paramètres implique des compositions hétérogènes, qui ne sont plus dominées par la géométrie euclidienne.
Cette évolution vers un nouveau mode de complexité se passe d'ailleurs dans une crise des utopies rationnelles qui ont inspiré l'urbanisme par- ticulièrement depuis le 19e siècle. Ces utopies rationnelles engendraient des doctrines où les effets sociaux des formes architecturales étaient surdéterminées. Elles négligeaient par ailleurs l'analyse des processus sociaux et de leurs liens multiples avec les dispositifs spatiaux.
L'analyse suivante comportera trois parties : approche pluridimensionnelle de la ville, composition hétérogène et mise en question de la géométrie euclidienne, crise des utopies rationnelles et analyse procés- suelle.
I. Approche pluridimensionnelle : autonomie et médiation –
Morphologie de l'habitat.
Bien des réactions dans les dernières années se sont focalisées sur les transformations en terme de morphologie de l'habitat. Il y a d'abord le zonage monofonctionnel, renforcé par les unités d'équipement et de services de grande dimension : centres d'achats, hôpitaux, écoles. Vient ensuite l'importance de l'infrastructure de transport dû à l'usage de l'automobile, celle-ci favorisant en autre la dispersion en des endroits accessibles pourvois de parking. Ensuite, les technologies nouvelles des constructions promues par des entreprises de grande dimension favorisent les bâtiments en hauteur notamment du point de vue du logement. Ceci modifie les rapports des familles à l'environnement. Le développement des milieux suburbains avec des maisons individuelles parfois très semblables, dispersées dans la verdure, modifie d'une autre manière le rapport de la famille au contexte social. La standardisation qui découle au niveau du logement, surtout dans le cadre de bâtiment en hauteur, diminue la capacité d'appropriation et la relation affective entre l'habitant et son chez soi ...
Toute cette évolution vers des produits fabriqués à grande échelle, favorise une monoculture peu propice à créer l'identité du lieu surtout que l'architecture se fondait sur un propos universel avec peu de sous- cis de continuité locale. Bref, tout cela aboutit à une remise en ques- tion de la morphologie urbaine traditionnelle : enchaînement de rues et de places, discontinuité entre l'intérieur et l'extérieur de la ville,
opposition entre les quartiers et les centres ville, mixité des fonc-
tions dans chacun des espaces, peu de signes verbaux ou abstraits,
beaucoup de symboliques concrètes. Au lieu de cela, éclatement du cen-
tre, dispersion et spécialisation fonctionnelle, surcharge de signes
abstraits ... Plus d'espace support de vie collective.

Face à ces constatations partant d'une évolution affectant la mor-
phologie de l'habitat, les groupes alternatifs ont souvent proposé des
options inverses. Retour au passé, à la petite dimension, à la mixité ...
Une intense partie du débat tournait autour de la différenciation fonc-
tionnelle et fondait la critique sur une analyse en terme existentiel,
comme si cette dimension pouvait s'imposer et remplacer la préoccu-
patin fonctionnelle. C'est ici que nous voudrions faire évoluer le débat
vers une prise en compte de la pluridimensionnalité de la
réalité urbaine.

Pluralité d'approche de la ville.

Ainsi la ville peut être abordée et donc définie à partir de points
de vue différents. La ville peut se définir par une morphologie de
l'habitat. C'est à cette définition qu'il vient d'être fait référence.
Cette morphologie de l'habitat peut être associée à diverses caracté-
ristiques de la vie sociale. Elle permettrait par exemple d'articuler
des modes divers de territorialité : le quartier où il faut résider
pour être chez soi, le centre ville comme territoire commun à des rési-
dents et à des non résidents. La rue et la place apparaissent alors
come des espaces favorisant une forme de sociabilité ouverte à la ren-
contre semi-aléatoire.

La ville peut être également définie par une composition sociodémo-
graphique à la manière de Halbwachs ou de Wirth : volume, densité, hété-
térogénéité des populations. A partir de là, on peut analyser les effets
de stimulation sur la vie sociale, des seuils quantitatifs, des stress
communicationnels, des masses critiques, suffisantes pour soutenir la
diversification.

A ces deux définitions dont le point de départ est descriptif, on
peut opposer deux autres où le point de départ est davantage de type
analytique : une définition structuro-fonctionnelle et une définition
socio-affective. Ce sont les deux dimensions qui vont servir de base à
l'analyse suivante. La première est associée aux diverses fonctions
qui se structurent et trouvent leur base organisationnelle à partir de
la ville. La ville fait converger des informations, permet la formation
de réseau d'échanges qui diminue le coût de diverses décisions, et
d'innovations. La ville est ainsi perçue comme un contexte accroissant
l'efficacité fonctionnelle des diverses activités nécessaires à la vie
sociale. La définition socio-affective ne part plus de la notion d'activi-
vité mais d'action.

Le point de départ n'est plus un problème à résoudre mais une personne ou un agent en recherche d'un espace/temps
dans lequel vont se dérouler les mises en scène et les scenario
sociaux. Ainsi la ville peut-elle être un espace qui compose d'une
certaine manière la sécurité et le risque, le connu et l'inconnu. La
ville devient donc un espace où l'on peut jouer à l'aventurier qui
prend des risques sans trop de conséquences, ou à l'explorateur qui a
toujours quelque chose à découvrir, ou un espace où l'on peut entre-
tenir toute une gamme de relation entre la relation intime et la re-
lation désimpliquée ... Ainsi l'air de la ville rend libre, comme disait
Simmel.
Dans certains contextes, les diverses dimensions de la ville s'interpénètrent, au point que l'une implique l'autre. Nous faisons l'hypothèse que se développe actuellement une situation où chaque dimension prend son autonomie et peut se développer selon une rationalité propre. Ainsi dans les cinquante dernières années, la ville a pu développer une efficacité fonctionnelle, alors que bien des aspects du niveau socio-affectif étaient moins bien résolus.

Dissociation entre les diverses dimensions.

Cette dissociation est favorisée par les techniques modernes, par les moyens de déplacements des personnes, des objets et des messages. Cette mobilité dans l'espace permet de développer des échelles adaptées au structuro-fonctionnel. Cette dimension prend de l'autonomie par rapport aux définitions descriptives. La formation des réseaux d'échanges ne passe plus nécessairement par la place publique et le centre urbain, c'est-à-dire par la morphologie de l'habitat. Par ailleurs, la densité des contacts s'appuie plus de façon aussi exclusive sur la densité physique. Ainsi se développe "the invisible city" chère à L. Mumford. Alors que le structuro-fonctionnel s'affirmait de façon beaucoup plus autonome, la dimension existentielle ou socio-affective a, elle aussi, pris de l'ampleur surtout en dehors des exigences du travail professionnel. Au lieu d'une vie axée de façon prédominante vers le succès ("achievement"), a pris du poids l'exigence d'épanouissement personnel ("selffulfilment") (2).

Cela est d'ailleurs relié à des évolutions structurelles. Le revenu moyen qui n'avait guère évolué depuis le début du siècle jusqu'en 1950, a été multiplié par 2,5 de 1950 à 1980. Pendant cette même période, le budget des ménages s'est fortement transformé. Le % consacré à des biens alimentaires et de premières nécessités a fortement baissé. Par contre, le % consacré au loisir et à la formation a fortement augmenté, de même la part dévolue à des objets dont l'usage est lié au temps libre. Le temps de travail a diminué, le niveau scolaire a augmenté, la distribution des revenus a renforcé les positions moyennes, les tâches liées à la manipulation de l'information se sont développées au détriment de celles consacrées directement à la fabrication des objets. L'agir significatif n'est plus réduit au travail professionnel, dans un contexte où les loisirs avaient comme tâche principale d'être un moment de récupération et de formation complémentaire... Les activités hors des espaces - temps professionnels ont pris une signification en elle-même. Un processus d'individuation a diminué l'attract pour les appartenances collectives massives en faveur d'appartenance plurale et sélective. Les développements urbains y ont d'ailleurs contribué. On est loin du propos de la ville de Vienne dans les années 20, qui voulait utiliser la seconde ligne de rempart encore en friche, après les démolitions du 19e siècle, pour développer un ring prolétarien en opposition au ring bourgeois construit à la fin de l'empire des Habsbourgs. La revendication depuis quelques années est plutôt de type égalitaire. Un certain nombre d'ouvriers arrivant à un degré d'aisance suffisant, ont eu comme préoccupation de ne plus être reconnus comme tels en dehors du milieu de travail. Ceci est favorisé par la mobilité spatiale qui permet de dissocier espace-temps professionnel et extraprofessionnel. Les deux scènes peuvent être d'autant plus étanches l'une à l'autre qu'elles sont connectées sur
un fond d'anonymat ... Ainsi prend forme un processus d'individuation qui est favorisé par des outils individuellement appropriable comme l'auto et la T.V. Ce processus est entretenu par la publicité et permet à la culture "psy" de trouver une large zone de déploiement. Cet individu qui se veut créatif est un être intentionnel, ce qui ne veut pas dire un être rationnel comme l'a bien compris la publicité : dans l'intentionnel rentre une part d'imaginaire et de présentation de soi. D'où comme disent les publicistes, il y a développement d'une multiplicité des styles de vie qui se présentent comme sur un marché car ils ont des liens relativement lâches avec les caractéristiques "objectives" des clients, ce qui accroît les degrés de liberté de ceux-ci.

Dissonance entre la logique fonctionnelle et la logique existentielle.

Comme la dynamique fonctionnelle dont nous avons parlé a toute chance de ne tenir compte que du rationnel, on se trouve dans une situation de dissonance et de recomposition sur un mode plus complexe. La logique existentielle ne va pas reprendre le dessus sur la logique fonctionnelle. Au contraire, nous faisons l'hypothèse que celle-ci va peser de tout son poids, peut être sous des modalités nouvelles. Les deux ayant pris un développement autonome, il est décisif pour l'avenir de trouver des médiations pour répondre à cette confrontation, même si les formes concrètes sont incertaines et à inventer.

Si l'on se met du point de vue existentiel, l'usager est incité à se constituer en instance critique. C'est notamment le résultat de divers mouvements collectifs des trente dernières années. Ceux-ci ont valorisé des formes de participation plus directes notamment dans la conception de divers aspects du cadre de vie. Nous faisons l'hypothèse que la réaction critique du client, ne va pas se développer principalement à travers la discussion participative, quoique celle-ci soit importante pour aider le concepteur à faire des anticipations plus fines. Les réactions critiques vont passer davantage par l'utilisation de toutes les ressources ou retractions liées au statut de client (3) : qui peut choisir de consommer ou de ne pas consommer, de faire usage d'une chose plutôt que d'autre, qui demande à être traité avec tous les égards d'un peuple qui prend sa souveraineté du sérieux ... Cela risque de provoquer chez les usagers une autonomie critique, face aux services publics, dans la mesure où l'on prend conscience de son statut de client dans ce domaine comme ailleurs. Une telle attitude posera des problèmes aux technostructures administratives et politiques chargées de l'urbanisme et de l'aménagement du territoire. Ainsi en France, voici quelques années, lorsque le marché du logement s'est détendu, la clientèle s'est détournée des produits officiels, ce qui a dérouté au moins dans un premier temps autant les promoteurs immobiliers que certains fonctionnaires.

La situation de la Belgique est significative à cet égard, les plans sont peu contraignants, voire inexistant. Ceci doit avoir bien des effets néfastes du point de vue structuro-fonctionnel, la satisfaction vis-à-vis du logement et du cadre de vie y est élevée, les désordres relevant de l'absence du plan sont moins critiqués que les effets de certain plan régi par une rationalité fonctionnelle. Ceci indique comme bien la possibilité de s'exprimer avec fantaisie, à travers son logement et son cadre de vie, a de l'importance. Nous pensons que cette aspiration est en train de grandir. N'est-ce pas ce qui est recherché dans la
maison ancienne que l'on peut réaménager à sa façon ? Dans ce cas, il est intéressant de remarquer la transaction faite par les occupants. L'intérieur est muni de tout le confort moderne tandis que le caractère ancien de la façade est revalorisé.

Il en résulte une composition entre des éléments fonctionnels que l'on dit relever du registre du froid et l'ambiance associée au registre du chaud. Une même transaction se fait entre le souhait de fantaisie et d'autonomie et l'attract pour des espaces publics, support de convivialité. N'est-ce pas d'ailleurs dans ce genre de composition que vient s'insérer le post-modernisme guidé par un grand souci de comprendre le goût de la clientèle. Il se peut que cette simple évocation fasse réagir négativement les milieux de concepteurs formés à la manière des "avant-gardes". Mais elle est en connivence avec une situation où l'on essaye d'anticiper les tendances des usagers potentiels.

L'investissement affectif versus la symbolique collective.

Dans un contexte où s'affirme la dimension existentielle, celle-ci nous paraît prendre une forme particulière ; l'investissement affectif personnel prend le pas sur une symbolique collective. Cette évolution apparaît particulièrement en milieu rural, mais cela vaut également par rapport à la ville, relativement à certains quartiers. Il y a ceux qui parlent de leur village, comme "le" village non substituable à un autre, parce que chargé de toute une histoire collective vécue au fil des ans. Il y en a d'autres qui parlent du village dans lequel ils habitent comme d'un village auquel ils tiennent parce qu'il a des traits de la ruralité. Ce sont souvent des nouveaux venus qui surinvestissent sur l'habitat rural, le paysage... et qui veulent le préserver tel quel, au moins dans ses apparences extérieures. Pour les autres, au moins pour une partie d'entre eux, le village est un être vivant. Pour survivre, pour répondre aux nouveaux besoins des habitants, il doit évoluer. L'étayage est plus temporel que spatial... Les premiers nous apparaissent liés à une symbolique collective découlant d'une histoire vécue et partagée, les seconds nous semblent davantage à la recherche d'un investissement affectif personnalisé. Les deux dimensions qui pourraient être associées, nous paraissent également prendre distance l'une par rapport à l'autre. L'investissement affectif est à mettre en correspondance avec l'exigence d'autonomie et de créativité, mais son orientation sur un cadre de vie immobile, parce qu'il est doté d'une valeur de par son passé, a probablement un sens d'autant plus fort qu'il s'exprime dans un groupe en quête d'un enracinement temporel. C'est le cas des classes moyennes dont nous avons évoqué le développement quantitatif, et qui sont des groupes sans histoire. Ainsi peut-on faire de l'archéologie industrielle réapproprier des usines pour les transformer en logements, tout en gommant l'histoire des luttes ouvrières pour exalter le temps des pionniers. Par là, un combat social se transforme en une aventure individuelle, à laquelle on peut s'identifier tout en s'appropriant le passé pour en faire un lieu de vie familier. Ceci aboutit à l'extension de la notion de patrimoine. Le lien entre la restauration et un groupe en quête d'un passé et d'un enracinement explique probablement l'évolution des destinataires dans une opération comme celle de Bologne.
Mâle que l'opération soit orientée au départ par un mythe prolétarien, les populations ouvrières du départ ont progressivement quitté les lieux même si les prix étaient abordables. Car le cadre de vie réétabli ne correspondait plus à leurs aspirations. Celles-ci sont celles d'un groupe qui disposant d'un stock de traits symboliques, cherchent à les rebricoler. Par là, il se compose un passé et donne une unité à des éléments d'origine hétérogène. N'est-ce pas à nouveau un des propos d'une architecture post-moderne ?

L'investissement affectif ne s'oriente pas seulement sur l'invention d'un nouveau rapport au passé, il s'exprime dans un nouveau rapport à la nature. Ce dernier engendre un mode nouveau de critique de la dimension structuro-fonctionnelle. Il est associé à la fois à une symbolique d'harmonie cosmique et à une vigilance pour éviter la dégradation des ressources fondamentales de l'humanité. L'harmonie cosmique était déjà dans les préoccupations de Le Corbusier. Si on a pu le critiquer parce qu'il manquait d'une sensibilité anthropocentrique qui le rendait peu apte à imaginer des espaces de rencontres et de sociabilité, il n'en va pas de même pour la composition de ses bâtiments en liaison avec une symbolique cosmologique : lumière, soleil, insertion dans le site. Le couvent de la Tourette est révélatrice du sens du sacré qui s'exprimait chez lui à travers le lien au cosmos. Mais il avait eu bien des prédécesseurs, tel le célèbre architecte américain Wright. Tous ces courants étaient d'une certaine manière précurseur d'une sensibilité qui s'est développée entre autre dans les mouvements écologistes... qui ne veulent plus pressurer la nature mais vivre en harmonie avec elle.

A côté de cette dimension "spirituelle" s'est créé un sentiment du risque que les technologies modernes introduisent dans la vie quotidienne. Cette sensibilité est d'ailleurs plus marquée dans les pays du Nord (notamment en Allemagne, même en Suisse) qu'en France (2). Elle surgit d'un sentiment que la terre est devenue comme une station spatiale. Transformée en milieu artificiel par toutes les technologies, elle est à la merci de la panne. Ainsi se crée des courants d'opposition. Certains acceptent d'entrer dans certaines opérations, si le risque est endossé d'un certain seuil estimé acceptable. Pour d'autres, il faut au contraire exclure toute prise de risque vu l'ampleur de la catastrophe qu'il entraînerait... Alors que décline le sens civique exprimé en terme traditionnel de responsabilité vis-à-vis de l'État, se redécouvre une solidarité de l'être biologique comme être universel bénéficiant à tous indistinctement. En le préservant, chacun préserve sa vie, d'où beaucoup sont enclins à faire une série de gestes mineurs de préservation qui profitent aux autres qu'à eux-mêmes et à leurs enfants. Ainsi, de diverses manières la dimension existentielle tend à s'affirmer et à se réorienter. Cette évolution se fait dans une tension entre diverses conceptions de la sociabilité citadine à promouvoir.

À titre d'exemple, rappelons les anciens débats aux États-Unis, entre Rossak (4) et Seemert (5). Le premier insistait sur le quartier et la communauté d'interconnexion. Le second au contraire valorisait la rencontre avec l'imprévu et l'inconnu qui implique des lieux divers d'échanges aléatoires et hétérogènes.

La valorisation d'un type d'habitat à partir de la dimension existentielle ne signifie nullement que la dynamique structuro-fonctionnelle ne suit pas son chemin propre. Ainsi le centre urbain peut être recherché pour son habitat traditionnel et ses modes de sociabilité, cela
n'aboutit pas à reconstituer un centre dans lequel circule les informations décisives pour la gestion des problèmes collectifs. Ces informations peuvent aussi bien s'échanger dans des espaces privés périphériques comme des clubs de golf... La logique fonctionnelle va continuer son chemin et elle-même se remodeler, quitte à ce que soit utilisé comme ressources dans la compétition, l'originalité de l'histoire de la ville et de son habitat. Ceci au niveau de l'Europe des Villes, qui à certain égard prend la succession de l'Europe des Régions. Dans la structuration des grandes activités collectives va-t-on continuer une évolution où l'économique se délocalise, alors que la politique s'investit sur des espaces plus restreints ? L'économique lui-même ne va-t-il pas dépendre d'une autre interprétation des échelles spatiales où les petites entreprises d'origine locales s'imbriqueront dans des réseaux internationaux ?
A partir de là, on peut s'interroger sur les contextes où la vie locale à petite échelle est favorable à l'émergence d'un esprit d'initiatives, du sens de l'entreprise, d'une socialisation du risque. Dans ce cas, la dynamique existentielle et la dynamique économique s'entremêleraient l'une l'autre. Cette conjoncture pourrait ne pas exister dans les anciennes régions industrielles. Vu leur tradition, ces dernières pourraient être moins aptes à diffuser un esprit d'entreprise chez des populations habituées au salariat.

II. Composition spatiale hétérogène et géométrie euclidienne.

La première étape constituant la base de l'analyse, les phases ultérieures seront présentées de façon plus succinctes. Nous avons dégagé l'existence d'une pluralité de dimensions ayant chacune leur logique propre, sans que l'une ne puisse se réduire à l'autre ou se comprendre à partir de l'autre ... Dans les conjonctions et les médiations à inventer, l'espace peut jouer un rôle important, pour cela il doit permettre de composer des dimensions hétérogènes.

Dans les dernières années, des groupes alternatifs ont prononcé l'inversion des échelles de composition spatiale. Au lieu de partir de l'agglomération dans son ensemble considéré comme limite de base de composition, à partir de laquelle on passe progressivement du global au partiel, on suggérait un mouvement inverse. Le point de départ devenait la petite entité où les problèmes sont considérés dans leur complexité, pour remonter progressivement vers des unités plus larges où se confrontent et se négocient des enjeux communs. Les deux points de vue au lieu de se substituer l'un à l'autre devraient se composer. Le premier accentue l'élément structuro-fonctionnel — le second tient davantage compte de divers éléments de vie quotidienne. Ainsi dans une agglomération comme Bruxelles jouant des rôles nationaux et internationaux, comment permettre le développement des grandes fonctions urbaines, sans destructurer la vie des quartiers ? En outre, même du point de vue de la vie des populations, le quartier n'est pas nécessairement l'unité de base des rencontres et des mises en scène sociales. Une analyse de type territoriale doit se composer avec une analyse en terme de lieux de rencontre dont les limites sont floues et qui se distribuent de façon discontinue...
Au niveau des quartiers vus comme des territoires sociaux, les limites ne se présentent pas nécessairement à la manière de frontières supposant un passage brusque entre un dedans et un dehors. Bien des limites supposent la formation de lisières. La lisière est un espace intersticiel où l'on n'est plus tout à fait dans le bois sans être vraiment dans le champ. Cet espace hybride peut être très productif et n'est pas nécessairement un déchet... Entre deux quartiers, des lisières peuvent être importantes pour des échanges en terrain neutre, mais néanmoins proches. Or un urbanisme fonctionnel risque de vouloir découper les espaces sociaux par des limites nettes, et faire disparaître tout ce qui est transition et passage progressif, même s'il a beaucoup de sens dans une appropriation existentielle de l'espace. Dans une salle de cinéma, le hall de transit peut y être plus important pour les rencontres que la salle de projection... On pourrait aussi analyser certain lieu comme des interstices à un quartier.

Ainsi tout une architectonique spatiale se doit de composer plusieurs dimensions qui supposent des discontinuités internes. Les niches "écologiques adoptées à certaines populations", des interstices sont à composer avec les grandes structurations fonctionnelles. La morphologie de l'habitat urbain traditionnel : rue, place... est à insérer dans des espaces conçus selon d'autres règles. Les axes de communication ou leur fonction de liaison doivent, comme l'avaient jadis développé Appleyard et Lynch (6), permettre une appropriation visuelle de l'entité collective.

Ces compositions d'exigences multiples voire hétérogènes, supposent que l'on abandonne le primat donné à la géométrie euclidienne comme support pour les conceptions urbanistiques. La géométrie euclidienne permet une objectivation de l'espace et une maîtrise instrumentale. Tout ne peut se réduire à un espace abstrait, homogène, réversible... Elle doit se combiner avec d'autres modes d'appréhension de l'espace et notamment avec la topologie. De diverses manières, on est en quête d'une nouvelle matrice de composition urbaine et régionale... le champ d'indétermination est d'autant plus grand que l'on se trouve dans un contexte où il y a une crise des doctrines urbanistiques et architecturales.

III. Utopies rationnelles et analyses processuelles.

Depuis le XIXe S. l'urbanisme a été marqué par les utopies rationnelles. Ces dernières se sont développées en Europe à partir du XVIe S. Thomas More invente le terme et propose une cité idéale sur une ile. Dans cette cité, où il n'y a pas de problèmes économiques de rareté, l'égalité et le bonheur sont créés à partir d'une série de procédures rationalisant la vie quotidienne. Cette rationalisation suppose des règles juridiques et une maîtrise géométrique de l'espace. Ces formes spatiales ne sont pas dégagées à la manière dont A. Dürer (8), dans son Manuel des fortifications, (Nuremberg 1527) fait le plan commenté d'une ville idéale fortifiée. Pour se faire, il part de diverses expériences pour les comparer et en dégager un modèle. Au contraire, la forme s'imagine à partir d'une déduction. Cela ne posait guère de problèmes, lorsque chez Thomas More l'utopie se présentait comme un genre littéraire. L'espérance d'une cité idéale pouvait alors s'investir dans une fiction qui exaltait le rationalisme social. ultérieurement, les projections utopiques devinrent un modèle à réaliser.
Par la médiation de l'architecte, l'utopie se mit au service du prince qui révait d'être l'initiateur d'une cité idéale construite à sa gloire. Une maîtrise artistique mais rationnelle de la vie sociale pourrait donc se réaliser à partir du champ politique. Progressivement un lien se développe entre urbanisme et utopie. Il est marqué par les caractéristiques suivantes : proposition d'une société alternative à caractère globalisant - promu par une minorité active - fondant son espérance sur un rationalisme social - comptant sur un pouvoir politique pour imposer ses vues - confiant dans la capacité des formes spatiales à produire progressivement une vie sociale idéale. Ces formes spatiales organisant les détails de la vie quotidienne, sont proposées comme ayant en elle-même une valeur définitive. Elles instaurent d'une certaine manière un éternel présent. Elles ne sont donc pas analysées dans leur évolution. D'ailleurs, il est probable que le monastère a été une figure analogique inspirant tout ce courant utopique. M. Weber constatait de son côté qu'à partir de la Renaissance bien des institutions sociales étaient conçues comme une sorte d'appropriation séculière du monastère et de son ascèse. Le Corbusier n'a-t-il pas été inspiré dans la conception de l'unité collective d'habitations par le modèle de La Chartreuse? La cellule devient l'unité familiale et s'insère dans un bâtiment qui a une autonomie interne de services. Le paquebot est une transposition plus ludique que l'on retrouve aussi chez Le Corbusier.... Toutes ces références relèvent de ce que H. Goffmann appellerait une institution totale, close sur l'extérieur et coordonnée de l'intérieur.

Les doctrines urbanistiques dans cette dérive se caractérisent par la quête d'une forme spatiale idéale et donc reproductible. Comme le dit F. Choay (7) cette recherche est commune aux divers courants : on la retrouve chez ceux qui proposent un modèle de culturel comme chez ceux qui proposent un modèle progressiste.

Le souci de dégager la forme juste va soustraire la quête de Le Corbusier "Toute ma vie est consacrée au dessin : dégager, décrypter les secrets de la forme ...". Cette forme juste va se dégager par comparaisons, au delà des styles et des manières ... "La grande ville est une catastrophe menaçante pour ne pas avoir été composée par un esprit de géomètre" ... "La ville se meurt d'être non géométrique"... "La géométrie est le point de rencontre entre le beau et le vrai"... "Obéissant à telles règles, les zones d'habitations offriront un spectacle de clarté, de grâce, d'ordre et d'élegance". Cette mise en ordre doit être promue par une avant garde clairvoyante : "Le monde a besoin d'harmonie et de se faire guider par des harmonisateurs". Ceux-ci doivent influencer les pouvoirs de décision en se présentant comme les interprètes des intérêts vrais du public. D'où pour Le Corbusier, il est décisif d'influencer la techno-structure de l'appareil politique, comme H. Raymond l'a bien montré dans un texte présenté au Colloque Le Corbusier à Louvain-la-Neuve en déc. 87. L'avant garde a la mission de dégager les besoins fondamentaux de l'homme : "rechercher l'échelle humaine, la fonction humaine, c'est définir les vrais besoins. Ils sont peu nombreux et identiques entre tous les hommes". Ainsi est affirmé le lien intrinsèque entre l'échelle humaine et les besoins. En outre, il s'agit d'atteindre l'universel, au delà de la diversité des cultures, en dégageant les constantes physiologiques, ergonomiques, psychologiques ... À ce niveau, les sciences humaines peuvent être d'un grand apport.
Le Corbusier exprimait la préoccupation d'une époque et cherchait à l'orienter. Des courants de rupture émergent depuis une vingtaine d'années exprimant une conjoncture socio-affective différente. À l'universalisme s'oppose le souci d'une continuité avec un passé local basé sur un particularisme. À la symbolique cosmologique prédominante substitue une préoccupation pour les espaces de convivialité et de rencontre, qui amène à redécouvrir les significations des morphologies traditionnelles de l'habitat urbain, la rue notamment si décrite par Le Corbusier. En outre, dans cette ambiance de recherche, voire d'insécurité, la chaleur des compositions spatiales est valorisée par rapport à la netteté et à la rigueur. Cette évolution de sensibilité est peut être l'indicateur d'une rupture plus profonde qu'il n'apparaît à première vue.

Dans diverses couches de population, l'insatisfaction face à des réalisations urbanistiques, combinée à un changement de conjoncture générale, a mené à douter quelque peu d'une maîtrise rationnelle par une imposition des formes.
Le primat d'une composition formelle n'incluant guère une analyse en terme de processus et d'enchaînement de causes est ébranlé par l'introduction de l'analyse économique et des sciences humaines en général qui reposent sur un autre mode de raisonnement. La sociologie notamment va se demander en quoi certains dispositifs spatiaux accroissent la chance de survenance de certaines réactions qui permettent la solution de certains problèmes de coexistence. L'interrogation se prolonge sur les projets réalisés pour observer les effets sociaux qui en découlent et qui peuvent être inverses de ceux escomptés. Il faut donc réévaluer et réadapter. Tout cela présuppose l'analyse en terme de processus à orienter sans qu'ils soient totalement maîtrisables.

De diverses manières émerge un retournement de tendance qui depuis vingt ans fait baisser la crédibilité des doctrines que jadis on aurait exalté au nom du progrès. Le rationalisme social, la capacité du politique à imposer un modèle idéal, le rôle d'avant garde anticipatrice, tous ces éléments de l'utopie ont tendance à avoir moins de poids. Est-ce le début d'une période marquée par plus d'incertitude, quelque peu déshanchée car manquant de modèle sur lequel fonder une espérance?

La baisse de crédibilité des doctrines à visée utopique aboutit à une recherche tâtonnante de procédures alternatives. La distinction entre type urbanistique résultant d'une interaction complexe entre usagers et concepteurs et modèle préconçu s'imposant par le pouvoir est probablement une clé pour comprendre l'évolution.

Cette crise des doctrines survient à un moment où les sciences humaines sont assez développées pour être partie prenante dans l'acte de conception. Mais elle est à relier avec la multiplication des agents spécialisés intervenant dans la production du cadre bâti : promoteurs immobiliers, compagnie d'assurances investissant dans l'immobilier, industrie de la construction. Chacun de ses agents est mu par une rationalité propre, mais a en commun de travailler pour une clientèle dont il doit anticiper les aspirations pour les transformer en demande sociale. La logique économique vient s'infiltrer de façon plus étroite dans la régulation politique. La transaction est d'autant plus complexe que se développe des modes nouveaux de rétroactions rapides et fortes des usagers. La logique économique n'est plus à regarder d'abord comme un élément pervertissant la pureté du politique. Il s'agit de deux logiques complémentaires, dynamisées par un jeu de critique réciproque sous le regard vigilant des utilisateurs. Un en revient au problème de la partici-
pation à travers un renforcement de l'autonomie du client. Dans une tel-
le évolution, la position du concepteur change. Il ne s'agit plus de
prendre des risques circonsidérés en fonction d'une vue idéalisée de
l'avenir. Il faut entrer dans un jeu où les innovations et la création
sont valorisées, à condition qu'elles fassent valoir les avantages com-
paratifs qu'elles apportent. Ceci vaut autant pour les relations de
clientèle qui passe par des liens de marché que pour les autres. La
transaction sociale est appelée à devenir multilatérale et complexe.

Ce sont là quelques éléments que nous proposons à la manière d'hypo-
thèse de travail. Celles-ci ont été exprimées de façon abrupte, peut
être même provoquante, de manière à induire un processus de falsifica-
tion. L'idée directrice est restée constante : au-delà d'un retournement
de conjoncture socio-affective, on est pris dans un mouvement long, qui
amène à un nouveau mode de complexité. Dans cette évolution, la position
du concepteur se modifie.

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INSTRUMENTAL AND SPIRITUAL VIEWS OF PEOPLE-ENVIRONMENT RELATIONS: CURRENT TENSIONS AND FUTURE CHALLENGES

ABSTRACT

Three philosophical views of people-environment relations are examined. The minimalist view, typical of the design professions prior to the emergence of environment-behavior research during the 1960s, assumes that physical settings play a minor or negligible role in facilitating the goals and aspirations of their users. The instrumental perspective, coinciding with the rapid expansion of people-environment studies, views physical settings as "tools" for supporting individual productivity and organizational effectiveness—as the physical means for achieving key behavioral and economic goals. In contrast to the instrumental view, much recent research reflects a spiritual orientation in which physical settings are viewed not as tools, but as ends in themselves—as contexts in which important human values can be cultivated. Key points of contention among these perspectives are discussed, including the growing tensions between technological development and questions of human value; contradictions between instrumental and symbolic functions of environments; the trend toward standardization and modularized design as opposed to the quest for uniqueness and customization; and alternative views of the major priorities for environmental design research and practice. In light of these issues, the prospects for people-environment studies during an era of accelerating change and complexity are assessed.

PREFACE

I want to express my deep appreciation to the conveners of this conference for inviting me to address the delegates of IAPS-10 as a plenary speaker. I am grateful for the opportunity to participate with you in the conference. In view of the rapid expansion of people-environment studies in recent years, the conference theme of "Looking Back to the Future" offers a timely and welcome opportunity to take stock of recent developments and to assess priorities for future work.

PHILOSOPHICAL FOUNDATIONS OF PEOPLE-ENVIRONMENT RESEARCH

The study of people-environment relations emerged as a distinctive scientific field during the last two decades, marked by the establishment of new journals, monograph series, handbooks, professional societies, and both regional and international conferences. Yet, the philosophical roots of people-environment studies span several centuries and cultural contexts. Examples of these early precedents include the religious traditions of Shinto and Buddhism and the more recent writings of 18th and 19th Century scientists and philosophers such as Galton (1883), von Uexkull (1909/1957), Watsuji (1935/1961), Lewin (1936), Tolman (1948), Bachelard (1964), and Leontyev (1975).
The present discussion is not intended to provide an historical overview of these philosophical and scientific traditions. Excellent analyses of these developments are available elsewhere (note 1). Rather, I will focus on three distinctive views of people-environment relations that I believe are reflected in the contemporary scientific literature: namely, the minimalist, instrumental, and spiritual perspectives. Having contrasted the key assumptions underlying these orientations, I will discuss some important tensions between the instrumental and spiritual perspectives and the challenges that they pose for future research.

The minimalist view
This perspective assumes that physical environments exert minimal or negligible influence on the behavior, health, and well-being of their users. This assumption was prevalent among designers and behavioral scientists prior to the mid-1960s. Aside from meeting people's needs for safe and comfortable shelter, designers felt free to indulge their own aesthetic whims without concern for occupants' environmental preferences. Similarly, researchers all but ignored the links between physical environmental conditions, human health, and behavior.

An example of the minimalist perspective is Herzberg's (1966) characterization of the physical environment at work as a "hygiene factor"—something that detracts from job satisfaction when its quality is very low but cannot improve employee morale at moderate or even high levels of quality. According to Herzberg, employee motivation and morale depend primarily on economic and social incentives at work, but are minimally related to the physical quality of the workplace. Maslow's (1962) theory of psychological health and "self-actualization" also reflects a minimalist stance toward the environment. While recognizing that the physical and social environment serves basic human needs for shelter and security, Maslow contends that the environment ultimately impedes psychological growth and autonomy and, therefore, must be "transcended". In his words, "I feel we must leap ...to the clear recognition of transcendence of the environment, independence of it, ability to stand against it, to fight it, to neglect it, or to turn one's back on it....(p.180)".

The minimalist view of people-environment relations was abruptly challenged by the global dilemmas of the 1960s, including the foreboding "silent spring" of environmental pollution (Carson, 1962), the "population bomb" (Ehrlich, 1968), and the "tragedy of the commons" (Hardin, 1968). Suddenly, the world was awakened to the very real and immediate impacts of the physical environment on human health and behavior. The emergence of people-environment studies during the late 1960s reflected widespread rejection of the minimalist perspective. The rapid growth of this field over the past two decades has been fueled by efforts to replace minimalist thinking with alternative conceptions of environment and behavior in which the strategic design of physical settings is seen as a vehicle for promoting human effectiveness and well-being.
The instrumental view

The instrumental view views the physical environment as a means for achieving important behavioral and economic goals. This "means-ends" orientation is clearly reflected in the functionalist or Modern movement in architecture (cf., Gropius, 1962) and in the positivist tradition of behavioral science (cf., Franck, 1987). The instrumental view pervades much of the recent research on strategic facilities planning. As noted by Becker and Sims (1986, p. 68), "corporations have begun to realize that their facilities can have a substantial effect on organizational and individual performance and productivity." Similarly, Brill, Margulis, and Konar (1984, p. 27) state that "we can reconceptualize the office as a tool and not just as a place to house tools. It is not such a conceptual leap, for Webster defines a tool as 'something that serves as a means to an end; an instrument by which something is effected or accomplished.'

Instrumental analyses of people-environment relations measure the quality of environments by their capacity to promote not only behavioral and economic efficiency, but also enhanced levels of occupants' comfort, safety, and well-being. For example, architecture has been described as an instrument for promoting public health (Archea & Connell, 1986; Greenberg, 1988) and for enhancing the therapeutic effectiveness of health care facilities (Reizenstein Carman, Grant, & Simmons, 1986). Increasingly, empirical evidence for the health and behavioral effects of the physical environment is being used as the basis for revising existing building codes and for developing new design standards and guidelines (Cooper-Marcus & Sarkissian, 1986; Steinfeld, 1986).

From an instrumental perspective, research is viewed as an objective process by which knowledge is discovered and used to achieve technological solutions to environmental problems. Research activities are assumed to be value-neutral and as separate from the social dynamics observed and recorded within particular settings. Emphasis is placed on the refinement of standardized research tools for gathering reliable and valid data (cf., Beechel, Marans, & Michelson, 1987; Zeisel, 1981). Generally, quantitative methods are emphasized over qualitative techniques.

The spiritual view

A third philosophical orientation that has received increasing attention in recent years is the spiritual view of people-environment relations. This perspective stands in contrast to instrumentalist views of the environment in several respects. First, spiritually-oriented analyses construe the sociophysical environment as an end in itself rather than as a tool—as a context in which fundamental human values can be cultivated and the human spirit can be enriched. Environmental settings are designed not only to facilitate the smooth performance of everyday activities but also to provide places to which people are drawn by virtue of their symbolic and affective qualities. The overall quality of environments is measured in terms of the richness of their psychological and sociocultural meanings, as well as in relation to physical comfort, safety, and performance criteria. Moreover, rather than encouraging the development of standardized, technical solutions to environmental problems, the spiritual view of environment and behavior assigns greater value to customized, indigenous
design strategies that give expression to the unique needs and identities of particular user groups. These and other differences between the instrumental and spiritual perspectives are summarized in Table 1.

An emphasis on the spiritual dimensions of environment and behavior is evident in numerous religious, architectural, and social-scientific works. According to the religious precepts of Shintoism, for example, physical settings are designed to invoke sacred spirits and to foster a deep reverence for nature. Recent architectural and social science theories also highlight the symbolic and spiritual facets of environmental design. Franck (1987, p. 65), in her review of developments in architectural theory, observes that designers are turning away from positivism and functionalism and "are becoming increasingly interested in history, culture, myth, and meaning." For instance, Jencks (1985) calls for a symbolic architecture in which clients and designers develop "iconographic programs"—written statements of symbolic design intentions that are as explicit as their economic contracts. Similarly, Perez-Gomez (1983) emphasizes the poetic aspects of architecture while Alexander, Anninou, Black, and Rheinfrank (1987, p. 129) advocate a "new sensibility" in design, "in which human activity, human feeling, color, and light together create an ordinary human sweetness, something almost entirely missing from the works of this century."

Much of the recent work in environmental psychology, sociology, geography, and anthropology has addressed the issue of environmental symbolism, suggesting that physical objects and places gradually acquire social meaning through their association over time with group activities and experiences (cf., Cooper, 1974; Csikszentmihalyi & Rochberg-Halton, 1981; Duncan, 1985; Geertz, 1973; Relph, 1976; Seamon, 1979; Turner, 1969). This symbolically-oriented research distinguishes organized social settings from unoccupied or sporadically occupied places, in the sense that the physical milieu of the former has acquired "social imageability"—the capacity to evoke vivid and widely-held social meanings among their occupants (cf., Firey, 1945; Milgram & Jodelet, 1976; Stokols & Jacobi, 1984; Stokols & Shumaker, 1981). Once established, the symbolic qualities of the physical environment become a "surrogate" source of social influence—their impact on individuals' emotions and behavior can occur even in the absence of direct interpersonal contact.

Studies of the symbolic and spiritual dimensions of environments generally use qualitative methods to assess occupants' perceptions of environmental meanings. Such research often establishes a communication process for sensitizing occupants to alternative environmental meanings and for articulating and strengthening their values. Thus, rather than remaining aloof and objectively neutral, the research team becomes an active part of the observed setting, thereby exerting a transformative influence on the social organization and physical form of the environment (cf., Saegert, 1987; Stokols, 1988).
<table>
<thead>
<tr>
<th>Instrumental</th>
<th>Spiritual</th>
</tr>
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<tbody>
<tr>
<td>environment viewed as a &quot;tool&quot;, as a means for achieving behavioral and economic goals</td>
<td>environment viewed as an end in itself, as a context in which human values can be cultivated</td>
</tr>
<tr>
<td>emphasis on material features of the environment</td>
<td>emphasis on symbolic and affective features of the environment</td>
</tr>
<tr>
<td>environmental quality defined primarily in terms of behavioral, comfort, and health criteria</td>
<td>quality of environments measured in terms of the richness of their psychological and sociocultural meanings, as well as their comfort, healthfulness, and behavioral supports</td>
</tr>
<tr>
<td>emphasis on the development of design standards and environmental prototypes in accord with the activity requirements of general user-group categories (reliance on exogenous design guidelines)</td>
<td>emphasis on customized design in keeping with the unique needs of specific individuals and groups (development of indigenous design guidelines that are suited to specific contexts)</td>
</tr>
<tr>
<td>emphasis on the distinctness and separation of key functions associated with public and private life domains</td>
<td>emphasis on the integration of public and private domains, and the increasingly multifunctional nature of environmental settings</td>
</tr>
<tr>
<td>designed environments viewed as relatively stable and inanimate; little attention given to the generative and regenerative qualities of environmental settings</td>
<td>designed environments viewed as dynamic and organic extensions of individuals and groups, and as capable of serving as &quot;social surrogates&quot; (e.g., through symbolic communication of social support)</td>
</tr>
<tr>
<td>research viewed as the discovery and application of generalizable knowledge; research activities assumed to be value-neutral and as separate from the social dynamics observed and recorded within particular settings; greater emphasis on quantitative than on qualitative methods</td>
<td>research viewed as a communication process that can enhance the awareness, participation, and cohesion of environmental users; as a process for articulating and strengthening the values of participants; equal emphasis given to qualitative and quantitative methods</td>
</tr>
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</table>
CURRENT TENSIONS POSED BY THE INSTRUMENTAL AND SPIRITUAL PERSPECTIVES

The preceding discussion outlines some of the contrasting assumptions associated with minimalist, instrumental, and spiritual views of people-environment relations. This brief sketch reveals certain philosophical tensions, especially between the instrumental and spiritual views of environment and behavior.

One source of tension is the potential contradictions that can arise between the instrumental and symbolic meanings of physical objects and places. For example, the incorporation of new technologies and efficient furnishings within an office may convey managerial commitment to improving employee productivity and morale. However, if the newly-installed equipment is unequally distributed among high- and low-status workers, then these physical objects can become a symbol of alienation and deprivation for many members of the setting. In Merton's (1957) terminology, the manifest instrumental meanings of the environment can be at odds with its latent symbolism. The material elements of the office are configured to maximize efficiency and cost-effectiveness. But at a symbolic level, the organization of the setting sorely lacks what Mannheim (1940) referred to as "substantial rationality", or intelligent insight into the interrelations among participants and events within a given situation.

The inherent tensions between instrumental and spiritual views of environment and behavior may be intensified in coming years by society's growing reliance on high technology and increasing emphasis on the regulatory and public health implications of environmental design. From an instrumental perspective, design technology is seen as a powerful tool for enhancing human health and productivity. As scientific evidence for the health and behavioral effects of the environment continues to mount, there will be greater pressure to apply that information toward the development of design standards and prototypes which can be incorporated within a wide variety of settings.

While a considerable body of scientific evidence already exists for the behavioral and health impacts of the physical environment (cf., Stokols & Altman, 1987), the links between environmental design and spiritual enrichment are less well understood. Therein lies the potential contradiction between the pursuit of technological innovation and questions of human value. On the one hand, the search for prototypical design solutions gives priority to the goals of standardization and cost-effectiveness. On the other hand, prototypical and technically-based design strategies are often at odds with occupants' desire for personalized, customized, and socially distinctive surroundings. For example, the "new sensibility" in architecture espoused by Alexander et al. (1987, p. 140) is "...by its nature, personal and unique. It is non-mechanistic, concerned with feeling and life. It creates deep feeling because it relies on deep feeling during the process of creation."

Technologically-oriented approaches to environmental design are based on additional assumptions that downplay the symbolic and spiritual dimensions
of environments. For example, technical analyses often view the physical components of settings as independent "levers" for achieving desired effects on occupants' behavior and well-being. Also, environmental settings are grouped according to certain key functions (e.g., residential, employment, school, and public recreational settings) and design solutions are developed to support those functions. Alternatively, spiritual views of people-environment relations emphasize the close interdependence between physical and social aspects of the environment and the fact that organized settings often incorporate multiple functions and user groups. These latter assumptions suggest that especially within complex, multi-functional settings, it will be extremely difficult if not impossible to leverage human performance and morale through technological interventions, alone, which focus almost entirely on physical features of the environment. Instead, efforts to enhance environmental quality and human well-being may rely increasingly on more integrative analyses of the links between physical, social, and organizational structure, which recognize the diverse needs and interests of multiple groups.

Interestingly, "multifunctional" settings may become more and more prevalent in future years. Brill (1987) has suggested that the distinction between public and private domains has undergone considerable blurring in recent years. Others have noted trends toward "telecommuting" between home and the workplace via computers (Galitz, 1984), job-sharing and diversified household structures (Michelson, 1985), and mixed land-use planning that combines commercial, residential, and recreational functions within the same geographical area (Francis, 1987). If these trends continue, environmental settings will be expected to accommodate increasingly disparate instrumental and spiritual functions. Already, residential and work settings are being modified to support many of the same kinds of activities and experiences. This increasing fusion of environmental functions suggests important challenges for future theorizing and research on people-environment relations. A key challenge is to develop new concepts and research methods that foster greater coordination, rather than polarization, between instrumental and spiritual views of environment and behavior.

CHALLENGES AND FUTURE PROSPECTS FOR ENVIRONMENTAL DESIGN RESEARCH

The tensions between instrumental and spiritual views of environment and behavior, noted earlier, suggest several conceptual, methodological, and professional challenges that remain to be addressed in environmental design research. For example, the contradictions that sometimes arise between instrumental and symbolic aspects of environments suggest the importance of distinguishing among settings in terms of their degree of "multifunctionality". Some recreational, domestic, and work settings may be associated with highly compartmentalized functions while others incorporate a wide range of individual and group activities, and a correspondingly diverse set of instrumental and symbolic meanings.

The greater complexity of multifunctional settings raises some important issues for future research. First, to the extent that settings are associated
with multiple functions and user groups, the potential for "counterproductive programming" (Mazumdar, 1984) may increase due to the diverse and sometimes competing interests among activities and occupants. In such situations, sophisticated programming and assessment techniques are required to identify the unique preferences of different user groups and the multiple symbolic meanings conveyed by the physical environment (cf., Jencks, 1985). A related task is the development of qualitative and quantitative techniques for assessing the clarity, complexity, and compatibility of symbolic meanings conveyed by a particular environment (cf., Csiszentmihalyi & Rochberg-Halton, 1981; Duncan, 1985; Harre' & Secord, 1972; Stokols, 1981; Turner, 1969). Such methods could be used to identify settings in which the instrumental and spiritual needs of occupants are coordinated and consistent, or disjointed and contradictory.

An additional direction for future research is to examine the spiritual qualities of environments in greater detail, and to identify the physical and social attributes of settings that contribute to individuals' experiences of spiritual enrichment. More specifically, what environmental and social arrangements are most closely associated with feelings of esteem, autonomy, insight, competence, coherence, tranquility, restoration, social acceptance and belongingness; or, in the words of Rene' Dubos (1965, p. 279), with a "reverence for the past, love for the present, and hope for the future"? The potential links between these basic human values and experiences, and alternative environmental arrangements, have scarcely been addressed in environmental design research (cf., S. Kaplan, 1983).

Previous studies suggest that physical elements such as artwork, music, color, graphic symbols, interior plantscaping, natural lighting and views of verdant parks may function as "environmental associators"—as elements that can enhance the attractiveness and emotional appeal of interior and outdoor settings (cf., Alexander et al., 1987; R. Kaplan, 1983; Ulrich, 1984; Wise & Wise, 1987; Whyte, 1980). At the same time, however, the question remains as to how effectively these design elements can enhance occupants' sense of attachment to the setting and the quality of their spiritual experiences, in the absence of sustained organizational and social supports. Along these lines, some theorists suggest that the symbolic meaning and spiritual quality of environments must be cultivated or "choreographed" over time through repeated rituals and group activities (cf., Salle, 1985; Seamon, 1979).

Turning from these conceptual and methodological issues, I want to mention some more general issues, concerning professional training and research collaboration, that are raised by instrumental and spiritual views of environment and behavior. First, the spiritual perspective with its emphasis on human values and enrichment moves ethical concerns from the background to the forefront of environmental design research and training (cf., Tzamir & Churchman, 1984). Within minimalistic and instrumental analyses, planning decisions are based on the aesthetic whims of the designer or on managerial concerns about organizational cost-effectiveness. From a spiritual perspective, however, design decisions are explicitly guided by considerations of occupants' emotional and physical
well-being, and by consultative and participatory processes that reveal the diverse interests and environmental preferences of setting members.

The complexities of ethical decision-making are most pronounced within functionally-diverse settings that are comprised of multiple user groups. It is in such situations that the adjudication of competing interests and environmental preferences becomes most challenging. Assuming that multi-functional settings will become increasingly prevalent in the future, ethical dilemmas are likely to become more salient within the arena of environmental planning and design. Thus, as Tzamir and Churchman (1984) observed earlier, it is essential that ethical issues and participatory processes be incorporated into the core curricula of environmental design and research training programs.

Clearly, one of the most pressing ethical issues of the 1980s is the achievement of world peace and international cooperation. The quest for personalized environments and the strengthening of local culture must be balanced by the realization that global stability is vitally dependent on cross-regional collaboration and understanding. As researchers, we can make greater collaborative efforts to integrate the concepts and findings from our respective regions. Eventually, we may even develop a system of "global icons"—pictorial and graphic symbols of human fellowship that can be displayed within public and private settings to remind us of our common global interests and responsibilities. Ultimately, we must find ways to promote a better balance between the instrumental objectives of high technology and the spiritual dimensions of environmental design.

NOTES

REFERENCES


B. Pre-arranged symposia
1

Aspects phenomenologiques du chez-soi
ESQUISSE DE LA RELATION AFFECTIVE AU CHEZ - SOI

Parmi les buts prioritaires d'une phénoménologie domestique figure indiscutablement l'évocation des relations affectives que l'habitant établit avec son logis. Afin de cerner la question dans sa dimension la plus manifeste, le champ d'observation a été volontairement limité à la perspective qui confronte l'individu à sa chambre propre. On entrevoit aisément à quel point ce rapport, en apparence élémentaire, prête à une lecture complexe, qui révèle les mille facettes de la notion d'habiter, avec un rapprochement correspondant de la spatialité et de la temporalité, qui contribuent à conférer son sens à l'existence individuelle.

Le présent texte fait suite à une série de communications sur le thème "configuration et expérience vécue de la chambre" présentées à Londres et Rome (1983), Berlin (1984), Melbourne et Paris (1985), (note 1). La problématique évoquée est la nature des liens affectifs que l'habitant tisse avec son cadre familial, qui combine parfois lieux de séjour et de travail. L'origine du propos est à situer dans le vers de Paul Eluard "la maison est dans notre chambre", où cette dernière est la partie prise pour le tout, attestant ainsi l'importance de la dimension camérale, qui est paradoxalement ignorée dans une large mesure par les chercheurs des sciences sociales.

La perspective phénoménologique adoptée entend débusquer jusque dans le détail l'éventail de sens attribué à ce site de la vie intime. Une telle topoanalyse prête ses références à des sources multiples : le témoignage oral ou écrit, l'expression picturale ou, plus simplement, le vécu personnel (note 2).

L'ELUCIDATION DES SENS ATTRIBUES AU CHEZ-SOI

Le courant architectural du fonctionnalisme tend à assigner, depuis une soixantaine d'années déjà une étiquette précise à chaque espace domestique en fonction de l'usage exclusif qui lui correspond. Ainsi s'établit un catalogue spatial relativement immuable, où les pièces sont identifiées en fonction du seul critère de leur utilisation. L'assignation d'un rôle instrumental à chaque espace domestique semble sous-entendre une certaine limitation du potentiel d'investissement affectif de l'habitant en même temps qu'une forme de censure à l'égard de toute forme de détournement de l'usage.

La littérature et les sciences sociales démontrent parallèlement l'importance de la projection ou de l'immersion de l'habitant dans son domicile, où il fait continuellement l'épreuve de la
spatialité alliée à la temporalité. En effet, le logis est par définition le seul point fixe où une possibilité de retour permanent est garantie.

L'attribution à la pièce familière et au logis d'un spectre de significations complémentaires est à l'origine et à la fois résulte des rapports affectifs entretenus avec eux. Il ne s'agit pas seulement d'un simple marquage symbolique de l'espace motivé par un désir de personnalisation (note 3), mais encore d'une recherche plus fondamentale de sens, ce dernier terme étant compris dans sa double acception physique (d'orientation) et morale (de signification) de l'espace familier.

Il me paraît donc urgent d'entreprendre une analyse approfondie du sens assigné au chez-soi, sans vouloir pour autant satisfaire à une quelconque volonté d'exhaustivité. L'essentiel de cette démarche de clarification consiste à démontrer selon quels processus l'espace domestique se trouve situé, orienté, symbolisé et répertorié dans l'entendement et la mémoire de l'habitant qui y a élu domicile. Cette investigation aboutit à reconnaître les rôles multiples joués par le chez-soi : celui d'allié ou de partenaire dans l'intimité comme dans l'adversité, celui de médiateur avec l'univers extérieur, celui de réservoir du souvenir et bien d'autres encore. L'évocation de ces missions implicitement confiées au logis confirme bien le caractère indispensable d'un tel lieu de séjour et de retraite dans la vie quotidienne.

Il semble que la variété du spectre signifiant détermine chez l'habitant une "intentionalité d'usage" de son chez-soi, qui est bien davantage qu'un simple recours à l'utilisation fonctionnelle de la pièce et qui dépend étroitement des circonstances d'appropriation individuelle. L'espace domestique est assimilé à une source de réconfort psychique. C'est le seul lieu où accumuler le souvenir et où s'entremer pour pouvoir refaire surface ultérieurement; le seul aussi où il n'y a de compte à rendre à personne. Ainsi la gamme de sens revêtus par le chez-soi correspond-elle à un ensemble de valeurs de la vie privée qui orientent fondamentalement les relations d'affectivité. Rares sont les cas où les connotations associées à l'espace propre ne sont pas de nature positive. Dans la majorité des situations, l'habitant cultive une relation privilégiée avec son domicile qui se trouve valorisée en permanence, comme si le logis s'apparentait à une face même de la personnalité. Ce constat atteste bien le caractère fortement imbriqué de ce rapport, où les partenaires sont à la fois sujets et objets.

**LE POUVOIR METAPHORIQUE DE LA CHAMBRE DU POÈTE**

Dans les cahiers de Malte Laurids Brigge, Rilke explore la dose d'affectivité suscitée par les chambres d'emprunt habitées par le personnage central de son récit : certaines d'entre elles sont étroites et familières, d'autres sont incertaines de configuration et comme distantes; tantôt aisément accessibles, tantôt situées à l'écart du monde, ces pièces semblent imprégnées du caractère que leur forme et leur situation dans la ville leur assignent, celui
aussi que leur habitant du moment est disposé à leur reconnaître. Le poète valorise à travers la confession de son héros les espaces aux proportions modestes, assimilables à celles d'une cellule propice au recueillement, où les murs rapprochés parviennent à retenir l'habitant chez lui, en lui dispensant ses ressources d'intimité.

Plus près de nous encore, un photographe parisien, Fr. David, réussit à saisir l'image de nombreux écrivains dans leur cabinet de travail, qui est aussi leur habitation. Ce recueil de témoignages apportés non seulement par la photographie, mais aussi par la plume des auteurs, fait entrevoir la nature des liens affectifs entretenus avec des espaces aussi intensément vécus. A travers la diversité des propos, certaines références se répètent, semblant illustrer quelque trait commun ou phénomène en apparence immuable.

L'allusion au cachot de prison est fréquente, comme si elle tirait son attrait d'un double pouvoir de détention de l'homme à l'écart du monde et d'incitation à l'évasion. Réclusion imposée et retraite choisie semblent faire d'une captivité imaginaire une forme de délocation associée à des projets d'accomplissement personnel dans l'écriture. L'expérience inconnue de l'emprisonnement est alors assimilée à une assurance de quiétude totale, obtenue par sublimation de la condition carcérale effective. L'aspect paradoxal de ces images met en évidence des associations de pensées de type antinomique, fréquentes dans l'univers familier du logis.

L'exégèse des métaphores camérales permet de reconnaître la diversité des lieux qui servent de points de comparaison. C'est tantôt le sentiment du Mineur qui semble impliquer cachette, confinement, réclusion ou enfouissement, tantôt le majeur qui préconise l'élancement au dehors, la projection, l'aventure ou la conquête. Ces registres opposés font bien ressortir le double office de cocon et de tremplin rempli par le logis, que W. Benjamin décrit à son tour sous les traits de l'étui et de l'univers. Ceci n'enlève rien au fait que la chambre propre est un partenaire sûr et indéfectible, en quelque sorte l'homologue de l'habitant. Un lieu où les contraires s'affirment et retentissent à de surcroît valeur de microcosme, où tous les aspects du monde peuvent converger, à la manière dont un jardin planté de toutes les essences végétales parvient à conjuguer une gamme illimitée d'horizons géographiques.

Par ailleurs, la métaphore a le pouvoir de transcender la complexité des allusions sous la forme d'une image unique, dont le pouvoir d'évocation peut être illimité. Son mérite est de ne pas prêter à l'analyse et à la différenciation. Elle reste unitaire et indivisible. Son pouvoir de symbolisation ne s'arrête pas au simple récit, mais il entend encore représenter une forme d'éternité, qui vient racheter le caractère éphémère de l'existence humaine. Le logis remplit aussi cette mission de ralentir le temps et de rendre moins perceptible son écoulement puisque, comme l'écrit Bachelard, "dans ses mille alvéoles, l'espace tient du temps comprimé". Dans son chez-soi, on parvient à en nier la
cadence inexorable, circonstance qui incline à la rêverie et à l'inaction, donc à la "perte" de temps.

PROLEGOMENES D'UNE PHENOMENOLOGIE CAMERALE

Jusqu'ici, aucune méthode n'a permis de tenir compte du "vécu phénoménal" de l'espace domestique dans le projet d'architecture. Ou, si d'aventure, un certain transfert de valeurs peut avoir lieu, il s'agit ordinairement d'une simple projection des propres idéaux du concepteur dans ses dessins, dont on ne tarde pas du reste à lui faire grief. Quant aux nouveaux moyens, permettant d'améliorer la communication entre architecte et client, ils touchent au médium plus qu'au message, n'en déplaise à M. Mac Luhan.

La pratique de plus en plus courante du projet de réhabilitation, de rénovation ou de restauration du domaine bâti, souffre d'une démarche ordinairement réductrice, d'où la présence humaine est le plus souvent exclue. Ce sont les espaces reconvertis à de nouvelles fonctions qui appellent de leurs vœux des "usagers", alors que l'on pourrait souhaiter un enchaînement inverse. Rien dans le processus de réélaboration des volumes intérieurs ne vient se référer à un vécu humain de l'espace, dont l'état antérieur du bâtiment n'était pourtant pas dépourvu, pas davantage que ne sont proposés des concepts annonciateurs d'un vécu futur. Aussi ces défauts prennent-ils une certaine gravité dans les transformations qui surviennent dans l'habitation, aussi bien que dans les cas où d'anciens espaces de travail sont reconvertis en logements.

L'absence de contact réel entre l'habitant potentiel (qui possède invariablement une expérience de l'habitation) et l'auteur du projet de transformation accuse le hiatus du processus de réaffectation des bâtiments obsolètes. Or, même dans les nombreux cas où les occupants d'un bâtiment ne sont pas connus au moment de l'étude d'un projet de remodèlement, il importe néanmoins de se préoccuper de questions existentielles lors de la reconversion des espaces. On constatera aisément que ce sont toujours les contingences techniques et économiques qui font la loi, au détriment des aspirations des habitants. À un stade essentiel de sa gestation, le projet de transformation est inexorablement appelé à tourner court.

Il est apparu que plus encore que le logis en forme d'appartement, la pièce individuelle constitue l'échelon vital le plus important entre la ville et l'individu, puisqu'elle est un espace irréductible par excellence, en quelque sorte le "plus petit commun multiple" de l'architecture domestique. Or, hormis quelques travaux en anglais sur la signification de la chambre, il n'existe guère de savoir psycho-sociologique sur les valeurs caméras, encore moins de connaissances phénoménologiques. Cette ignorance est d'autant plus inexplicable qu'il s'agit de l'espace construit le plus répandu et aisément appropriable. Les politiques immobilières actuelles tendent à considérer la pièce individuelle comme une unité interchangeable de l'habitation, dont la valeur d'usage élargie tient à une forme indifférenciée, capable d'accueillir un
nombre élevé de combinaisons d'ameublement. Cette dernière "qualité" qui conduit à la multiplication des pièces carrées et impersonnelles, munies de fenêtres de format neutre, est exactement à l'opposé des propriétés de singularisation et de différenciation des espaces, dont on sait qu'elles conduisent à une appropriation plus active de la part des habitants.

Aussi n'apparaît-il que trop légitime d'aspirer à redonner à la chambre l'importance qui devrait lui revenir dans le processus d'amalgame spatial et de composition, indissociable du projet d'architecture et de réhabilitation. Dans cette perspective, ce qui est désigné sous le terme de "caméralité" (à savoir le résumé de toutes les valeurs attribuables à la chambre) aurait pour but essentiel de saisir à travers une approche phénoménale les mille liens tissés entre l'habitant et son chez-soi. Lieu géographique de l'autonomie et de la vie privée, mais nullement de confinement égoïste, la préoccupation camérale semble un agent puissant de valorisation de la vie sociale.

Divers types de chambres peuvent être identifiés en fonction d'un arrière-plan historique, qui revendique un caractère tantôt institutionnel (comme l'asile ou le monastère, dont dérive la cellule), tantôt résidentiel, qui engendre des pièces plus conviviales. La forme physique de la pièce n'est jamais totalement étrangère à une valeur d'usage première, dont les connotations sont encore tangibles. La chambre apparaît donc comme prédestinée et marquée au sceau de son origine, de telle manière que les comportements à domicile, de la réclusion solitaire à l'exercice de la sociabilité, sont invariablement influencés par une spatiabilité initiale.

On peut ainsi conclure à l'adéquation de configurations camérales particulières à de nouveaux registres d'utilisation, ainsi qu'à l'opportunité d'une diversification des types à l'intérieur d'un même logement (contrairement à la pratique courante, où toutes les chambres d'un même appartement semblent calibrées d'après une mesure invariable). Il ne serait désormais plus question seulement de valeur d'usage, au sens restrictif du terme, mais aussi d'un pouvoir d'incitation, d'évocation ou d'émulation, caractéristique des conduites à domicile.

La caméralité, qu'on peut aussi définir comme la correspondance du contexte architectural à la pulsation existentielle, servirait en outre d'instrument de pondération et de modération d'échelle au domaine bâti. À cet égard, la capacité domestique des bâtiments demande à être interprétée comme la faculté d'accueil offerte par des espaces qui n'outreprennent pas un taux d'occupation humaine admissible. Ainsi la capacité des immeubles d'habitation se jauge plutôt à partir d'une norme sociale qu'en fonction de l'unité de surface obtenue. C'est donc à l'effectif d'habitants que revient la charge de déterminer l'espace nécessaire plutôt qu'aux pièces disponibles de régenter le nombre des occupants.

Entre les deux concepts énoncés de caméralité et de capacité domestique, s'instaure tout un domaine encore inexploré de
réflexion et d'opération mis à disposition des constructeurs. Pour mener à bien une telle investigation, il convient de recourir à des concepts phénoménologiques, apparemment seuls à pouvoir retracer le rapport intime de l'habitant à son espace familier. La perspective brièvement esquissée ici ne demeurera cependant pas isolée par rapport à d'autres démarches parallèles. L'occasion est offerte par le présent symposium de comparer entre elles les dimensions de "l'habiter" sur le terrain du chez-soi qui, pour être restreint, n'en est pas moins un espace multiple et infini dans les retentissements qu'il peut impliquer.

ANNOTATIONS

1) Exploration phénoménologique de la relation individuelle à la chambre, symposium anglo-français sur le thème des modes d'habiter, University College, Londres, septembre 1983.
   The Phenomenology of Room and Domestic Sublimation, IAPS 8, Berlin, 1984.

2) L'auteur s'apprête à publier prochainement un essai consacré à ce thème-là.

3) Au sens des recherches publiées par le RAUC (Centre de recherche d'architecture, d'urbanisme et de construction), Leroy C., Bedos C., Bertholet C., (1970) Appropriation de l'espace par les objets.

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Towards a Phenomenology of Being at Home

Phenomenology emphasizes and explicates the intentional relationship between bodily subjects and their material and social environment. This relationship is conceived of as reciprocal. Individuals, (as well as groups) experience (perceive, judge, feel, evaluate) and act upon their concrete, i.e., situated, environment which, in turn, has its impact on its inhabitants. Some of the modalities of both the environment as intended and as happening ("unintentionally") will be demonstrated and discussed with respect to living at home.

The Use and Usefulness of Phenomenology

Whoever claims to make use of a phenomenological approach must be prepared to answer the question of what he means by "phenomenology". The term has a considerable and irritating range of meaning or usage: From Hegel's "Phenomenology of the Spirit" through Husserl's philosophy of consciousness, to Merleau-Ponty's structural analysis of perception and behaviour we encounter a series of schools of philosophical thought which not easily pass as unitary. The impression of diversity under a common name is enhanced if we look into those social or human sciences which partly, i.e., for some of their ways of problem-solving, have adopted the term "phenomenological". For psychology this goes back to Husserl's teacher, Franz Brentano, whose Viennese lectures on descriptive psychology in the eighties were also presented as "phenomenology". Since then the impact of phenomenology on the various human sciences has been varied rather than uniform, sporadic rather than continuous, waxing and waning, certainly different for each discipline (cf. Merleau-Ponty, 1973; Natanson, 1973; Spiegelberg, 1972).

The history of the relationship between phenomenology and the human sciences is what a social psychologist would call "selective exposure" (Festinger, 1957): Each discipline took and utilized what suited its present purposes best, and this selective give-and-take is still going on (Graumann, 1983). Understandably, purists of (philosophical) phenomenology have every now and then complained of this selective usage, but they tend to overlook that this selectivity has always worked both ways.

For the human scientist, 'purity of faith' is not a major issue; we are interested in the function a phenomenological approach may have for the solution of our problems. Hence, it is important of
realize and to state which function or aspect of phenomenological analysis we are interested in. With respect to the human sciences we may distinguish between several major functions that have proven useful to the study of human experience and behaviour (Graumann, 1983). Of these I shall briefly address two: the critical and the descriptive function.

(a) Phenomenology has always been considered as a critical science by both its protagonists and its "users". Critique is meant here as the rigorous examination of one's own assumptions and presuppositions. Whether the "deliberate suspension of all implicit and explicit assumptions" is possible as one of the "users" demanded (MacLeod, 1974, p. 194) or can only be approximated is less important than the awareness of one's presuppositions as a necessary step toward suspension. The major thrust of the critical activity is directed against intellectual and verbal habits in which we have learned (almost been conditioned) to approach and to grasp things, i.e., without further reflection.

(b) The methodological postulate since Husserl has been to be guided by "the things themselves" which leads us to the descriptive function of a phenomenological approach. Description, however, has to be specified as intentional description which accounts for the meaning that things, people and behaviour have for a given person. Phenomenologically, the experience of reality is the experience of meanings. For Schütz (1962-66) the life-world is a universe of significations. Its interpretation by those who inhabit it must be accounted for by the social scientist who interprets everyday experience and behaviour.

Briefly stated, we shall use the term phenomenology within a social science context for the intentional description of the person-world relationship. When we characterize this elementary relationship by intentionality we mean that any human experience or action refers the experiencing/acting person to something (object, event, or state of affairs) which is meant to be distinct from the experience or action.

The tree that I see, the melody that I hear, the armchair I sit in, the face I remember as well as the square root that I extract of a number or the law of distributive justice that I recognize in social exchange - they are all intended as having an existence of their own, real, imaginary or ideal. On the other hand, whatever I experience is also the ("noematic") correlate of my experience; each consciousness is personal consciousness (James, 1950, 225).

The methodological consequences of this intentional person-world interrelationship should be evident. Whoever is interested in an individual experience must try to discover and describe the individual's world as far as it is seen, heard, remembered, thought of, acted upon, etc. by the individual in question. Whereas psychology traditionally focuses on the individual in his or her experiences and behaviours, the emphasis suggested by the adoption of a phenomenological attitude is on a person's or a group's situation. Conversely, whoever is interested in different
environments, such as the home, the office, a school or a hospital ward, must conceive of these settings as Umwelten, i.e., intentional environments which have meanings and values (valences) for those who inhabit them as "situated persons" (Linschoten, 1953, 246) and which bear reference to the actual or potential behaviors of such inhabitants. Whenever we speak phenomenologically of Umwelt, we refer to somebody's inhabited place; if we speak of behavior or action we include its spatiality as an essential feature of any human activity. All activity, physical or mental, may rightly be conceptualized as locomotion (Lewin, 1936); Umwelten are fields of real and potential locomotions.

The correlate of a spatial Umwelt is the bodily subject or the embodied self. It was mainly Merleau-Ponty (1945) who emphasized and elaborated the bodily nature of human subjectivity. For the human sciences this "rediscovery" of the embodiment or incarnation of a person's identity has become of the greatest importance since whether a person perceives or acts, his or her world is encountered only within 'the modalities, potentialities and limits of the body, different for a child, for the aged, for a highly trained or for a disabled person, for a woman or a man, the slim or the stout, etc. One and the same setting will be quite different Umwelten for any of these. The fact that we experience the world from points of view, i.e., in perspectives, we owe to our bodily identity (Graumann, 1960).

Both the bodily nature of persons and the spatial structure of their Umwelten must be seen in their temporality. Persons have their age, groups and nations have their history. So have the things they are surrounded with, the territories they inhabit. Intentional correlates of any modality may be present as perceived, past as remembered, future as expected, but whatever we experience as being there now, carries its own temporality, impressing us as having been there before we looked and still being there when we close our eyes or turn away. Both our own memories and anticipations and the past and the future of the things and persons around us enter into an interaction that is only partly transparent to our present awareness; partly it remains opaque even for our intense investigations.

One final phenomenological perspective on the intentional person-world relationship refers to its sociality. Very often we, as individuals, do not remember the past of persons and things, not even our own early past, but we know about this past from our elders and from what has been documented by those before us. We experience ourselves as members of a series of predecessors, contemporaries, and successors (Schütz, 1962-66; Schütz & Luckmann, 1974), being born into a world of people and things that we learn to name and to cope with by the mediation of others. Language here is the most powerful, socially mediated tool of appropriation.

These four emphases of a phenomenological approach in the human sciences, viz., on the spatiality of the human environment, the
correlative bodily nature of the inhabiting subject, the historical and social character of the human situation, were first explicitly stated and partly elaborated in the Utrecht School of phenomenological psychology (Buysendijk, Langeveld, Linschoten, van den Berg) which, in turn, leaned heavily on the phenomenology of the late Husserl and on the phenomenology of Sartre and, mainly, Merleau-Ponty. Its key-concept was the situation or the person’s being situated which, according to Merleau-Ponty (1967) is characterized by the "human dialectic". Human activity, whose prototype is working, brings forth a world of things, i.e., the "proper milieu of man" (1967, 162), which, in turn, motivates new kinds of activity, in which we accept, modify, reject, or surpass the structures brought forth - structures which may help us to transcend our present situation, but in which we may also find ourselves imprisoned (1967, 176). Things, even though they may be our own products have an existence and opacity of their own and will affect us, happen to us like natural and unpredictable events. This ambivalence of being situated is an essential feature of the human condition as it has been elaborated in modern phenomenology.

For the present purpose I want to maintain the usefulness of this conception of phenomenology for an ecological human science. I shall try to demonstrate this usefulness by focussing on the intentional structure of being at home.

TOWARD A PHENOMENOLOGY OF BEING AT HOME

What we have introduced as the intrinsic intentional interrelationship between person and world becomes evident when we inquire into the meaning of the simple sentence "I feel at home here". Rarely spoken at one’s own home, where such feeling might be self-evident, but at some other place where we feel at ease, the sentence impresses us as synonymous with "Here I can be myself". If feeling at home, feeling at ease, and being able to be oneself may be used quasi-synonymously, we are directly confronted with a prototypical case of the basic person-world relationship. We consider the intentional structure of the situation at home along the lines of the preceding paragraph emphasizing the spatiality of the intentional environment and the embodiment of the situated person.

The Umwelt of Being at Home

We first articulate the spatiality or whereness of the situation at home. What kind of a space or place do we refer to when we say we are or feel at home? The question itself implies a methodological caveat: Phenomenologically, no reference to a place, be it a house, a home, or a town, should be made irrespective of its inhabitant(s). Therefore, "being at home" is the more appropriate topic than "home" of what we understand being not
only as a state but as any of the many modalities of existing which although make up what in different languages is called "wohnen", "dwelling", "habiter". While a lot has been written and argued about the differences between the German, English, French, etc. words for being at home, about Heidegger's (1971) interpretation of "wohnen" and Merleau-Ponty's (1945) conception of "habiter" (for a comparative discussion cf. Kruse, 1974) I shall here concentrate on some essential features of dwelling with respect to the spatiality of the place called home. 

Home is the place where I stay or continue to be, at least for a given time. Staying means having one's residence which is not permanent presence but accessibility. If I tell you where I stay or live you know where, in principle, to reach me. I may not be "in", though. But there is a fixed place, house, apartment or room, in which I live. "Live" is used here in a special sense of the word. Of course, I also live when I am away from home as long as I am alive. But at home, at "the place where I live" I dwell, I "make my home". I may have built the house or merely furnished the apartment. Growing up in my parent's house it may even be only a few cherished things that I call mine and have gathered around me or even hidden from others (Langeveld, 1954). Such things and activities will help to make a place my place, to appropriate it, to feel at home there. Hence, what we call living or dwelling in a place is largely living with things, in a "world of things" (Graumann, 1974) which, as pieces of furniture, objects of art, toys, utensils, etc., may have many meanings for us and for those whom we present them (Csikszentmihalyi & Rochberg-Halton, 1981). As objects acquired by us or trusted with they demand our attention and care. We may own them, but in limits we may also be possessed by these things (Graumann, 1987). In the intentional relationship of having objects the dialectics and the ambivalence of being situated is evident: The place and the things that we have both enhance and limit our potential. 

This dialectic relationship is not restricted to the possession of things. Being at home, in general, has this dual character: "Within one's own four walls", as a common figure of speech says, we are free to behave as we wish to do when we know ourselves protected from any intrusion of our privacy. It is the walls, the doors, the curtains, etc., that protect us against the outer world while we are inside. Being at home in many languages has this meaning of being inside, with all the freedom that is made possible by being walled off against the outside. Even inside our own home we have and maintain more exclusive insides, spaces of increased privacy and intimacy (Kruse, 1980). But each additional wall or other separation between person and world, between us and others, not only keeps the world and the others outside, it keeps us inside. Walling off is inevitably walling in. 

Being at home is spatially articulated by rooms and objects. So far I have only indicated that they serve different purposes. This cannot be treated here in any detail. We should, however, remember that the spatiality of being at home is conceived of here as a
feature of the intentional person-world relationship. That means that each object and place have to be considered in their functionality for the person(s) involved. This may be, besides the common utility of things, the degree to which they are expressive of their owner, e.g., as parts of person's material self (James, 1950), their identificatory function, if they serve a person's identity, their representative function if they serve impression management, and last not least, the social function that rooms and objects have for those living together such as the dinner-table around which the family gathers, the parlour in which guests are entertained, etc. Altogether the various functional meanings rooms and domestic objects acquire for different dwellers, once they have been established, tend to become part and parcel of the things themselves.

One final characteristic of the spatiality of being at home is its locality by which I mean its position with regard to the surrounding world in which we also move. Maybe that modern men and women spend more time professionally in offices, factories, or travelling than at home. But what they call their home is, as a rule, the place they start from and to which they return. As such a person's home is the center or base of his or her activities. It may be true that for people "living" at a large distance from their place of work being at home or dwelling is reduced to having a meal with their family, watching TV and sleeping. But even if one's home is not much more than a sleeping place, a person's bed is certainly a distinguished place to which to return he or she takes the daily trouble of commuting.

To sum up: If we, in a phenomenological orientation, consider the home we live at, as a distinguished part of our intentional environment, each material or spatial aspect of "home" must reflect the person or persons dwelling in it. In each detail that we might care to investigate we will have to describe space as lived space, i.e., inhabited space.

The embodied self at home
If we take the reciprocity of the person-environment relationship serious whatever we have stated about the home environment must be reflected by its inhabitant, the dweller. And to the degree we have emphasized the spatial character of a person's home we must now reciprocally address the bodily nature of the inhabitant. The reason why we speak of the embodied self rather than person comes from the phenomenologically correct and psychologically very old insight that a person's identity is not restricted to his or her spiritual self or inner character but includes all things and places a person considers his or her own (James, 1950); identity is also place-identity (Proshansky et al., 1983). What I consider to be myself transcends my body to the extent I feel able and willing to appropriate things. A most distinctive area of appropriation is where I am at home. For some students of ecology (originally the study of the "house"), the house is a symbol of
the self (Cooper, 1976), a hardly tenable contention in view of
the extent of multi-family housing in highrise apartment
buildings.
What we are interested in from a phenomenological perspective is
the many ways in which we bodily inhabit the things and spaces of
our home environment. If I feel I can use the statement "I feel at
home here" interchangeably with "I can be myself here", then this
being at ease means freedom from the restrictions, the
formalities, and the conformities of public, social life. A great
deal of this freedom is realized in bodily activities: The casual
clothes, comfortable slippers that we exchange for the more
formal, may be elegant, but uncomfortable outfit; the easy-chair
or couch that replaces the seat behind the desk or the wheel; the
favourite record, tape or radio program I listen to, the magazine
or novel I pick up for reading, the freedom to look at this or
listen to that or doing nothing at all is one way of dwelling when
usually goes together with a way of communicating with others very
much differently from the more formal and functional contacts of
our professional lives.
But we must not idealize. The furniture, the apartment, the house,
the garden are also matters of our concern. The iron has a loose
connexion, the wall needs papering, the roof repairing, the
flower-bed weeding. Appropriation is more than acquisition, it is
maintenance which, as a rule, means work, mostly of the physical
kind. Being at home is, for many hours and days, caring for it.
Although a lot of this caring is work, as manual labour for
oneself, for the family, it is different in kind and motivation
from what we are obliged to do "for our living". We may really
toil at the basement or the garden and end up hurt and stiff, the
satisfaction that we draw from such homework may be much more
rewarding than the everyday professional work. Again, we must not
disregard the ambivalence of doing homework. It is in the nature
of things which we need regularly as well as of persons who need
our regular help that they demand recurrent activities of
maintenance from us. These daily chores are certainly not
restricted to the maintenance of a home, but they acquire a
special significance for those who stay at home most of the time
and have no professional life outside. Traditionally, it has been
the woman or women who take care of the household and the
children, both of which require regular and iterative duties, such
as tidying, shopping, cleaning, cooking, washing, again and again.
Whether the prototypical housewife is going to be replaced or only
relieved by a houseman, does not change the regularity and
repetitiveness of the basic work one's house or home requires,
neither the boredom and distress that may result from the monotony
of the regular, nor the pleasure domesticity gives.
Once more, we see that being at home, which (preferably by men) is
often contrasted with being at work, is also work. Whatever we
enjoy in feeling at home, e.g., sociality, comfort, meals,
entertainment, rest, which altogether contribute to our feeling at
ease, presuppose work to be done which, in turn, limits the
freedom of whoever has to do the work. The home environment, phenomenologically seen, is a model of the dialectic of human situations between potentiality and constraint.

We have only touched upon the possible difference between men's and women's perspectives on their common home. The intentional description of the embodied self at home (which is here only exemplified) will reveal other gender-related home activities which are either conventionally or consensually distributed or a recurrent cause of conflict. (The home, after all, is a primary place of interpersonal conflict, often enough arising over home-related issues.) Then there are little children. Their view of and behaviour toward "their" home (it is theirs in a different sense from their parents) will literally be that of "little ones" as, for example, being too small to reach the door-handle or the bell-push, or skilled enough to climb the balcony railing, etc. We could go on with the aged, the disabled, the sick or even bedridden inhabitants and the specific body-related attitudes and behaviours towards the physical and spatial characteristics of their home-environments which may be facilitative or inhibitory or ambivalent.

I have exemplified intentional description only with respect to the interrelationship between the home as spatial environment and the inhabitant as embodied self. No phenomenological analysis would, however, be complete without an equally careful description of what we have called the sociality and the historicity of a given situation. The importance of these two perspectives on the home situation and their meaning for being at home should be evident if we only indicate the different functions and meanings of home for a single, a newly-married couple, a family, a commune and their relations with landlords and with other inhabitants, tenants, neighbours. It may be due to the social network that is stretching from our home that for many the meaning of being at home transcends the apartment or house they live in and has spread to the neighbourhood.

A similar importance for our understanding of being-at-home must be attributed to the historicity of the place(s) where we are at home, for example, as the house father built, the house of my childhood, the house we build for our children; things around us that were inherited, were given as a wedding- or other present, that serve as memories of good and bad times, of those far-away and dead.

These are some of the distinctive features that would figure in a phenomenological analysis of being at home, an analysis which to my knowledge does not yet exist.

References


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LA PHENOMENOLOGIE SENSORIELLE COMME REFERENCE DU PROJET D'ARCHITECTURE

L'habitant et son lieu de vie, par adaptations successives, dialoguent.

C'est dans le mot "habiter" qu'on perçoit la dimension du façonnement réciproque.
Si "habiter" conceptualise le rapport d'échanges entre l'individu et son lieu - le lieu étant à sa création le plus souvent neutre - imaginons un autre concept où le lieu naîtrait chargé d'intention, comme l'est une église.

"Surhabiter" serait aussi distant en valeur positive de "habiter" que "habiter" l'est de "loger".

La surhabitation proposerait un lieu actif de haute potentialité. Par le lien du corps au monde, on peut espérer créer ce surhabitat.

Comment, par des méthodes d'études adaptées, peut-on favoriser ce lien de l'homme au monde ?
Comment l'espace du béton et du verre peut-il être organisé pour agir sur les individus ?

La méthode sera celle du parcours qui lie espace et temps.
Les outils, mis en œuvre dans ce parcours, seront :

- La dialectique du dedans/dehors, privilège fondamental de l'architecture
- Le cadrage des vues ou le pouvoir du béton et du verre de montrer ou de cacher
- L'action sur le temps par le pouvoir du mur à régler les distances et les vitesses
- L'action sur le corps par le volume bâti qui règle les gestes et l'action kinesthésique.

Nous examinerons successivement les documents graphiques illustrant l'évolution d'une théorie architecturale :

- L'idée rencontrée dans l'espace des temples Bouddhistes Zen de KYOTO
- L'enseignement reçu dans l'Agence SAKAKURA en 1960, sous la direction de Fumitaka NISCHISAWA
- La réalisation de plusieurs générations d'habitations construites en France de 1974 à 1987
- L'étude d'un collège en cours de réalisation, aboutissement de l'expérience acquise.
1. 1959-62 LA CONNAISSANCE DES TEMPLES BOUDDHISTES ZEN DE KYOTO

Les moines Bouddhistes Zen des XVIIème et XVIIIème Siècles ont, par l'espace de leurs temples, exprimé une philosophie du monde. Le visiteur occidental, sans en connaître le sens, ressent une émotion intense liée au fond commun de l'humanité : la physiologie et les sens.

Le temple de JIKO.IN est un exemple.
2. 1959-62 L'ETUDE D'UNE HABITATION DANS LE CADRE DU BUREAU SAKAKURA A OSAKA

Les préceptes liés à l'espace traditionnel exprimé dans les temples filtrent au travers de l'enseignement reçu. Cependant, la modernité corbuséenne des années 60 limite l'influence traditionnelle. Le parcours est bien présent, mais il n'a jamais été désigné comme fil conducteur d'étude.
3. 1961-74 PREMIERE EPOQUE, INTUITIVE

La seule recherche des impressions, ressenties dans les temples Bouddhistes Zen de KYOTO, guide l'étude. Elle aboutit en 1974 à la réalisation de la maison personnelle de Maurice SAUZET.

L'étude du parcours, a posteriori, fait apparaître que :
1) la disconnexion dans le parcours existe assez faiblement
2) le cadrage des vues est réalisé
3) la descente kinesthésique vers l'entrée existe
4) le fond caché est aussi présent.

Pratiquement toutes les bases, théorisées par la suite, sont présentes mais n'ont pas été utilisées consciemment. L'étude, il faut le préciser, s'est prolongée sur deux années.
4. 1978-82 DEUXIÈME ÉPOQUE : BASE THÉORIQUE NAISSANTE
Cette série de réalisations a été faite avec une base théorique naissante. La méthode du parcours séquentiel, pour la recherche et le contrôle, n'est pas encore utilisée.
Ces méthodes utilisées à posteriori ont apparaître les insuffisances :
- peu de disconnexion par changement de direction
- parcours à plat
Le marquage du premier seuil apparaît ici avec les passages couverts.
6, 7, 8. 1985-86 QUATRIÈME ÉPÔQUE : TROIS RÉALISATIONS TRAITÉES AVEC UNE CERTAINE MAÎTRISE DU PARCOURS

Le parcours est, dans ces projets, la structure de la conception.
Le retournement complet du parcours principal est la caractéristique essentielle.
La qualité du rapport dedans/dehors est très fortement marquée dans les séquences avant l'entrée.
Le cadrage des vues est bien maîtrisé, surtout dans le projet S.B., bien que le terrain en question soit particulièrement petit.
9. LE BATIMENT SCOLAIRE EN COURS DE REALISATION

Après la réalisation de plusieurs bâtiments scolaires, le Collège de GAREOUlt est le premier bâtiment public conçu par le groupe en utilisant le parcours comme base première de la conception.

Le parcours a des séquences dedans/dehors très marquées. Le retournement, dans la montée, se fait à 180 degrés : il doit en résulter une disconnexion forte avec l'extérieur.

Le coeur du collège a une position surélevée dans la plaine plate : c'est l'aboutissement des parcours.
LE CHEZ SOI : ESPACE ET IDENTITÉ

Notre réflexion prendra son départ dans une analyse de l'expression "chez soi". Cette expression nous donnera une première incitation à penser l'être chez soi, par le rapprochement qu'elle suggère entre la spatialité de la maison et l'identité personnelle. En creusant la distinction entre loger et habiter, nous parviendrons à un envisagement de l'habiter comme processus d'interaction dynamique. Pour mieux comprendre ce processus, seront à prendre en compte, d'une part, le monde auquel la maison renvoie, d'autre part, l'insertion de l'habitant dans un réseau de relations interpersonnelles qui affectent de part en part sa manière d'être, c'est-à-dire d'habiter. Une telle approche implique une critique des façons habituelles de penser la relation de l'homme à la maison, ainsi que, plus généralement, la relation dedans/dehors.

Nous savons et ne savons pas ce qu'est le chez soi. Notre position ici n'est pas, en effet, sans analogie avec celle de Saint Augustin lorsque, dans le Livre XI des Confessions, il s'interrogeait sur le temps. Dans le cas d'une méditation sur le chez soi, outre le potentiel d'énigme que recèle la question, l'attention est vite attirée par l'expression linguistique elle-même : l'expression française "chez soi". Sa singularité éclate dès que l'on essaie de la traduire dans d'autres langues, en tenant compte de la différence des contextes d'usage. Sans prétendre être exhaustif, mais en guise d'exemple, considérons quelques cas. En anglais on dirait, pour "être chez soi" : "to be or to stay at home" et on traduirait la phrase "Hier je suis restée chez moi" par "Yesterday I stayed at home", où c'est le substantif "home" dans sa différence d'avec "house" qui porte le poids de la signification. En italien, et dans d'autres langues latines, on spécifierait la relation de la maison à celui qui l'habite par un pronom possessif "a casa mia", ou, plus couramment, par la suppression de tout possessif, devenu pour ainsi dire redondant. Cette même possibilité existant aussi en français ("je suis restée à la maison"), comme du reste en allemand. On aurait donc en it. "a casa" (sous-entendu "mia"), en fr. "à la maison", en all. "zu Hause". En allemand le locatif "zu Hause" peut être substantivé pour dire "le chez soi", "das Zuhause". Si l'on continuait la comparaison, on aurait un aperçu des ressources sémantiques et syntaxiques que chaque langue met en œuvre pour signifier, d'une façon ou d'une autre, le "chez soi". Cependant, si l'on peut toujours traduire les phrases françaises où figure cette
expression, on ne saurait réduire pour autant son idiomatisme. En quoi consiste-t-il ? En ceci que "chez", qui dérive étymologiquement du nom latin "casa", est devenu une préposition, laquelle demande comme complément ou bien un nom propre (chez Jean) ou bien un pronom personnel (chez moi, toi, soi, ...), et que l'expression ainsi constituée peut renvoyer non seulement à la maison, mais aussi à celui qui l'habite et à sa manière d'habiter. Ainsi, dans l'expression "chez moi" la valeur réfléchie du pronom personnel en est venue à signifier le moi lui-même, non sans poser la question de son identité.

Quelle indication nous donne donc l'expression "chez moi", dans la mesure où, en elle, la question de la maison se trouve déjà reliée à celle du soi ou du "self", pour le dire en anglais ? N'est-ce pas tout d'abord qu'elle nous oriente vers une compréhension de la maison - voire de l'espace habité - qui ne s'arrête pas à la sphère de l'avoir ou de la simple localisation, mais l'envisage en rapport à la constitution même d'une identité personnelle ? Une telle orientation de pensée ne dissuade-t-elle pas d'emblée d'envisager le rapport à la maison comme celui qu'entretiendrait le sujet à un objet qui lui serait pour ainsi dire extérieur ? Si nous maintenons le cadre de la relation sujet-objet, où ce qui s'objecte, ce qui est objet pour un sujet ne l'est qu'en tant que posé devant, placé en face par et pour le regard connaissant, nous ne parviendrons qu'à ressaisir l'expérience que peut avoir de la maison un agent immobilier, un ingénieur urbain, ou celui chargé de déterminer les impôts locaux, chacun dans l'exercice de sa fonction, et non pas en tant que lui-même est aussi un habitant. Car jamais l'habitation ne peut se laisser penser dans le cadre général prescrit par la relation sujet-objet. Au contraire, toute pensée de l'habitation ne peut que subvertir ce cadre, pour peu qu'elle se fasse véritablement attentive à l'expérience que nous avons de l'habiter.

Dans le film *Les baleines du mois d'août* (The whales of August) de Lindsay Anderson, où Lilian Gish et Bette Davis jouent les rôles de deux soeurs âgées qui passent l'été dans la vieille maison familiale du bord de la mer, la scène décisive et annonciatrice d'un tournant est celle où un agent immobilier fait irruption et se met à regarder la maison comme un objet chiffrable, en vue de son évaluation pour une possible mise en vente. Un tel regard est si froidement ou frontalement objectivant, alors même que l'agent ne fait que son métier, que par contre-coup il révèle aux soeurs le sens qu'a cette maison dans la vie. Elle en est une partie inaliénable, à telle enseigne que la perdre eût été une sorte d'effondrement, de mort anticipée. Avec la maison, ces deux soeurs âgées auraient perdu une certaine façon d'articuler leur existence et de se retrouver grâce à elle. Or c'est seulement lorsque se dévoile ainsi la vérité de leur maison, que les deux soeurs comprennent que ce qui les unit est plus fort que leurs différences de tempérament et décident de demeurer ensemble. Mais une telle fin ne peut survenir dans toute sa signification que parce qu'elle a été préparée silencieusement tout au long du film grâce
au pouvoir des images et, en particulier, à la façon dont la caméra semble caresser les objets dépositaires des souvenirs que recèle la maison, en les traitant autrement que comme un simple cadre inerte. Dès le départ la maison était envisagée comme un quasi-personnage, voire une figure centrale. Ne s'agissait-il pas de la faire apparaître comme le trait d'union entre les deux soeurs ?

Ajoutons en passant que l'espace du "chez soi" ne coïncide pas nécessairement avec l'espace de ce que stricto sensu l'on appelle une maison. Un marin peut être davantage chez lui sur son bateau que dans sa maison, tant il est vrai que ce qui est en jeu ici, c'est avant tout le pouvoir d'être soi, ou mieux de revenir à soi, à travers une certaine façon d'habiter. De même, et puisque l'usage de l'expression sert à marquer des différences dans la relation que chacun entretient avec les espaces où il vit, le "chez soi" peut, en gagnant en amplification ce qu'il perd en intimité, être étendu à la sphère d'un quartier, d'une ville ou même d'un pays. Dans cet emploi, pourrait-on dire affaibli, "le chez moi" serait l'équivalent de "dans mon pays", mais non sans introduire une connotation identificatrice.

Cependant, un autre emploi de la préposition "chez" fournit une confirmation du lieu qui unit la question de la spatialité à celle de l'identité, ou, pour le dire autrement, celle du "Où" à celle du "Qui". Soit une expression telle que "chez Proust" ou "chez Kafka", où "chez" est suivi d'un nom propre; ce nom propre étant moins celui de l'état civil d'un homme que celui d'un auteur, lequel en tant que tel ne se retrouve que dans son oeuvre. Nul doute que cette expression n'efface toute référence directe à l'espace de la maison en faveur d'une référence à l'oeuvre; autrement dit, c'est de l'oeuvre de Proust et non de la maison de Proust que nous parlons dans la plupart des contextes où l'on est aujourd'hui amené à employer l'expression "chez Proust". Mais elle ne peut opérer cet effacement, qu'en assumant implicitement l'oeuvre comme l'espace imaginaire et pourtant réel, à travers lequel se constitue l'identité d'un être, c'est-à-dire non pas en tant que tel ou tel individu, mais en tant que celui auquel l'oeuvre renvoie. Et ne faut-il pas supposer que l'oeuvre a été pour cet être le lieu où s'est exposée, s'est abritée et s'est risquée la quête d'une ipséité (selfhood), voire d'une identité autre que celle de sa simple identité psychologique, ou psycho-sociologique ?

Questions difficiles que nous ne faisons qu'entrevoir de loin, mais qui ont surgi du fait même que nous nous sommes rendus attentifs à l'usage d'une expression telle que "chez ...". Tout se passe, en fait, comme si à travers ses divers usages cette expression signalait le lieu, réel ou fictif, à partir duquel il peut être possible pour un être de devenir "soi", fût-ce au prix d'un conflit avec ses manières courantes et socialement repérables de se conduire. Risquons donc, en première approche, cette affirmation : le "chez soi" est cet espace à travers lequel, et plus
que nulle part ailleurs, on peut devenir soi, à partir duquel on peut "revenir à soi".

Or lorsque nous essayons de creuser sous cette affirmation, disons exploratoire, nous sommes amenés à renoncer au domaine de nos opinions courantes, apparemment bien établies, selon lesquelles le "chez-soi" est facilement identifiable, reconnaissable. Ne se confond-il pas avec notre maison ? Et ne sommes-nous pas aisément enclins à supposer que chez nous, dans notre maison, nous sommes à même de retrouver un abri où nous puissions être nous-mêmes, loin des rôles sociaux que nous assumons au-dehors, dans notre vie professionnelle par exemple ? Toutefois s'il y a quelque vérité dans cette vue des choses, elle est tout à fait partielle, sinon partielle. Tout d'abord parce que nos rôles sociaux ne cessent pas au seuil de notre porte ; ils ne font que changer. Dans la maison nous sommes père ou mère, mari ou femme, fils, fille, frère ou soeur. Par là, la manière pour chacun d'être chez lui n'est pas indépendante de sa position familiale. Or cette position, dans ce que souvent on appelle la constellation familiale, peut être tout aussi bien un appui qu'un obstacle à être soi dans sa maison. On peut y loger, sans y être vraiment chez soi. Cela pouvant aller jusqu'à l'épreuve de la maison comme presque invivable, sans que le caractère d'inivable attribué à la maison soit dû aux conditions matérielles d'inconfort ou de précarité du bâtiment, mais plutôt à l'impossibilité d'être chez soi au milieu des siens.

D'une telle impossibilité Kafka a fait une épreuve si radicale, qu'elle lui a forcé l'accès à la fondation, par le mariage, par exemple, d'un foyer qui lui fut propre. Lui, qui en dehors de séjours dans des hôtels, des hôpitaux ou des sanatoriums (il est vrai de plus en plus fréquents à la fin de sa vie) n'a jamais pu quitter définitivement sa maison familiale, était pris dans un état : ne pouvoir ni être chez soi dans la maison de son père, ni fonder un chez soi, où lui reviendrait, à son tour, d'assumer la place du père. C'est de ce double interdit, de cette double impuissance vis-à-vis du "chez soi", que s'est nourrie sa vocation d'écrivain. Ce n'est, en effet, qu'à partir du lieu ouvert qu'est son projet d'écrire qu'il peut s'attendre à être un soi, à s'accepter comme quelqu'un et non pas rien, comme lui-même le laisse entendre dans une de ses lettres à Felice Bauer : "Il est probable que ma littérature ne soit rien, mais alors il est également sûr et certain que moi je ne suis rien du tout."(1) C'est aussi dans cette correspondance avec Felice que s'indique la difficulté qu'éprouve Franz Kafka, le juif pragois de langue allemande - condition qui ne fait que redoubler la question du "chez soi" pour lui -, à être chez soi dans sa maison familiale. Cette difficulté se cristallise, notamment, sous la forme d'une hyper-sensibilité aux bruits des siens. En s'en plaignant à Felice, il ajoute au sujet d'un court texte, intitulé Grosser Lärm, ("Grand Tapage") qu'il vient de publier : "A preuve la description que vous trouverez à la situation acoustique de notre appartement, description qui, pour le châtiment public et peu douloureux de ma famille, vient de paraître dans une petite revue de Prague."(2) Comment Kafka essaie-t-il de faire face à ce tapage qui compromet
ses chances d'écrire ? En échangeant les heures de la journée par celles de la nuit. A son retour de la Compagnie d'assurances où il travaille, il prend son repas et essaie de se reposer quelques heures dans l'après-midi pour pouvoir se lever et écrire la nuit. Celle-ci est le véritable abri pour cette activité si décisive et essentielle à ses yeux, mais qui aux yeux de ses parents ne peut être qu'une lubie, un simple passe-temps. La nuit-refuge joue ici un rôle clef : elle met la maison "entre parenthèses", elle en opère pour ainsi dire la réduction en créant autour de lui l'espace de solitude qui lui est nécessaire. Mais on aurait tort de croire que tout cela se serait passé autrement si la famille Kafka avait habité dans une maison plus grande permettant aux uns et aux autres de s'isoler; autrement dit qu'il y aurait eu une solution socio-économique ou technique à ce que Franz Kafka a lui-même désigné comme "la situation acoustique de notre appartement". Ce serait méconnaître ce qui se cache derrière la plainte sur la situation acoustique de la maison, plante que, dans les lettres à Felice, il ne faut pas lire isolément mais en la rapprochant d'autres "aveux" ou "demi-aveux" de Kafka. Ainsi, sa remarque à propos des chambres d'hôtel, que nous citons en nous contentant d'attirer l'attention sur le contraste entre la tonalité affective (la Stimmung) du début et celle qui perce vers la fin, lorsque lui-même se met à "soupçonner" son goût pour les chambres d'hôtel : "]... cela me donne le sentiment ou tant au moins le soupçon de ce que pourrait être une existence nouvelle, inemployée, destinée à quelque chose de meilleur et tendant tous ses ressorts au maximum, ce qui, il est vrai, n'est peut-être pas autre chose qu'un désespoir pourchassé qui se trouve à sa vraie place dans ce tombeau glacé d'une chambre d'hôtel. Moi en tout cas je m'y suis toujours senti très bien."(3) La question n'est donc pas que la plainte sur l'impossibilité où il est de s'isoler dans sa maison ne serait pas justifiée. Elle l'est. (Nous savons d'ailleurs qu'à un autre moment de sa vie Kafka a loué pour peu de temps et en vue de son travail littéraire un logement dans le château Schönborn). Mais il n'est pas moins vrai qu'elle renvoie à quelque chose d'autre, et d'autrement plus déterminant qu'à la réalité acoustique de sa maison, à savoir à la position même où il se trouve par rapport à son père. Un père qui, justement, a de la voix, surtout lorsqu'il se met en colère, ce qui arrive fréquemment, ainsi que le révèle le texte connu sous le nom de Lettre au père. Lettre jamais remise à son destinataire, mais qui, après-coup, se donne comme un étonnant document autobiographique. Dans ce texte, où Kafka entreprend, avec une lucidité hors du commun, de s'expliquer avec son père pour mieux s'expliquer avec soi-même, à soi-même, se laissent entrevoir les raisons de l'exil intérieur qui a dû être celui de l'auteur du "Château". Ou plutôt, ce qui lui a pour toujours barré l'accès à une maison qui fut pour lui un chez soi.

Nous retiendrons que deux courts moments de cette longue Lettre qui commence ainsi : "Très cher père, Tu m'as demandé récemment pourquoi je prétends avoir peur de toi."(4) D'entrée de jeu s'exprime l'affect, la tonalité affective qui domine le rapport du
fils au père - la peur, et, au-delà de cette peur, l'angoisse quant à sa propre identité -, et qui sans doute explique encore, ou au moins en partie, le pourquoi du non-envoi de la lettre. Voici maintenant le premier moment que nous avons choisi d'évoquer, celui où Kafka essaie de "décrire" l'attente minimale que son père pouvait formuler à son égard alors que de son côté il ne pouvait que le décevoir : "... mais tu attendais au moins un peu de prudence, un signe de sympathie; au lieu de quoi, je t'ai fui depuis toujours pour chercher refuge dans ma chambre, auprès de mes livres, auprès d'amis fous ou d'idées extravagantes; ..." Devant l'incompatibilité la plus totale entre ces deux êtres qui partagent le même toit, et qui plus est, sont unis par les liens les plus étroits, la "fuite" du plus faible va se jouer sur tous les plans de l'existence, ainsi que lui-même le dira un peu plus loin : "Je me mis à fuir tout ce qui, même de loin, pouvait me faire penser à toi."(5) Toutefois cette fuite n'a pu signifier pour Kafka une véritable rupture, voire une séparation.

Et puis, où fuir, si dans l'espace du rêve, de l'imaginaire, la place du père est démesurée ? N'est-ce pas ce que finit par dire Kafka, lorsqu'il écrit dans une sorte d'amplification mythico-onirique : "Tel que nous sommes, le mariage m'est interdit parce qu'il est ton domaine le plus personnel. Il m'arrive d'imaginer la carte de la terre déployée et de te voir étendu transversalement sur toute sa surface. Et j'ai l'impression que seules peuvent me convenir pour vivre les contrées que tu ne recouvreras pas ou celles qui ne sont pas à ta portée. Etant donné la représentation que j'ai de ta grandeur, ces contrées ne sont ni nombreuses ni très consolantes, et surtout, le mariage ne se trouve pas parmi elles."(6)

Nous savons que Kafka a pu trouver au moins une "contrée" qui n'était pas occupée, traversée ou barrée par la figure de son père : celle de la feuille blanche. Elle a été pour lui l'espace vide à partir duquel il lui est devenu possible de constituer en son identité d'écrivain. Au moins elle lui laissait la place pour être autre que le fils que son père avait pu souhaiter avoir. Le prix à payer a été lourd pour l'homme Kafka. La constitution d'un "chez soi" lui est demeurée interdite, même si ni l'amitié ni l'amour ne lui ont jamais fait défaut. Ainsi, de même qu'il n'a pu se marier malgré les "combats désespérés" avec lui-même que furent ses fiançailles (en particulier avec Felice), il ne lui a pas été permis d'"épouser sa maison" selon la maxime pleine de sens de René Char : "Épouse et n'épouse pas ta maison."(7)

Que l'on nous comprenne bien. De cette œuvre il n'a pas été question dans tout ce qui a été dit jusqu'ici. Loin de moi l'intention bien naïve - et vouée à l'échec - d'avoir voulu expliquer les œuvres par la vie de l'écrivain ... Ce qui nous a importé c'était de faire entrevoir, à travers des textes, qui, à proprement parler, ne font pas partie des œuvres de Kafka - encore qu'ils puissent et doivent être pris comme appartenant au "corpus" - , comment la question du "chez soi" a pu se nouer chez lui d'une
façon qui, tout en étant singulière, car elle était inséparable de son devenir écrivain, n’est pas moins riche d’enseignement pour celui qui se met à réfléchir sur le "chez soi". Que cela puisse, au moins, ébranler nos opinions les plus courantes sur cette question. Mais notre visée n’entendait pas s’arrêter à cet ébranlement. En faisant allusion à Kafka nous entendions montrer comment la question du "chez soi" ne doit être séparée de celle de l’identité, de l’ipseïté, laquelle se pose non pas à propos d’un "solus ipse", mais d’un être qui est toujours déjà en rapport avec d’autres. Ainsi la question "qui suis-je ?" ne se laisse pas penser indépendamment du "Où suis-je ?" et du "Comment y sommes-nous ?"

Il resterait à faire remarquer que les rapports d’un être avec d’autres s’inscrivent dans l’horizon du monde qui correspond à leur être-ensemble. Que l’on se souvienne, par exemple, de ce que, d’un point de vue anthropologique, disait Fritz Morgenthaler en conclusion d’un de ses essais sur les Dogons : "Le désir qu’avait Dommo de me montrer sa maison nous a menés au lieu de réunion des anciens, à la maison du chef du village, à celle du prêtre, puis à la maison du chef de famille, et enfin à sa propre demeure : dans ces endroits, en un sens chaque fois bien précis, il est "chez lui"."(8) La question du "chez soi", en tant même qu’il est un des principaux repères identificatoires dès le niveau psycho-sociologique, est donc imbriquée avec celle de la manière dont un être-ensemble se constitue, et de tels rappels doivent nous empêcher d’isoler la considération du "chez soi" de celle du monde auquel il appartient.

A présent, et pour finir, si nous revenons sur les considérations faites jusqu’ici nous sommes amenés à voir comment d’ordinaire nous faisons fausse route, lorsque nous faisons de l’opposition dedans/dehors le modèle pour la compréhension de notre rapport à l’espace. L’espace, en tant qu’habité, n’est pas un dehors inerte qu’un sujet aurait à façonner selon sa volonté ou ses désirs. A cette vue se rattachent encore tous ceux qui prétendent au moyen de dispositifs décoratifs rendre l’espace expressif du sujet, sans se poser la question du "Qui ?". Comment répondre à la question "Qui suis-je ?", autrement qu’en occultant la béance à jamais ouverte de cette question, par une "idée ou un idéal du moi", qui fonctionne comme une image flattause et trompeuse de soi. Ce serait la maison-miroir embellissant, avant, peut-être, de devenir la maison-piège, oblitérant un véritable accès au "chez soi". S’il n’est pourtant pas faux de dire que la maison "exprime" ses habitants, cela ne peut se produire véritablement qu’à leur insu, et tout d’abord pour les autres. Etre chez soi n’est donc pas pouvoir se "contempler", se voir dans une maison-miroir, mais pouvoir articuler son existence au milieu d’êtres et de choses avec lesquels des liens de familiarité, d’intimité, ne cessent de se tisser et de se retisser, d’autant plus forts qu’ils n’enferment pas sur eux-mêmes ceux qui les tissent. Mais liens toujours contingents et précaires, tant il est vrai qu’il n’y a de
familiarité que sur ce fond d'inquiétante étrangeté qui est celui même de l'exister.

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2

Ecological psychology
SYMPOSIUM "ECOLOGICAL PSYCHOLOGY" (ABSTRACT)

Ecological psychology did not emerge as a component of the "ecological movement". It arose much earlier and owes its existence to Barker's idea that psychology - in analogy to biology - needs an ecological subdiscipline or an ecological perspective, as an indispensable complement to experimentally oriented methodology. Ecological psychology nevertheless also has good reasons to ascertain, in "looking back", that its hopes had been somewhat too optimistic. Why did they to some extent remain unfulfilled? What is our present point of view? What are our plans and expectations for the future?

The symposium will be focussed on Barker's "behavior setting" concept which, in the meantime, has undergone various further developments, though less than would have been possible and desirable. Most of these trends and attempts appear, on the whole rather incidental, sporadic, non-systematic. However, due to their respective independence they reveal the multiplicity of potentialities and tasks for further progress in ecological psychology. As a complex systemic unit, the "behavior setting" lends itself to extensions in quite different directions. At least five main tasks or trends seem to be taking shape so far:

1. "Psychological ecology" aims at taking a descriptive-taxonomic inventory of all naturally functioning systems of person-environment-interrelationships. What are "natural units" above and below the "behavior setting" level? How are they defined and delimited?

2. The "behavior setting" itself, as the basic unit of Barker's "ecobehavioral" approach, deserves further elaboration. Is there any news about it?

3. The individual participant of a behavior setting system can (while actually participating in it) be viewed in traditional or current psychological terms. How does this enrich and differentiate behavior setting theory and research? How does the systemic context determine details of the individual's participation processing?

4. The individual as a whole, viewed in different longitudinal perspectives, overarches, as a different kind of "natural" systemic unit, all his/her various actual behavior setting
participations. How can (individual) behavior setting participations be integrated into an ecological personology?

5. Although points 1 to 4 figures as issues in basic research they nevertheless can also raise questions of practical applicability.
Robert B. Bechtel*
Department of Psychology, University of Arizona
Tucson, AZ 85721 U.S.A.

BACK TO THE FUTURE...AGAIN
A PERSPECTIVE ON ECOLOGICAL PSYCHOLOGY

INTRODUCTORY STATEMENT

Some confusion exists about the elements of ecological psychology. Behavior Specimen Records were the first attempt to capture the richness of daily behavior. Behavior Settings were the units of behavior discovered after conventional psychology was abandoned, but these were relayed to the community as a whole and individual behavior was deemphasized. This may account for the lack of acceptance in U.S. Psychology. But behavior settings when compared across communities and organizations of differing size led to underemphasizing theory which explained higher participation levels in smaller groups and organizations. The main philosophy of data collection in ecological psychology was to adopt the role of transducer and not impose manipulation of variables. While none of these concepts has been accepted by mainstream U.S. Psychology, the need for unobtrusive, wholistic data collection is still felt as manifested in the transactional perspective, which repeats many of the tenets of early ecological psychology. Thus, the hope of the future is that this need will continue to be felt and the principles of ecological psychology will be discovered by a new generation in whatever form they may take.

While the term ecological psychology is clearly connected to the work of Roger Barker and his colleagues, the use of that term in the literature is not as clear. In their reference to Barker and Wright's work, Hall and Lindsey (1957), refer to the daily behavior of children as an important contribution to developmental evidence. M. Brewster Smith in his review of Qualities of Community Life, however, questions whether anyone would want to make the effort to do behavior setting surveys again. Kaminsky (1982) in his review of ecological psychology questions whether the "tradition" of Barker has not been lost in the later work of Barker's colleagues. But are the daily behavior of children, the behavior setting surveys and a "tradition" of research linked together in some way, or are these reviewers all talking about separate and distinct concepts? Before any discussion of ecological psychology, it is best to make clear four elements that are often confused.

The first element is the behavior specimen record, really a method more than a concept, but it is mentioned first because it
came first in the chronological evolution of ecological psychology. In their first book, *One Boy's Day*, Barker and Wright (1951) presented a detailed record of the daily events in the life of a boy in a small midwestern town. In the next few years there followed about seventeen such records (unpublished), and these were considered the rich ore of daily life from which valid facts about human behavior could be mined inexhaustibly. The method of collecting this data was long and tedious and it took reams of trained observers who had to spell each other every 20 or 30 minutes because of fatigue. While behavior specimen recording was a featured element of the first ecological psychology textbook, *Midwest and Its Children* in 1955, this method was dropped from the 1968 textbook.

By 1968, Barker had clearly moved from a detailed recording of daily events of individuals to the more global perspective of seeing behavior as occurring in natural units called behavior settings. While behavior settings have people in them, they are essentially *supra* individual and are more closely linked to the community than to individuals. What so many psychologists have had trouble accepting is that behavior settings are essentially units of community behavior: they are connected to the life of a community while individuals become interchangeable. It is this non-global view that Kenneth Little, former executive director of the American Psychological Association, felt was the key stumbling block to the acceptance of ecological psychology by American psychologists. In an address to the Interprofessional Council on Environmental Design of the American Society of Civil Engineers in 1970 he asserted that the chief reason why U.S. psychologists had not accepted ecological psychology was the "over commitment to personality as an explanation of human behavior." Nowhere does Barker repudiate personality, he simply ignores it.

A third element of ecological psychology which is often confused is the "theor". When many people talk about Barker's "theory" they confuse the concept of behavior settings as a unit with undermanning theory, the only theory which Barker espoused. This theory was first described in the 1960 Nebraska symposium on motivation, supported in more detail in the book, *Big School, Small School*, 1964, presented again in the 1968 text and then added to and expanded by Wicker (1969, 1979) and Bechtel (1985). Essentially, undermanning still has problems with explaining the relationships among setting size, organization size, the optimal size of behavior settings and the many forces which operate among the parameters of group size and participation level.

Nevertheless, undermanning theory remains an important attempt to explain the impact that small group size seems to have on human behavior. It is an important cornerstone to a situational determinist viewpoint. But in a society where bigness is always considered superior, the evidence of the superiority of small schools and organizations was not acceptable.
Finally, a fourth source of confusion is the viewpoint Roger Barker conveys about the way psychologists should do research. He delineates the difference between the psychologist as operator, imposing a selection process on data gathering, as opposed to being a transducer, of non-interfering conduit for data. This is essentially a Baconian rather than a logical positivist view.

And, of course, all four of these elements are connected. It was Robert Barker, the transducer, who abandoned traditional psychological methods to discover the basic facts of human behavior by using behavior specimen records, and was then led to the discovery of larger-than-individual human units of behavior called behavior settings, and these in turn led to the discovery of underrunning theory when the size of the behavior settings was found to influence behavior. So the elements are really stages in the evolution of research. Yet the philosophy of the transducer remains supreme and Robert Barker would be the first to assert that if "more natural" units of behavior were discovered the behavior settings would be abandoned. The transducer is an empiricist above all else.

Now at last we are able to understand much of the confusion that has surrounded ecological psychology. Empiricists who are invested in personality as the unit of behavior can well understand the behavior specimen records as relevant but dismiss the behavior settings as sociology. The logical positivist, imbued with the experimental method as the way to truth sees ecological psychology as anthropology at best.

Thus, in an academic world where experimental evidence is considered the only acceptable truth, it is surprising that ecological psychology has done as well as it has. Roger Barker received the career gold medal of the American Psychological Association. Surely some of the over-committed to personality must have looked beyond their traditional noses. Yet, even though Holahan (1982) claims that Barker founded all of environmental psychology, it remains an accepted truth today that ecological methods are not used and rarely taught. Kaminsky feels it is the fruit of the concept (Kaminsky, 1983). Barker (1953), like Kenneth Little, feels it is the traditional values of the psychologists.

What, then, can the future hold for ecological psychology? In a way, the need for the basic elements of ecological psychology simply continues. And even though the methods and concepts may not be followed as originally conceived, the evidence for desirability of transducer-collected data keeps surfacing.

A prime example is the new transactional approach to data collection espoused by Altman et al (1987). An ecological psychologist cannot read this literature without a sense of déjà
vu. The transactional view is "... the view that phenomena are made up inseparably of people/psychological processes, environment, and time, and, therefore ought to be studied as holistic, temporally linked events." The transactional view focuses on networks and proposes that "(1) network phenomena be studied holistically, as composed of many aspects; (2) stability and change are inherent qualities of networks; (3) unique phenomena and general principles are both worthy of study; and (4) research can usefully focus on patterns of relationships among aspects rather than on antecedent-consequent relationships between them." (Oxley et al, 1986).

One can only ask from the ecological perspective which behavior settings make up a network and the bridge between the two views is accomplished. I welcome the transactional view of studying behavior in context. It has a familiar and comfortable feel to is principles. I welcome it back to the future...again.

So long as the need for studying behavior in context continues to be felt, the ecological point of view and methods will be current. It does not matter whether the units are called by the same name or the methods given the same labels. What is important is that the transducer model of collecting data moves forward to be rediscovered by future generations. They are all welcome to the future as many times as they want to make the future their own discovery.

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LEARNING HOW TO ACT IN BEHAVIOR SETTINGS: THE CASE OF NEWCOMERS

According to my theory, behavior settings are interpreted as sources of knowledge and social forces. Empirical studies with first-time users of service settings were aimed at uncovering how newcomers make use of both other members' competence and the space of the physical milieu when they learn how to act in unfamiliar behavior settings, such as libraries and placement centers. There is strong evidence that newcomers' learning activities reflect different tactics of coping with social embarrassment. A transactional model summarizes the impact of cognitive, emotional, and socio-physical components on situated learning. Since the behavior setting perspective includes the transactions between physical, social, and behavioral components, it allows a comprehensive view of situated learning.

Behavior settings: Sources of knowledge and social forces
Much of the study of people acting in "behavior settings" has been the structure and the coercive forces of those settings upon individuals, and of the behavioral aspects of these individuals en masse (Barker, 1968). Thus, Barker's view on behavior settings represents a psychology of the absent individual. In contrast to this view, the present approach is aimed at bringing the single individual back into the focus of attention. Specifically, the attempt is to capture both the behavior setting and the single individual's learning activities as part of these settings.
A general theme that lies behind the discussion of research in this paper is that learning is situated. If one applies the behavior setting perspective on situated learning, a major concern for participants in such behavior settings is to interpret them partly as sources of knowledge (cf. Fuhrer, 1988a). In some settings this knowledge is distributed among certain members of the particular setting, whereas in others
the knowledge is not distributed, i.e., it is available from on particular member. Moreover, the members of behavior settings are connected by "social forces" (Barker, 1968), i.e., they are under the impact of setting-specific rules (the setting program), structures of involvement and responsibility. Thus, in behavior settings learning activities are both supported and constrained.

The social cognitive meaning of learning activities. From a cognitive point of view, learning activities, such as asking questions to knowledgeable setting participants or imitating others, are directed to update current cognitive schemas, to make sense of what is going on, and to plan actions accordingly. Many social psychological and social anthropological theories, however, assume that people's actions are motivated to create desired impressions on others (Goffman, 1959). Thus, I assume that learning activities in behavior settings have both cognitive and social meanings.

In recent extensions of the cognitive research on questioning in behavior settings (e.g., Fuhrer, 1987) it was found that crowded newcomers asked fewer questions than did uncrowded newcomers. The interaction between prior knowledge and social density on the number of questions newcomers asked, indicate that the crowding effect is basically found within the group of subjects without prior knowledge. That is, crowded newcomers without prior knowledge asked fewer questions than did uncrowded subjects without prior knowledge. In another study (Fuhrer, 1988b), the results show that setting-specific prior knowledge and subject-other goal congruence increase the control over the setting and reduce the experience of crowding stress and social anxiety which, in turn, leads to an increase in question asking. Finally, if newcomers have the choice between question asking and observing behavioral models, they relied more on observing which might be less embarrassing (Fuhrer, in prep.).

These findings indicate that the newcomers' lack of prior knowledge made them reluctant to ask questions in the presence of many others. Since other setting participants will interpret the newcomer's actions in relation to what they already expect of him/her (Heider, 1958), it seems likely that a newcomer will consider this attributed knowledge when coping with social embarrassment. Perhaps newcomers with low prior knowledge under conditions of high social density and low subject-other goal congruence reduce question asking because they have engaged in a special sort of
social categorization, viewing themselves as outsiders among insiders. Newcomers are more likely to categorize themselves as outsiders, when other setting members are insiders and when they (1) feel that they act systematically different from others, or (2) possess little or no prior information about the salient behavioral standards of the setting (Moreland & Levine, 1982).

Physical mediators of learning activities
Taking the assumption as a basis that architectural features of settings moderate people's learning activities, I analyzed how newcomers made use of the behavior setting's physical milieu based on a behavioral path analysis (Fuhrer, in prep.). The results show that crowded newcomers are more often in the peripheral zone of the milieu than uncrowded newcomers. Moreover, newcomers in the presence of others deviating from the behavior setting's salient behavioral standards were staying less frequently in the central zone of the milieu than did newcomers in the presence of others acting in accordance with the setting program. These effects were most prominent under conditions of high social density. These findings support the hypothesis that the peripheral zone fulfills two important functions in coping with social embarrassment: First, the level of social stimulation met in a behavior setting can be reduced by diverting attention away from people and toward nonsocial stimuli (e.g. pictures, advertisements placed on walls) located within the peripheral zone. Second, the peripheral zone provides opportunities for newcomers to engage in alternative, nonsocial behaviors not considered inappropriate by other setting members. These nonsocial activities are aimed at covering up the newcomer's incompetence. It reflects the newcomer's motivation not to be recognized as an outsider among insiders which, in turn, indicates some kind of non-learning (Fuhrer, 1988a).

Situated learning: A conceptualization and model
To help summarize and integrate some of the basic elements that appear important for the development of a comprehensive theory of situated learning, I present a theoretical model that emphasizes the need to integrate conceptually how individual cognition/emotion and the behavior setting contribute to situated learning. Retrospective verbal protocols of first-time users in a career planning and placement center are the empirical basis of the model (see Fuhrer, 1988a). The model (see Figure 1) borrows from many of the ideas discussed
Figure 1: A model of newcomer x setting transactions in situated learning
earlier in this paper but has also some unique features. This model, however, by no means covers all the problems referred to earlier.

The behavior setting's control unit as described by Barker (1968) is considered only in so far as it provides inputs to the newcomer's control unit and as it receives outputs from the newcomer's control unit. Newcomers entering behavior settings explore these settings by applying cognitive schemas in order to understand what is going on. If such a schema is activated in memory, this may thereby become available for use as a cognitive resource of knowledge for a discrepancy-reducing feedback model. The activated cognitive schema then operates as a recognition device whose processing is aimed at testing the schema against the behavior setting's behavioral standards. Schema/setting discrepancies trigger the newcomer to verify the available sources of knowledge and to plan the use of these resources accordingly. Since behavior settings are partly social settings, these schema/setting discrepancies cause emotional arousal, such as social embarrassment (Fuhrer, 1988b).

Continuing on Figure 1, the newcomer then tests to what extent the different ways of using the resources of knowledge will be socially embarrassing. He/she tries to avoid embarrassing ways of using these resources (1) when he/she feels crowded; (2) when others systematically deviate from his/her actions; and (3) when he/she views him/herself as an outsider among insiders. These effects are most prominent for newcomers without any setting-specific prior knowledge. Thus, both the fit between setting and schema and social characteristics determine the kind of learning activities to which newcomers switch after evaluating their prospective actions in comparison with what constitutes a reasonable action within the particular behavior setting. Emotions of social embarrassment are likely to modify the plans that newcomers formulate for achieving their goals.

If the schema fits the current behavior setting, the final mechanism occurs, deactivating the system or freeing it for further actions. If, on the other hand, the second test reveals that setting/schema discrepancies still exist, learning activities are reactivated and continue to sequence alternately with testing the schema/setting discrepancies until the newcomer has achieved his/her intended goal.

Concluding remarks
The primary link between behavior settings and the newcomers' learning activities is via the newcomers'
cognitions of the relations between the sources of knowledge provided by the behavior settings and its social forces. Situated learning is the joint product of cognitive, social, and emotional processes. The enforced attention to behavior settings illuminates the transactions between physical, social, and behavioral components in the process of learning. Although the model focuses on intra-setting processes, it would certainly be expandable to include extra-setting conditions that contribute to the internal dynamics of the particular behavior setting (cf. Wicker, 1987).

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97
Ecological psychology and experimental psychology appear as two different, unconnected worlds. Could they be reconciled or even integrated to one world? Ecological psychology claims to be responsible for all kinds of person-environment-interrelationships and may attempt to usurp experimental psychology by pronouncing all psychological experiments to be behavior settings. Supposing experimental psychology would not resist: would that have any consequences for it? Or would that amount to a Pyrrhic victory for ecological psychology? And how could experimental psychology enter into the realm of ecological psychology? What would be the repercussions on itself? The paper attempts to find at least some answers.

In Barker's (1968, p. 1 ff.) view psychology is something like an anomaly. While other natural (and also social) sciences first passed through a stage of comprehensive descriptive exploration and taxonomization of their respective realms before they began the systematic investigation of details and/or search for general laws, psychology started right off with experimentation. Barker felt the necessity of compensating for this severe deficit and envisioned—taking biology as a model—a psychological kind of ecology. This is the most extensive and most fundamental objective of his "ecological psychology". The "ecological perspective" embraces all "natural" interrelationships of people with all their "natural" environments (Kaminski, in press). It implies asking questions like: What are the basic descriptive and functional units of "natural happenings"? What are their dimensions of variability? How can their respective internal organization be described and analyzed? What structural and dynamic interrelationships exist between all kinds of natural ecological units? Barker and his associates gave specific answers to all these questions, examples of "natural units" being—among others—the "behavior setting", the "multisetting synomorph", the community, the episode, the individual as a system that outlasts behavior setting participations and profits from them in a more or less idiosyncratic manner. This kind of "psychological ecology" starts with observing people in their natural surroundings. It develops methods and concepts for delimiting, describing, and taxonomizing "natural happenings" which, in principle, must be applicable to all kinds of "natural" people-environment transactions. Experimental psychology is not the only counterpart of the ecological perspective in psychology (cf., e.g., Cronbach 1957), but it is certainly the most remote one and therefore an especially appro-
appropriate subject for the following considerations (c.f. Barker, 1968, p. 139 ff.). The immense multitude and diversity of experimental approaches makes it difficult to envisage "experimental psychology" as a unity. However, in all its multifariousness it is governed by a few almost universal principles: The experimentalist attempts to obtain if-then statements by systematic variation of experimental conditions. His/her descriptive concepts are constituted singly and constructively by experimental operationalizations. The experimentalist thus "creates" and deals with "tesserae" sensu Barker (1978, p. 4), i.e. with un-ecological, artificially delimited pieces of reality. The multiplicity of all these experimental activities can be subdivided into more or less extensive subsets, each of them gaining its internal coherence through an organizing, thematically specialized paradigm, model, or theory. However, if we would mentally try to aggregate and to integrate all these experimental research activities: would all their facts and demonstrated regularities fit together and construe or disclose one well-ordered world of human life? And--more than that--could the reality of human life, as it is articulated and constituted by experimental psychology, be somehow or other mapped into the "natural world" of human life, as it is envisioned and claimed by ecological psychology? Or must this attempt fail because the experimentalists have interspersed and spoiled their reality of human life with too much artificial, methodology-bound order?

THE PSYCHOLOGICAL EXPERIMENT AS AN OVERLAP BETWEEN TWO WORLDS

As it stands, the psychological ecologists and the experimentalists evidently live in almost totally separate worlds. Should we acquiesce in this status for ever? Or should we interpret this duality as a provisional one, hoping that one fine day all psychologists will consider the "natural world" as their proper homeland and domaine for research? Be it as it may, today clearly the ecologist must be blamed more than the experimentalist for this state of the affairs. The ecologist claims to be responsible, in principle, for the description and analysis of all kinds of "natural happenings" in human everyday life. Since all psychological experiments are happenings in the experimenters' and in the subjects' everyday life they, too, should lend themselves to description and analysis in ecological perspective. This could be an occasion for psychological ecologists to establish contact between those two worlds through demonstrating that they are connected by an interface: Each psychological experiment could be interpreted as a behavior setting. Why has this been left undone hitherto?

This consideration raises a series of questions: What could an eco-behavioral analysis of a psychological experiment really accomplish; in what way (in how far) could that be profitable? Would it be possible to connect the ecohbehavioral description and interpretation of the happenings within the experiment with the aspects, variables, and constructs which the experimentalist him/herself applies in describing and interpreting the processes occurring in
the experimental situation? If that turns out to be impossible: for what reasons? What general consequences would that have for understanding the interrelationship between those two worlds? Or if this interconnecting succeeds, at least in part: what would follow for either of them, psychological ecology as well as experimental psychology, respectively? (The question whether or how interconnecting those two worlds could also be effectuated in essentially different ways must remain untouched here.)

How could we obtain answers to these questions? In the most thorough procedure we would probably videotape a sample of psychological experiments in toto (or at least, in a case study, one typical example). Then several subjects (or at least, in a pilot study, one) who are familiar with all the details of behavior setting description and theory (see Barker, 1968) would categorize and analyze the stream of happenings with respect to the entirety of descriptive and interpretative ecobehavioral conceptualizations pertaining to behavior settings. In a next step the same videotape(s) would be analyzed by the experimenter or by a colleague fully familiar with the corresponding experimental paradigm by applying the entirety of descriptive and interpretative conceptualizations which are afforded by this paradigm. Afterwards the two kinds of analyses are compared systematically by qualitative content analytic methods as to corresponding and non-corresponding contents. Finally, theoreticians of both camps would have to evaluate the results of the comparisons, at best in common, with respect, e.g., to compatibility or incompatibility of the two descriptions of the experiment(s) and also with respect to possible modifications in their respective theoretical bases, that could be suggested by the comparison.

A SIMPLIFIED SHORT-CUT COMPARISON

In default of a virtual investigation we will construe an imaginary confrontation between an ecobehavioral and a traditional description of a hypothetical modal experiment. Moreover, the comparison will be grossly simplified, e.g., in that it only exemplifies the gist of the argumentation by virtue of a view selected classical ecobehavioral concepts.

Implications of an ecobehavioral articulation of the typical psychological experiment

The experimentalist will probably not be very much impressed by having his/her experiment described and interpreted as a classical behavior setting. The outcome will appear, at first sight, as trivial and useless, as all too coarse-grained, far from the precision and the minuteness in which (s)he looks at particular and specific processes within the experiment. However, closer inspection reveals that even Barker's original ecobehavioral perspective may convey to the experimentalist important and useful viewpoints. Generally speaking, the heuristic fruitfulness of the behavior setting concept seems to be based mainly on three interdependent characteristics of an ecological approach: a holistic view (i.e.

100
giving the entirety methodological and theoretical priority over parts and details); a striving for completeness in description and explanation; an inclination towards (in favor of) systemic analysis. Furthermore, the descriptive categories of the ecobehavioral approach have been elaborated in extensive comparative observations of a great variety of behavior settings. As coarse-grained as they may appear from many special perspectives they nevertheless must have proven applicable and valid for articulating a wide diversity of happenings in everyday life. Thus they may be expected to possess a certain validity and heuristic value also when applied to experimental situations. In particular, the structural and dynamic properties of behavior settings may be exploited, e.g., for generating questions and hypotheses allowing for possible influences from contextual conditions on the focal experimental processes. Admittedly, many kinds of contextual influences have already been considered and investigated by the experimentalists themselves. But there they are usually conceived of as variables only, singled out from the total systemic network in which they are functionally embedded, as the ecologist would understand them.

Let us discuss a few examples: Supposing we would describe the stream of happenings within a psychological experiment according to Barker's specimen record methodology. It would probably appear then that, there also, the subjects--not to mention the experimenters themselves--are almost continually engaged in multiple acting. But which of the experimentalists is concerned about this fact? Is it totally irrelevant for the scientific interpretation of the focal experimental processes?

Barker's "penetration" aspect (1968, p. 49f.) directs our attention to the distribution of responsibility and power in psychological experiments. Be it a clearly asymmetrical or an almost symmetrical one, the ecologist tends to trace the implications of this distribution through the totality of the behavior setting system and not merely allow for its influence on a few isolated, partial processes. Besides, the "penetration zones" concept could also serve to sensitize us for the informal "zoning" within the "milieu" (the spatial-material components) of a psychological experiment and for its--possibly very subtle--effects on the subject.

The concepts "milieu" and "behavior objects" encompass more than the mere discriminanda and manipulanda of the proper experimental arrangements. They therefore may suggest questions as to what determinants, out of the totality of the spatial-material conditions, might exert which kind of influence on the focal processes in the experiment.

Barker distinguishes, with respect to the happenings within a behavior setting, 11 "action patterns" (aesthetic, business, education, etc.) and 5 "behavior mechanisms" (affective behavior, gross motor activity, manipulation, talking, thinking). Certainly, estimating the percentage of occurrence of each action pattern for a psychological experiment would hardly promise any enlightening results. But this categorization of activity touches upon the background motivation, the superordinate goals of the participating individuals, and it suggests questions concerning the multiple instrumentality of a psychological experiment for the persons
involved. The "program" (Barker, 1968, p. 80 ff., 168 ff.) is the regulatory basis of the behavior setting as a whole. (In psychological or sociological perspective it may be interpreted as the shared knowledge of the participants about the correct goal-directed functioning of the system.) Psychological experiments are in several respects a rather exceptional type of behavior setting. They are usually relatively short-lived, without having a true life cycle (Wicker, 1987), have a small number of occurrences (fixed in advance), and they are explicitly created, i.e. planned and initiated, often by only one person (the researcher). The "program" must be constructively anticipated and imagined as completely and with as much detail as possible. It is hierarchically organized, where the focal processes, being framed by the proper experimental arrangements, are embedded in more informal wider contexts of social interactions and of more or less unspecific orientational and adaptational transactions. While the core of the experimental procedure can--and often must--be preconceived very precisely, since the experimenter is, by contract, admitted to have almost total "leadership" in these critical periods, the contextual phases cannot be predetermined thus far. Therefore a psychological experiment is based on several partial programs which differ in quality and strictness. They are altogether the main regulatory basis for the "program circuits" and the "maintenance circuits" (Barker, 1968, p. 168 ff.). In order to test the appropriateness of the set of programs the experimenter usually executes a series of pilot trials.

The program development is primarily aligned with the scientific goals of the experimenter. But the program set must also provide for a certain instrumentality for the potential subjects; otherwise they would not join the behavior setting (or they would leave it precipitously). From the perspective of the potential future subjects, the psychological experiment is usually not a "natural", freely accessible behavior setting whose benefits and costs they can estimate on the basis of prior experience. Thus the experimenter must envision his behavior setting from the view of the individual system, the person whom (s)he wants to enlist for participation as subject. Then the experimenter must invent a set of different verbal representations of the behavior setting. The first one must be conveyed to the potential participant under the auspices of some other, "natural" behavior setting whose specific program characteristic have to be taken into account, at the risk of becoming a victim of a "vetoing circuit". This first verbal representation of the psychological experiment must offer preliminary and basic information about the behavior setting program as well as making it attractive within the horizon of natural interests of the individual system who must be convinced of its net gain and its instrumentality for any of his/her "personal projects" (Little, 1987).

The second program representation is transferred to the participating subject verbally--and in part nonverbally--right after (s)he has entered the behavior setting. It informs about the course of happenings to be expected in a more concrete, milieu-specific
manner. And a third verbalized program representation, the "instructions" in the strictest sense, pictures to the subject the hard core of the psychological experiment, those conditions and phases of activity in which the subject has to generate the proper experimental data.

The experimenter as a behavior setting creator is in a dilemma situation: On the one hand, the potential subject tends to follow his/her accustomed modes of "natural" ("ecological") orientation and tries to learn as much as appears worth knowing about a still unknown behavior setting; and the experimenter has good reasons to yield because (s)he is eager to win a participant. On the other hand, the experimenter must conceal certain parts of the behavior setting program because the psychological experiment often requires that the subject enter specific phases of the procedure as a naive, specifically uninformed person. If this status is not guaranteed, the behavior setting loses its instrumentality for the "personal projects" of the experimenter.

So much as a short and sketchy exemplification of a few ecobehavioral concepts and perspectives applied to typical psychological experimentation.

Repercussions for the ecobehavioral approach
So far ecological psychology appeared mainly as the donor when the psychological experiment has been interpreted as a behavior setting genotype. But, surprisingly and fortunately, the ecobehavioral approach seems to receive more from this donating than it has given away. Having been daring enough to attempt to enlighten the experimenter, the ecologist leaves the encounter deeply changed him/herself. This issue cannot be adequately discussed here; a few remarks must suffice.

Let us suppose that the experimenter is willing to adopt and to utilize the ecobehavioral interpretation of the psychological experiment and that he would ask the ecologist for help whenever he meets with problems. Then the coarseness of the ecobehavioral conceptualizations would very soon become obvious, especially when they are to be applied to the "hard core" of the experiment. Since psychological experimentation is focussed on very different kinds of individual and social processes and structures (perception, thinking, emotions, knowledge, cooperation, verbal and nonverbal interaction, etc.), the ecobehavioral conceptualizations will prove insufficient in a great variety of experiments. For what reasons? The experimenter as the creator of a behavior setting has to plan and to construct it in all details especially as concerns the hard core. Guided by the development of psychological tradition the experimenters' scientific interests and goals have become more and more differentiated, so that many processes, as well as their interrelations and conditions, are observed and investigated in a microscopic view. Therefore, at least the core of the respective experiments has to be constructed in a corresponding degree of differentiation and precision. Whereas the classical psychological ecologist (except for the "behavior setting technologist"; see Wicker, 1987) merely observed happenings and never had to create behavior settings; so (s)he was free to choose the degree of
differentiation which appeared appropriate for his/her more global descriptive and comparative purposes. The experimenter, on the other hand, cannot but attune the verbal program representation, especially the core "instructions", to the differentiation level in which (s)he analyzes reality because the subjects must be optimally preconditioned to the experimental procedure with which they are about to be confronted; and these experimental operationalizations must correspond to the differentiation level of the scientific problem. Thus the ecologist learns that the experimenter often just begins differentiating where (s)he has ended: In ecobehavioral view the "behavior mechanisms" manipulation, thinking, talking are basic descriptive categories; for the experimenter, however, they are but the starting point for extensive theoretical and empirical research about actions and psychomotor processes, about thinking, problem solving, consciousness, and language use. So, while the ecologist attempts to invade the fortress "psychological experiment" and to pronounce it to be a behavior setting, (s)he must take cognizance of the fact that the happenings in the behavior setting "psychological experiment" as well as, in principle, in all behavior settings whatsoever can be described and analyzed theoretically and empirically on very different levels of differentiation.

What follows? The questions are raised, how (or whether) the different levels of articulation can be interconnected systematically, and how to determine when, and for what reasons to choose which level (cf. Kaminski 1986, 1987, McGrath, 1981).

Note
The author thanks Walter Nilson for his assistance in raising the linguistic qualities of the text.

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LENELIS KRUSE*, FERNUNIVERSITÄT HAGEN, ÖKOLOGISCHE PSYCHOLOGIE,
POSTFACH 940, 5800 HAGEN, FRG

BEHAVIOR SETTINGS, COGNITIVE SCRIPTS, LINGUISTIC FRAMES

Behavior settings in the Barker tradition are conceptualized as non-psychological, supra-individual entities. It will be argued that it is useful to expand this conception toward a socio-cultural setting, stressing the fact that behavior settings are heavily influenced by the shared norms and value systems of a society. For the development of a truly ecobehavioral approach it appears necessary, however, to complement the behavior setting concept by psychological concepts that help to explain and predict typical verbal and non-verbal behaviors of setting participants. It will be proposed that the concept of script may serve as a cognitive correlate of behavior setting as it represents sequences of actions in typical settings. The linguistic concept of frame provides a further complement as it refers to setting-specific forms of speech. A theoretical and empirical integration of these concepts contributes to a more productive relationship between social and environmental psychology.

Ecological psychology from the very beginning claimed to be part of an interdisciplinary enterprise. Analysis and solutions of real problems of real people in real environments require concepts and skills from many disciplines and only concerted efforts will finally succeed in establishing a comprehensive human ecology. Similar demands for interdisciplinarity come from other fields of psychology, as well as from microsociology and discourse analysis. At first sight, these claims for interdisciplinarity may appear unrelated, heading for different goals. One objective of my paper is to show that, at least to some extent, the demands of environmental or ecological psychology, on the one hand, and social and language psychology, on the other hand can be reconciled. The ecological concept of "behavior setting", the cognitive concept of "script" and the linguistic concept of "frame" will be taken as examples for the attempt at bridging the gap between environmental, social and language psychology. "Behavior in social situations" (including language behavior) may serve as a preliminary common denominator for linking ecological and social cognitive approaches, toward more "psychologizing" of the ecological approach and more "contextualizing" of the cognitive and linguistic approaches.

BEHAVIOR SETTINGS AS SOCIAL SETTINGS

Everyday behaviors - be they individual or social activities - take place in concrete settings, they are intimately related with places
and things. While psychology in general has ignored the environmental context of behavior it was Barker and his associates (Barker, 1968; Barker and Associates, 1978) who have focussed specifically on this environmental context of behavior by developing an ecological psychology with the concept of "behavior setting" as its key-concept. Behavior settings are conceived of as eco-behavioral entities, to be characterized by a close ("synomomorphic") relationship between typical, standard patterns of behavior and a milieu circumjacent to the behavior. A church wedding, shopping in a supermarket, dining out at a restaurant, are typical examples of such behavior settings. A number of structural and dynamic attributes have been defined to identify behavior settings and distinguish between independent or overlapping settings. The essential properties are the concrete spatial-temporal boundary of the setting, the participants of the setting, and the material objects necessary for the participants to perform a behavioral program. While Barker conceives of a behavior setting as an objective, non-psychological entity, which can be analyzed in objective, almost behavioristic terms, he ignores the fact that he is actually dealing with social or socio-cultural settings characterized by typical behavior or conduct that is regulated by roles, rules, norms, and values. It could thus even be taken as a prototype of a social psychological concept. Considering the "restaurant" as the ubiquitous example of a behavior setting, it is to be conceptualized as a concrete pre-perceptual entity that occurs within specific physical and temporal boundaries. It comprises human components (waiters, customers) as well as non-human components (tables, menus). The essence of the behavior setting is its "program", i.e., typical or standard patterns of behavior (cooking, serving, eating) which are coordinated with the spatial seated at the table, but not behind the counter.) Barker has always emphasized the fact that behavior settings are extra-individual entities, specific individuals are not important but interchangeable. Their positions, roles, and functions, however, need to be maintained in order to maintain the program. The more essential the function of an object is, the more power a person exerts, the more important it is to find replacements for dysfunctional equipment, substitutes for "dropouts".

The social character of the behavior setting becomes even more apparent, when it is viewed, as Barker does, as a "self-regulating system", in which any considerable deviation of the program or in the physical milieu is counteracted by "maintenance mechanisms", such as correcting deviant behaviors, repairing defective equipment, or removing the deviant person, the defective object altogether from the setting (cf. also Wicker, 1979). While the range of possible behavior patterns may be large in one setting, smaller in another, they are always restricted by the necessity to maintain the program in order to keep the behavior setting alive. All the participants in a behavior setting finally have to comply, to adapt to the standing pattern of behavior that is characteristic for the setting. Barker even speaks of the "coerciveness" of the
setting (1968, p. 29), which may be based on several sources, some of them physical, most of them social: That restaurant customers in our culture do not sit on the table or on the floor is less due to physical features of the setting (e.g., tables too high or small, the floor too dirty to sit on) than to social forces which regulate behaviors by threats and promises, punishment and rewards. While sometimes the physical and social milieu may, in fact, seduce individuals to behave in the appropriate manner, e.g., to applaud and laugh at the cabaret, to rise during a church service when the congregation rises, other behavior patterns have to be learned explicitly, e.g., not to run through the long aisles of the nave. People who do not know the proper standards in a setting or do not quickly pick up the rules and regulations are explicitly regarded and labeled "deviant". As far as people comply with the physical and social forces of the behavior setting, exhibit behaviors that are in accordance with social and cultural norms, behavior settings can be said to effectively shape behaviors into uniform patterns. Barker may rightly state that there is more similarity between the behaviors of two individuals in one setting than between the behaviors of one and the same individual in two different settings, or else, that the behavior of an individual may be better predicted from the knowledge of the setting he/she is in than from knowledge of his/her individual traits, motivations, or attitudes. The analysis of some structural and dynamic features of behavior settings was meant to show that the concept which Barker has claimed to be an objective, eco-behavioral entity, should be more adequately labeled "social setting", as it is essentially the social make-up, or even better the socio-cultural structure that makes a behavior setting tick.

SCRIPTS AS COGNITIVE MODELS OF BEHAVIOR SETTINGS

The analysis of the structure and dynamics of such typical, setting-specific behavior or action patterns leads, almost automatically, to the question whether there exists a corresponding knowledge structure in the mind of the actor, a structure to be actualized or instantiated as soon as a specific setting is identified or certain actions are being planned. Rather than looking at behavior settings from the perspective of an external, uninvolved observer, we now analyze the perspective of a potential or active setting-participant equipped with cognitive skills (cf. Kruse, 1986). How do I know, e.g., which behaviors are appropriate in a specific setting, e.g., in a restaurant? How do I know that the waitress brings a Coke when I order it, but not, say, a new shirt should I ask for that? How do I know that the same waitress will not bring me a Coke, when I ask her for one when I meet her outside the restaurant setting? And how do I know that I may expect to find these behavior patterns not only in my favourite café but in other restaurants as well?
The theory of scripts (cf. Schank & Abelson, 1977) provides the conceptual framework to answer these questions, since it states that individuals have stored organized knowledge about typical situations or behavior settings, and that they use this kind of knowledge to interpret these settings and to act in and toward them, verbally and non-verbally, in an adequate way. While a script is a representation of a pre-determined, stereotyped sequence of action, characteristic for well-known, stylized everyday situations, it cannot and will not be used to handle novel situations.

Scripts are learned throughout an individual's lifetime. Since individuals have different biographies, they may have different scripts. Nevertheless, there is a large number of interculturally, even crossculturally, common scripts, as for example, dining out at a restaurant, attending a birthday party, shopping at the market. The more common a behavior setting is for a given culture, the more stylized or standardized its behavior programs are, the more can we expect that our scripted knowledge structure is adequate to handle such situations, and that others will have the same or matching scripts and will act accordingly. "The waitress typically does what the customer expects, and the customer typically does what the waitress expects" (Schank & Abelson, 1977, p. 61). Schank & Abelson talk about "situational" scripts when these refer to public situations of a more or less institutional character (i.e., social settings) and can be expected to be collectively shared (as distinguished from "personal" scripts which may exist for only a single individual, representing, e.g., specific neurotic behavior sequences). In a similar vein Stokols and Shumaker (1981) refer to the "social imageability" of places when these are associated with regular and predictable individual or collective behavior.

A further correspondence between behavior settings and scripts is in terms of the essential identifying features: Both specify the roles or functions of actors or setting participants, respectively; both define certain "scenes", sequences of behavior or behavior programs, respectively; and both stress the material context of behavior by including objects that are instrumental "props" for adequate script-like actions and are functional "non-human components" for behavior settings.

While many studies have been done on the role of scripts to interpret information about past or future events presented in texts, research on the relationship between scripted knowledge and actual behavior in social settings is still missing. It should be mentioned, however, that besides script theory there are other approaches that could be taken as a first step in that direction. I am referring to research on "situation prototypes" (cf. Cantor, 1981; Cantor et al., 1982) which tries to investigate how people describe and categorize everyday situations (like attending a birthday party). Cantor has found that there exist "consensual prototypes" that identify everyday situations (behavior settings) in terms of appropriate behavior patterns (dancing, drinking) and psychological states of participants (happy people) rather than in terms of physical characteristics.
The central role of socially appropriate behavior for the definition and social categorization of behavior settings has also been emphasized by Price and Bouffard (1974) or Stokols and Shumaker (1981) and seems to justify once more the term "social setting".

It is left for future research to provide evidence for the specific links between structured social knowledge (scripts or prototypes) and actual-behavior-in-social-settings.

LANGUAGE AND SOCIAL SETTING

As mentioned before understanding and interpreting social settings also includes the understanding of talking about them, and, furthermore, that action sequences make use of non-verbal as well as verbal channels. Hence, we can safely assume that there are scripts and schemata for the production and understanding of setting-specific language.

We talk differently in different settings with different people. We use another kind of speech when talking to the waiter than when talking to our colleague whom we invited for dinner. We have different speech varieties available which we use at different times, in different situations, with different persons.

What is true for language production also applies to language comprehension. We do not expect the sales-lady at the supermarket to whisper in a soft, almost sexy voice and we would be rather startled if people attending a funeral would suddenly start telling dirty jokes, laughing out loudly, as they may do toward the end of the funeral banquet. The interpersonal relationship in a work team, the power structure in an academic institution, the social atmosphere at a party, they can all be identified by the way people speak.

We expect people to behave and speak in a way that is appropriate to the socio-ecological setting, to the topic and the purpose of the conversation, to the participants (their social status, their mood, their interpersonal relations) and expect to find variations in discourse as to code, syntax, intonation, speech variety, dialects, etc. Various disciplines, such as sociolinguistics, social psychology of language and, in particular, the "ethnography of communication" are interested in the analysis of discourse (cf. Giles & St. Clair, 1979; Gumperz, 1982; Hymes, 1974), and a number of approaches have been developed to study the interaction between the above-mentioned elements or dimensions of a discourse situation. While the social psychology of language has only recently begun to discover the social setting as a major factor in speech situations (cf. Forgas, 1985; Giles & St. Clair, 1979; Herrmann, 1983), linguists with a background in sociology or cultural anthropology have for quite some time studied setting-specific multilingualism, use of speech varieties like dialects and sociolects, of "fan" language, and code switching (cf. Fishman, 1972; Frake, 1972).
Frase, to give but one example, who studied the problem: "How to order a drink in Subanum" (1972) demonstrated that for this speech act the speaker is not only required to use the correct words and syntax but has also to take into account "what kind of things to say in what message forms in what kinds of situations" (1972, p. 260). Other studies investigated the circumstances of the code switching of multilingual persons, e.g., in regions where people know Italian, German and a local dialect and use these "dia-types" in a setting-specific way: Italian in public and more formal situations, the local dialect in the pub and the German language at home, within the family. What happens when a stranger enters the pub? It affects a change of the social setting and people immediately switch to Italian.

It was in this context of sociolinguistics and ethnography that the notion of "frame" has been developed (cf., e.g., Metzing, 1980), a construct that contains the rules for verbal acts. The concept of frame denotes a cognitive frame of reference which two speakers have to agree upon before communication between them may succeed. Only then will speakers be able to attach the right meaning to each other's speech acts. In the same sense reference to and cognition of a behavior setting can serve as a frame for understanding the meaning of actions and speech acts.

Recent developments in psycholinguistics show a great interest in approaches that attempt to specify the roles that typical social situations or behavior-settings play in the way people use language in everyday life (cf. Forgas, 1985). Both is of interest: The effects of sociocultural settings (and respective schemata and scripts) on language use as well as the use of language serving to define (sometimes ambiguous) settings.

If we accept as a desirable goal an integration of social cognitive as well as environmental psychology, or at least some assimilation and accommodation of either side, we should try both to "socialize" and "psychologize" the conception of behavior settings as developed in ecological psychology, and to restore the concrete spatial and material context to the interpersonal and social relationships that are studied in social psychology. The concept of behavior setting as "social setting" could serve as an integrating concept. We should, furthermore, try to relate these socio-contextual structures and processes to cognitive and linguistic structures and processes.

The approach that I have suggested in this paper is meant to reconcile the seemingly antagonistic positions of "cognitivists" and "ecologists" about the relative importance of "the head the environment is in" or the "environment the head is in" (Wohlwill, 1974).

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Volker Linneweber, Fachrichtung 6.1, Universität Saarbrücken, 6600 Saarbrücken - West Germany

JEOPARDIZING PATTERNS OF SETTINGS: DEVIATIONS AND DEVIATION - COUNTERINGS

ABSTRACT

Although Barker theoretically conceptualized discrepancies between the "program" of the setting and events actually happening, he was primarily interested in states of "congruence" or "fit". Theoretical considerations and results of empirical studies are presented which focus on intra- and interpersonal processes resulting from events evaluated as contradicting to programs of settings. The results and their interpretation indicate that (a) Barker's approach generally offers room for this kind of events (b) criticisms concerning the static and a-philosophical character of his concept may be taken up productively (c) for this, a crossfertilization of ecological with social-psychological concepts is inevitable.

SETTINGS AS FRAMES FOR BEHAVIORAL REGULARITIES

Barker (e.g. 1968) directed his special attention to standing patterns of behavior-and-milieu. Primarily he was interested in behavior-milieu parts he called synomorphs. He studied the influence of behavior settings as "stable, extralndividual units with great coercive power over the behavior that occurs within them" (Barker, 1968, p. 17). "The sine qua non of behavior settings is this: they are not neutral places where people congregate for their own purposes; they are superordinate, self-regulating, dynamic entities which manipulate the behavior of their human components toward an equilibrium state for the setting" (Barker, 1987). Settings have a life of their own, they exist independently of particular persons. Nevertheless human components and their influences are essential to prevent settings from perishing: they realize deviations from programs of settings and initiate restorative or modificatory processes. These "setting maintenance actions" are extra-individual (they do not dependent upon specific persons) place-time specific actions imposed upon the components by the program of the settings.

This brief recapitulation of Barker's approach may indicate that his endeavours were directed towards the analysis of everyday regularities, i.e. ordinary events of ordinary people in ordinary situations. The extension of Barker's perspective towards
irregularities, i.e. events considered as contradicting to the program of the setting and maintenance activities initiated by members of the settings is topic of this contribution.

DEVIATIONS FROM STANDING PATTERNS OF BEHAVIOR

Some conceptual considerations and empirical studies presented here definitely take Barker's concept as a starting point. Using the title of a book by Marsh, Rosser, and Harré (1978), our attention is directed towards "the rules of disorder". These poles characterize the theoretical suspension created by the orientation in eco-behavioral as well as social psychological and conflict-theoretical considerations: If the environment-behavior relation Barker focussed can be described as "synomorphy" (Barker, 1968), "congruence" (Wicker, 1972) or "fit", the logical consequence is that less "optimal" states, i.e. relations of "incongruence", "distortion" or "non-fit" exist and - we will try to show this - are worthwhile to be analyzed. In fact, also Barker realized this and he formulated general assumptions on discrepancies between program and behavior.

Barker's perspective on deviations
The "deviation-countering action" is elaborated in Barker's 1968 book: "Sensing mechanisms" (S-MECH) (performed by inhabitants or other components of the setting) transmit information about behavior settings to "an executive-mechanism" (E-MECH) testing the information against inhabitants' criteria of behavior setting adequacy and - in case of inadequacy - activating "maintenance mechanisms" (M-MECH). These change behavior settings from inadequate to adequate using two possible strategies: "deviation-countering feedback" (D-MECH) by countering inadequacies, or vetoing (V-MECH) by removing inadequate components. Barker explicitly locates the control unit within the organism sector of the E-O-E arc he adapted from Brunswik (1955) and exhibits the analogy to Miller, Galanter, and Pribram's (1960) fundamental behavior unit (TOTE unit). Although Barker generally conceptualized these processes and additionally presented some impressive examples, he neither studied these distortions nor their counterings empirically and considered deviations more as symptoms of mental or physical illness or caused by "incapacities of extreme youth and age". The examples of deviations he presents primarily include malfunctions of physical elements of settings. More recent theoretical and empirical developments, taking a less static perspective and focussing dynamic processes of settings (Wicker, 1987; Wicker & King, 1987) necessarily have to be more interested in these events only roughly described by Barker.

Criticisms and consequences
Thus the analysis of derivations aspired here is an extension of Barker's approach and by this takes up aspects of several criti-
cisms on Barker's and his successors' conceptualizations. Canter (1977) concludes that "Wicker and Mehler (1971) have agreed that social controls are involved in keeping the behaviours appropriate to the setting" (p. 122) but - and this exactly concerns the topic raised here "the conceptual systems which enable these social controls to operate have not been elaborated by any of these ecological psychologists." (p. 122). With respect to the present state of research, one decade later Wicker (1987) remarks: "The theory of behavior settings pays very little attention to the cognitions of setting occupants. Although the theory states that maintenance circuits are enacted only when setting events are judged to be incompatible with the setting program, neither the nature of the template for the setting program nor the process of evaluation is specified". Linnweber (1988) titles incongruence "the neglected issue"; with respect to the course of aggressive interactions, he notes that this kind of "mutual social influence processes can be conceptualized as possible kinds of (obviously ineffective) maintenance circuits not only from a scientific point of view as Barker would do it. For the involved individuals their own behaviour directed towards the opponent may have the same quality. They are engaged in maintaining their own definition of the situation including e.g. their calculations of reciprocity. They feel justified to sanction the opponent because (s)he has shown inappropriate behaviours with respect to the 'given' or better 'subjectively interpreted' circumstances. For the phenomenon non-aggression it should be obvious, that describing and explaining social influences as maintenance circuits is not only a matter of scientific but also laymen's interpretation of everyday events." More generally, McGrath (1984) misses empirical studies on processes mediating the person- and the environment, Kaminski (1986) characterized behavior settings as pre-psychological provisional; Kruse (1986) stimulates an extension of Barker's framework by "socializing" and "psychologizing" it. She presents conceptual considerations adding internally represented patterns of action ("Handlung") and (social) interaction in analogy to Schank and Abelson's (1977) "scripts". As a consequence from these criticisms it can be resumed that without any doubt Barker's theoretical stimulations have to be appreciated extraordinarily but (re-)integrating psychological processes seems to be necessary to further develop and refine his ideas. As - according to Caesar (1979) and Gump (1980) behavior settings are social on various levels, social psychological aspects have to be included in order to do justice to Barker's approach. It will be shown that processes of attribution, social judgement, social influence, and social conflict are appropriate to be included in setting-theoretical formulations.
Deviations and deviation counterings as elements of social conflicts

The "abnormal" relation between setting, program and events actually happening are - although not in the center of Barker's focus - highly interesting for social psychological considerations. Reformulated in social psychological terms, Barker's general assumption is that settings are not just physical realities but - and this fundamentally indicates their social character - they include interindividual liabilities by limiting the behavioral variability of setting occupants. Consequently, violations of standing setting-behavior relations are considered as inappropriate not only by the "transducer" (Barker, 1968, p. 140), but also by involved individuals ("setting members"). They however not simply realize distortions but they eventually moreover initiate social influence processes (Linneweber, 1988) in order to restore an status quo considered as "appropriate".

Empirical evidence

Results of an own study focusing on neighborhood social relations are presented. This is a replication of a study on violations of norms, rules, and expectations in person-environment transactions (Linneweber, 1988). In this replication the range of "critical events" is restricted to problematic interactions between neighbors. Subjects are asked to depict events or episodes considered as inappropriate; additionally they report evaluations, attributions, explanations, affective consequences, their own reactions, considerations about alternative interventions as well as expectations concerning the effect of own social influence processes. The results indicate that these evaluations and interpersonal influences are typical elements of social conflicts (Kelley, 1986; Levin, 1948; Priutt & Rubin, 1986). Social conflicts in our definition thus involve mutual evaluations of behavioral inappropriateness relative to given situational circumstances. The studies presented here indicate that social influence processes ("deviation counterings" in Barker's terms) necessarily but not sufficiently are predictable by subjectively perceived irregularities and unexpectancies of within-setting events. Problematic and conflictual relations between neighbors in fact include mutual evaluations of inappropriateness. This however does not necessarily imply direct social influences in Barker's sense (deviation countering, vetoing). Other consequences (passivity; continued attention; demarcation; third party involvement; involvement of authorities) are alternatives frequently found. The realization of alternatives and also decisions concerning the type of social influence obviously depend upon the cognitive interpretation of the (problematic) relation, its evaluative "contextualization", its categorization with respect to similar experiences; the degree of affective involvement, self-efficiency expectations, the perceived importance of the specific quality of neighborhood relations and expectations of their future development. The characterization of events or episodes in
question as social conflicts generally means a perspective implying a high amount of complexity. The mutual interrelatedness of social influences in neighbourhood relations and their temporal progress indicates that an analysis focussing individuals inevitably implies shortcomings. Only a theoretical perspective exceeding the individual level of analysis, in other words a social psychological perspective seems to be able to conceptualize the topic in question in a satisfactory way.

CONCLUSIONS

Although our studies are restricted to a specific type of relation (neighbourhood), the results seem to be transferable to other non-intimate but also non-anonymous social relations met e.g. in areas of occupation and leisure-time activities. Our results show that Barker's (e.g. 1968) considerations concerning the "coercive power of the environment" in no way have lost their stimulative potency and still are able to "crossfertilize" (Wicker, 1987) eco-behavioral with social psychological research (cf. Krupat, 1985). However, theoretical up-datings, i.e. confrontations of Barker's and his successors' considerations with recent theoretical and empirical developments in relevant psychological subdisciplines, seems to be inevitable.

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Environmental stress
Rikard Küller, Environmental Psychology Unit, School of Architecture, Lund Institute of Technology, Box 118, S-221 00 Lund, Sweden

SYMPOSIUM ON ENVIRONMENTAL STRESS

In a recent review Evans and Cohen (1987, p. 574) identifies four general types of environmental stressors. Catastrophic events, stressful life events, daily hassles, and ambient stressors. With the exception of catastrophic events, all these areas will be covered in the present symposium. Initially, stress was studied as a response to single environmental factors. In at least one of the papers, the one on colour and physiological arousal, this approach dominates. However, already in the 1960’s, stress researchers began to look at more complex human situations. This approach may be exemplified by two of the other contributions, one dealing with crowding and social support in an Indian setting, and the other with collective housing for old persons suffering from senile dementia. These contributions also exemplify the close link that exists between stress research per se and the well established fields of environmental psychology commonly referred to as personal space, crowding, and human territoriability.

The importance of the concept of stress for environmental psychology emanates from the definition of stress as a generalized response to environmental factors. It is generally assumed that stress is a response to overload, resulting in a shift in bodily physiology, like blood pressure, pulse rate, and the secretion of adrenalin, noradrenalin, and cortisol. In addition there might be changes in perception, emotion, and behaviour. However, this straightforward view on the relationship between overload and stress is now being replaced by more elaborate models where cognitive or motivational factors are assumed to mediate the stress reaction (Küller 1987, p. 1251). In this context it is intriguing to take part of the hypothesis presented in one of the papers, that the breakdown of social support systems under high density living conditions may account for at least part of the deleterious effect that crowding has on mental health.

The two contributions concerning colour and arousal and the activation of elderly people, however points to one of the limitations of the stress concept. Stress is commonly understood as a negative effect of too much stimulation. Therefore it often becomes necessary to point out that mild or moderate stress levels might be beneficial to the human organism. In those instances stress is instead regarded as a positive quality, and opposed to
understimulation. It seems desirable to make a better distinction between the concept of stress on one hand, and the more general dimensions of activation and arousal on the other. Should we continue to regard stress as a generalized response to overload, or should stress instead be regarded as a positive force of everyday life?

The organizers of IAPS 10 have asked us to look back into the future, which means we should try to compare the expectations we had twenty years ago to the present situation. I have come to the conclusion, that perhaps stress research is unique within the field of environmental psychology, in combining sound theoretical reasoning in physiology, psychology and sociology with a powerful set of methods and an eye for real world problems. Stress researcher actually seem to come to terms with a number of environmental problems (Küller 1987, p. 1267). I believe that this conclusion will become consolidated by the presentations at this symposium.

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Gary W. Evans*, Social Ecology, University of California
Irvine, CA 92717 USA
M. N. Palsane, Department of Psychology, University of Poona,
India
Stephen J. Lepore, Social Ecology, University of California,
Irvine
Janaea Martin, Social Ecology, University of California,
Irvine

CROWDING AND SOCIAL SUPPORT

ABSTRACT

People adapt to crowded settings by social withdrawal and
avoidance of interaction. This coping strategy may loosen social
bonds. An empirical study of residential crowding in India
verifies the hypothesis that the adverse consequences of crowding
on male adult's psychological health are mediated by a breakdown
of social support systems. Residential density predicts
psychological symptoms after controlling for income and education.
The addition of a social support term to the regression analysis,
however, removes the significant effect of density on
psychological symptoms.

INTRODUCTION

Crowding research for the past fifteen years focused on
pathological outcomes of high density exposure and on moderators
of those effects. Among the myriad of effects linked to crowding
are heightened cardiovascular and neuroendocrine responses,
negative affect, social withdrawal, reduced cooperative and
helping behaviors, decrements in complex task performance,
aftereffects indicative of cognitive fatigue, observations of
anxiety and tension, helplessness, and possibly poorer mental and
physical health. Contention remains, however, about the strength
of these effects and on the evidence for them (Baum &

The present study represents an important shift from prior
research on crowding, by focusing on a particular process to
explain how crowding might affect psychological health. We
evaluate the hypothesis that the breakdown of social support
systems under high density living conditions accounts for the
association between crowding and mental health. The weakening of
social bonds is a cost of a typical strategy for coping with
overcrowded living conditions-social withdrawal. An additional
contribution of this study is our analysis of a sample with a
wide range on the independent variable, residential density. Severe range restriction is common in crowding studies and can significantly attenuate statistical estimation of shared variance.

One of the most consistent and well documented findings in the crowding literature is that individuals in high density settings report excessive, unwanted social interactions and lack of privacy. In fact some researchers have defined crowding as interference with the regulation of interpersonal exchange caused by the close presence of other people (Altman, 1975; Stokols, 1972). Self-reports of excessive, unwanted social interaction have been found under chronic, high density living arrangements ranging from dormitories (Baum & Valins, 1977;1979), prisons (Paulus, McCain, & Cox, 1981), homes (Saegert, 1982) to laboratory settings (Sundstrom, 1978). Observations of crowded adults and children also reveal overt indices of social withdrawal, including reduced social interaction, increased nonverbal cues of withdrawal (e.g., reduced eye contact), and more solitary play (Aiello, Thompson, & Baum, 1984; Evans, 1978; Sundstrom, 1978). Crowded persons are also less cooperative in group situations (Baum & Paulus, 1987; Sundstrom, 1978) and less altruistic (Baum & Paulus, 1987; Epstein, 1982).

Moreover the strategy of social withdrawal generalizes beyond the crowded setting. Baum and associates found that students from crowded dormitories sat further away, had less eye contact, and initiated conversation less often with a stranger in a low density laboratory setting than did their counterparts from uncrowded dormitories (Baum & Valins, 1977;1979).

If people in crowded settings adapt to unwanted, excessive social interactions by social withdrawal and avoidance of others, then this coping strategy may interfere with crowded individuals' abilities to form and maintain social bonds. Paradoxically the close presence of an excessively large number of people may lead to the deterioration of social support. There is abundant evidence linking social support with mental and physical health. Social support may have a protective function, buffering some of the harmful effects of stressors (Cohen & Wills, 1985). Feelings of being cared for and intimately tied to others also have direct, positive effects on health and well-being (Cohen & Syme, 1985; Sarason & Sarason, 1985; Shumaker & Brownell, 1984). Therefore if crowding leads to social withdrawal which in turn loosens or disrupts social ties, then some of the negative effects of crowding could be caused by insufficient social support.

METHOD

Subjects and setting
One hundred and seventy five male heads of households were
interviewed in Pune, India. Residential density ranged from 11 persons per room to two rooms per person with a mean of 2.81 persons per room. The sample is representative of the male urban poor and lower classes in India with an average income of 750 rupees per month (14 rupees equals one dollar U.S.), 50% with some high school education, 80% Hindu, 80% married, 70% in a scheduled caste (i.e., socially and culturally disadvantaged groups eligible for affirmative action programs in India). Seventy-five percent rent and have lived in their homes for an average of eight years, 91% have no refrigerator, 92% no telephone, 37% no water in the home, and 43% no indoor bath facilities.

Procedure
A stratified random sample frame was employed to sample the extremely destitute, the lower, and lower middle class, of Pune, Maharashtra, a large urban center in India. A total of 490 male heads of households were interviewed with greater than 90% of households consenting to be interviewed. The structured interview for all 490 respondents included approximately 75 sociodemographic questions focusing on the decision to migrate to Pune; approximately 75 questions on stress and coping; and a social support scale. A random subset of 175 respondents also completed a psychological symptoms checklist for nonclinical populations. This is the sample used in the present study.

The social support scale includes 40 dichotomous (yes/no) items (≥ .91) designed to probe the functional content of relationships with friends and family. The scale includes measures of emotional support (e.g., understands you in your time of need), tangible support (e.g., I get financial support when I am in need), and informational/appraisal support (e.g., I learn new things from). The contents of the social support scale were derived from Gottlieb (1978) and House (1981). The three subscales (emotion, tangible, informational/appraisal support) are highly intercorrelated and proved more reliable in combination than as separate scales. Psychological symptoms were rated on a 0 (never) to 2 (often) scale for 24 items reflecting moderate psychological dysfunction (≥ .77). The items were derived from the demoralization scale of the PERI (Dohrenwend et al., 1980).

All interviews were conducted in Marathi, the local language, by a pair of trained graduate students. The interviewers were blind to the hypotheses of the study.

RESULTS
Residents were asked a series of dichotomous questions (yes/no) about housing conditions. Data from two of these questions indicate that high density as indexed by people per room is strongly associated with perceived crowding. Residents of high density homes report more often their home is too small for family
needs, X (2)=32.28, p<.001; and their home does not have enough rooms, X (2)=27.64, p<.001. For these analyses the density frequency distribution was trichotomized (<1.6, 1.6-3.25, >3.25 people per room).

Regression analyses, controlling for income and education, were used to evaluate the relations between density and psychological health and the mediating effects of social support. Higher residential density is associated with greater psychological symptoms after controlling for income and education (row one in Table 1). Social support is also significantly related to mental health after controlling for income and education (row two in Table 1). However when the effects of social support are also taken into account, density is no longer a significant, independent predictor of psychological symptoms (row three in Table 1). Density as expected is highly related to social support, F (3, 165)=6.90, p<.001. Adult males in higher density homes, controlling for income and education, have significantly less social support.

Table 1 Regression of Psychological Symptoms onto Density and Social Support Controlling for Income and Education

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Total R²</th>
<th>F</th>
<th>ΔR²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>.06</td>
<td>3.35*</td>
<td>.03</td>
<td>4.19*</td>
</tr>
<tr>
<td>Social support</td>
<td>.08</td>
<td>4.43*</td>
<td>.04</td>
<td>7.29*</td>
</tr>
<tr>
<td>Density controlling for social support</td>
<td>.09</td>
<td>3.96*</td>
<td>.01</td>
<td>2.44</td>
</tr>
</tbody>
</table>

*p<.05

Because questions were included on coping and stress, an additional analysis of the role of unwanted social interaction was possible. Residents of higher density homes prefer to be left alone (1-5 scale) significantly more strongly than do residents of lower density homes, F (3, 165)=6.60, p<.01.

DISCUSSION

Male heads of households of high density homes feel there is insufficient space in their homes. They also prefer more strongly to be left alone. Inspection of Table 1 reveals the negative effects of crowded living conditions can be attributed in part to weak social ties. Density is negatively correlated with social support. The significant, positive regression of psychological symptoms onto density becomes nonsignificant when the mediating effects of social support are partialled out.

One way people cope with crowded living conditions is to withdraw from others (Baum & Paulus, 1987; Epstein, 1982; Sundstrom, 1978). This social withdrawal may weaken or dissolve social bonds.
Crowding also reduces cooperation and mutually supportive behaviors like helping someone. Fewer affiliative behaviors may also contribute to the weakening of social ties. Given the importance of social support to the maintenance of psychological well being, the breakdown of social support precipitated by residential crowding may be a central mechanism linking crowding with ill health (Evans & Cohen, 1987).

Our data also underscore the value of examining social support as an endogenous variable part of the transactional process influencing not only psychological outcomes but also as affected by external, environmental factors (Shinn, Lehmann, & Wong, 1984; Shumaker & Brownell, 1984). The predominant paradigm in the social support literature focuses on social support as an exogenous factor moderating the effects of stressors on health or as a principal, direct cause of adverse outcomes (Cohen & Wills, 1985; Cohen & Syme, 1985; Sarason & Sarason, 1985; Shumaker & Brownell, 1984).

Conditions of the physical environment can influence the frequency and quality of social interaction. Architectural variables such as proximity and access-authored distances among entryways, availability of semi-private meeting areas for multiple dwelling residences, defensible spaces that can be monitored, controlled, and elicit feelings of proprietership, are all associated with friendship formation (Fleming, Baum, & Singer, 1985; Zimring, 1982). Noise and pollution may also influence interpersonal relationships. Noise interferes with communication, can increase hostility under certain conditions, and reduces helping behaviors (Cohen & Weinstein, 1982). Irritating pollutants may also have similar effects (Rotton, 1983).

Characteristics of the physical environment can alter social relationships among people. Changes in social relationships in turn can affect human health and well being. Data from the present study suggest some of the deleterious effects of crowded living conditions are caused by the weakening of social ties.

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Crowding and social support

Key words: crowding, social support, mental health, stress, cross-cultural
Rikard Küller, Environmental Psychology Unit, School of Architecture, Lund Institute of Technology, Box 118, S-221 00 Lund, Sweden

ENVIRONMENTAL ACTIVATION OF OLD PERSONS SUFFERING FROM SENILE DEMENTIA

ABSTRACT

It was hypothesized that a familiar environment would activate old habits established through lifelong experience, thus increasing the functional and social competence of patients suffering from senile dementia. Two collective housing units for about ten patients each were built at the Kroksbäck housing area in Malmö. The intention was to follow the patients for two months when they remained at the geriatric hospital and then for another four months after they had moved to the two collective housing units. The results showed that collective housing in small units, especially if the environment was decorated in an old and familiar style, had an activating effect on patients with old age dementia. It actually provided a much better therapeutic environment than the conventional geriatric hospital.

INTRODUCTION

People who become 'cases' at a geriatric hospital are generally handicapped in one way or the other, as a result of cerebral hemorrhage, cardiovascular disease, fractured thighbone, etc. This means they are so restricted in their functions that they must spend the rest of their life at an institution. Even if moving to an institution is often regarded as a temporary measure, for most old persons it turns out to be the final solution (Küller, forthcoming). The monotony of the environment as well as the almost total loss of a normal social life means that those patients, who remain at the geriatric institution for a long time, will run the risk of becoming understimulated. This prolonged understimulation in its turn may cause intellectual as well as emotional changes, and in the long run may influence the personality of those patients. Hospitalization is a term which is applied in this context. It means that the patient becomes adjusted to the low degree of stimulation. Regarded from a narrow perspective of medical treatment, this type of adjustment might be desirable. The patient often becomes compliant and easy to handle. However, at the same time acute conditions of confusion, depression or aggression, are often found with patients who have become thoroughly hospitalized, which implies the adjustment is only apparent. Since the patients often lack the motivation to
eat by themselves, malnutrition is another common problem with this group. This is serious not least because the importance of adequate nutrition for recovery is becoming more and more recognized (Isaksson 1980). There is also growing evidence that hospitalization in the long run might lead to medical complications of various kinds.

THE DINING ROOM STUDY

Attempts at creating a more humane and homelike geriatric long term care environment have been partly successful. During 1982 and 1983 we conducted a study at the Värnhem hospital in Malmö which involved a partial change of one of the wards. An attempt was made to recreate a dining room as it might have looked in the 30’s and 40’s, when most of the patients were in their most active ages. The change comprised the all over design as well as the furniture, lighting, colouration, decoration and dining tables’ outfit. Instead of getting their food on plastic trays the patients were allowed to serve themselves and eat on a porcelain of their own choice. Furthermore, the personnel was instructed to eat together with the patients. As far as possible the patients were to wear their own private clothing. The aim of the change was to obtain an activation of the patients in a way that helped preventing hospitalization. The details of this study were presented at the 8th IAPS conference in West Berlin (Küller & Mattsson 1986). Below a brief review of the main results will be given.

In order to evaluate the results of the change, the patients were studied by means of medical examinations and clinical tests. In addition, systematic observations of meal time behaviour were carried out as well as a post interview with patients and personnel. Finally, in order to study the eventual nutritional consequences, the patients dietary intake was examined. The whole study lasted for eight months, and the results indicated that an environmental change even of this rather limited kind, meant a positive stimulation and activation of geriatric patients. When the conventional hospital environment was replaced by an environment that better agreed with the patients own home environment, the degree of hospitalization seemed to diminish. The patients became happier and more susceptible to social contacts and their dietary intake increased (Ehlmståhl et al 1987, Küller, Mattsson & Steen, forthcoming). Thus by redecorating the environment and changing the routines it may be possible to maintain these groups of patients in a healthier and less confused state than would otherwise be the case.
THE COLLECTIVE HOUSING STUDY AT KROKSBÄCK

At the large Värn hem hospital we managed to change part of the environment in one of the wards with positive consequences for the patients. However, we felt there was urgent need for much more radical changes. Our ultimate aim was to be able to move most geriatric patients to small homelike units, distributed all over the city. Thus, the patients would become tenants and able to continue a fairly normal life surrounded by their private belongings and their own friends and relatives. All over Sweden today, experiments are carried out with new types of care for geriatric patients, like day care, where the old persons are living in their own homes but come together for training and recreation during day time, or night care, where they spend the night at a clinic, but otherwise live in their own homes. In the Krok sbäck study we intended to investigate a third alternative, i.e. collective housing for persons with senile dementia involving a moderate degree of confusion. These plans were supported by the medical and social authorities and it was decided that the Krok sbäck study would become a pilot project before building any further collective housing units. The study was directed by chief physician Lena Annerstedt at the Värn hem hospital together with the present author.

Two collective housing units, for about ten patients each, were built at the Kroksbäck housing area in Malmö. Kroksbäck consists of several highrise apartment blocks, originally built in the late 60’s. The whole area was to be thoroughly renovated, outdoors as well as indoors. The collective housing units were to be composed of several old flats on the first and second floors of one of the buildings. In one of the units normal standards were applied for the environment at large, while private furniture was allowed in the patients’ rooms.

In senile dementia parts of the patient’s brain have for various reasons been destroyed, which makes the learning of new habits and the recognition and recollection of new environments difficult. It was hypothesized that a familiar environment would activate old habits established through lifelong experience, thus increasing the functional and social competence of the patients. In order to test this hypothesis, we designed the other unit in a way that would be easily recognized as a home as opposed to an institutional environment. The design of this unit was based on the experiences from the dining room study above, which meant a rather strict adherence to a style from the 30’s and 40’s. The decoration of the private rooms was supported by a special programme which included interviews and counseling with the relatives of the patients.
Methods of assessment and the design of the study

Considering the pilot character of the project it was important, in addition to the environmental design per se, to evaluate the outcome of the experiment. Therefore, the intention was to follow a number of patients for two months when they remained at the geriatric hospital and then for another four months after they had moved to the two collective housing units. The evaluation was made by means of systematic observations of the patients' behaviour and also included a control group who remained at the geriatric hospital for the whole period of six months. Thus the study comprised two experimental environments, one completely designed and decorated in old style and the other decorated in a more conventional style. In addition there was the control group who remained at the geriatric hospital for the whole time period (figure 1).

![Diagram of experimental and control groups](image)

**Figure 1.** The experimental design of the Kroksbäck study. While the control group remained at the geriatric hospital for the whole duration of the study, the experimental group moved to the two collective housing units in December of 1985. (Seven of the patients in the experimental group stayed at the hospital for one week only.)

The behavioural observations were adapted from a technique developed for the dining room study mentioned above. It comprised seventeen categories of visual, eating, verbal, emotional, and motor behaviour. The actual observations were carried out by a group of three trained psychologists, who, one at the time, joined the old persons during lunch time weekdays for the whole
period of six months. Other methods included psychological and psychiatric assessment of the patients, including clinical measurements of brain capacity by means of the Cerebral Blood Flow technique, as well as an estimation of the costs of care, and an analysis of the legal aspects of the project. These results will be reported elsewhere.

Results of the behavioural analysis
The first step of the data treatment involved a factor analysis of the behavioural observations. Of the seventeen behaviour categories only ten were frequent enough to be included in the analysis. After oblique rotation three factors emerged, which were interpreted as active social behaviour, visual rigidity, and passive social interest respectively. The results concerning active social behaviour is given in Table 1. As may be seen social behaviour increased considerably after the patients moved from the geriatric hospital to the collective housing units, while the control group, who remained at the hospital, did not get a corresponding increase. The variables that loaded highest in this factor were 'speaks with personnel' and 'speaks with other patient'. When the experimental group was partitioned into the two different units, a somewhat stronger increase in social activity was found in the old style unit. However this difference did not obtain statistical significance.

Table 1. Prevalence of social activity in two groups of patients. The experimental group stayed at the geriatric hospital during period 1, then moved to the collective housing units, while the control group remained at the hospital (For interaction, p = .0001).

<table>
<thead>
<tr>
<th>SOCIAL ACTIVITY (factor scores)</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group (N=17)</td>
<td>-.66</td>
<td>1.01</td>
<td>.59</td>
</tr>
<tr>
<td>Control group (N=10)</td>
<td>-.69</td>
<td>-.46</td>
<td>-.55</td>
</tr>
</tbody>
</table>

Concerning the second behaviour factor, visual rigidity, there were no significant differences between the various environments. However, the third factor, passive social interest, showed a pattern similar to the first factor, even if the effect was not as strong (Table 2). The patients looked around, looked at other persons, and listened to other persons, more frequently in the collective housing environment.
Table 2. Prevalence of social interest in two groups of patients. The experimental group stayed at the geriatric hospital during period 1, then moved to the collective housing units, while the control group remained at the hospital (for interaction, p = .07).

<table>
<thead>
<tr>
<th></th>
<th>SOCIAL INTEREST (factor scores)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Period 1</td>
</tr>
<tr>
<td>Experimental group (N=17)</td>
<td>-.05</td>
</tr>
<tr>
<td>Control group (N=10)</td>
<td>-.25</td>
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</table>

However conclusive these figures may seem, one becomes even more convinced of the advantages with the small collective housing units if one pays a visit, first to the geriatric hospital, and then to the units at Kroksbäck. Let me exemplify this by telling you about Helga, 83 years old. Since one year she was suffering from a moderate dementia. Three months ago she became so undependable that she could not be left alone in her apartment. After she was moved to the hospital, she spent most of her time facing the ceiling of the twin bed room. She understood that she was ill, however, she was not certain what type of disease it was, but kept asking the doctor about it. She did not want to get out of the bed, but had to be dressed, fed and taken to the toilet. Then, Helga with eight other ladies, was moved to one of the collective housing units at Kroksbäck. She got a room of her own, furnished with her own belongings by her brother and his family. She had almost forgotten what the furniture looked like, the sofa, the chiffonjé, the painting from the countryside where she grew up. Not only the room, but the whole flat seemed familiar to her. Already after two weeks in the apartment, Helga recovered some of her good spirits. She got up in the morning all by herself, got dressed, went into the kitchen, and made her own coffee. This change in spirit and behaviour actually occurred with all the patients without exception. It was so dramatic that it astonished everybody involved in the project.

DISCUSSION

The aim of the environmental programme in the two studies presented above, was to accomplish an activation of the patients in order to oppose the process of hospitalization. The results show that collective housing in small units, especially if at least part of the environment is decorated in an old and familiar
style, has a stimulating and activating effect on patients with old age dementia. It actually provides a much better therapeutic environment than the conventional hospital. Furthermore, the economic assessment showed that all costs included in this type of care, amounted to less than half compared to conventional geriatric long term care. The result is so encouraging that it has led to the full acceptance of this type of care amongst politicians and social and medical administrators in Malmö. There is now a programme under way in order to build around thirty units of this kind. However, one word of caution seems to be in place here. The study was carried out with patients suffering from a moderate degree of confusion. Because the small collective housing unit is lacking in medical resources this type of long term care will not be suited for every kind of patient. We must find many different solutions rather than one only. However, for the old patient with senile dementia, the collective housing seems as good a solution as can possibly be found at the present time.

NOTE

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COLOUR AND PHYSIOLOGICAL AROUSAL

ABSTRACT

There is more to colour than meets the eye and an account of some of the purported psychophysiological effects is given. The question whether Red is a more activating colour than Blue is discussed by reference to two opposing schools of thought, one based on colour light and measured by physiological changes in the central and autonomic nervous system and the other based on colour pigment applied in interior and exterior spaces while varying the dimensions of hue, chromatic strength and lightness. An experiment is discussed where subjects experience realistic full scale Red and Blue spaces and where both physiological and affective measures are taken.

INTRODUCTION

We need light to see the world around us and colour to add beauty to our aesthetic sensibility. The effects of light and colour on man however go beyond our common sense assumptions and expectations, and writers from poets to evolutionary biologists alike have praised man's good fortune. Indeed Nicholas Humphrey (1976) put forward the proposition that our ability to see colour can only have evolved because it contributes to our biological survival. Rikard Küller's (1981) mammoth Annotated Bibliography of 1,700 references commissioned by the Commission Internationale de l'Eclairage (CIE) summarising the psychophysiological literature on activation firmly established the importance of three systems, mediating the non visual effects of light and colour. 1. The cutaneous system activated when ultraviolet and infrared radiation reaches the skin. Skin pigmentation, and the development of vitamin D are some of the main effects. 2. The pineal-hypothalamic-pituitary system. Light affects the pineal gland where it blocks the sleep hormone melatonin which in turn influences the hypothalamus which is involved in our emotions and the pituitary gland which regulates other hormones. 3. The Reticular Activation System whereby visual stimulation passing through the reticular formation activates the central nervous system as a whole. Both external stimulation through the ARAS and internal activation through the DRAS affect our state of arousal.

Background to the problem under investigation
In both scientific and introspective accounts, colours have been classified and grouped in various ways depending upon the believed influence or effects of such groupings. One of the most widely held groupings is that of 'warm' and 'cool' colours. Hues such as
red, orange and yellow are seen in addition to their warmth, as exciting and stimulating, whereas hues such as blue, turquoise and green are seen in addition to their induced coolness as calming and relaxing. Applications based on these properties of colours are not confined to the work of architects and artists but also to clinicians in an attempt to pacify or calm down aggressive and anxious patients by using blue and green colours, and also to stimulate depressed patients by using red and orange colours. Bayes, K (1967)

Some researchers have criticized these studies and suggested that the effects of hue on warmth and excitement is an intellectual one involving cognitive processes and not based on physiological processes which affect the whole organism. In an attempt to answer this type of criticism, namely that the effects of these colours are not only based on stereotyped verbal associations but that different colours actually evoke different feelings and emotions affecting the entire organism, Robert Gerard in his classic study in 1958 concluded that the two wavebands of radiant energy at the opposite ends of the visible spectrum, ie Blue and Red, exert a differential biological influence on the organism as measured by general activation in the Central and Autonomic nervous system (EEG, blood pressure, palmar conductance level, respiration and heart rate).

Further support to Gerard's work is given by an experiment carried out by Ali, M.R. (1972). Coloured lights (Blue and Red) were projected directly on the eyes of 10 normal subjects for 6 minutes and EEG were recorded throughout the period. The results of this study showed greater cortical arousal following the presentation of Red light and lower cortical arousal following a Blue light.

Parallel to these attempts to validate through physiological measures the purported effects of the warm and cold colours there has been a different approach altogether to establish the meanings people associate with different colours. This approach differs significantly from the above in that: 1. All three dimensions of colours (hue, chromatic strength and lightness) have been systematically manipulated in an attempt to ascertain their relationship to the dimensions of colour meaning and 2. the obtained data were treated by more powerful methods of statistical analysis such as factor and cluster analysis which were not available to the early researchers.

Lars Sivik (1970) demonstrated with a technique of photosimulation that it was not hue which affects how exciting or calming a colour is but the Chromatic strength of each hue. Acker and Küller (1972) showed with the use of perspective drawings of interior spaces and later on in full-scale spaces that weak colours give a room an impression of calmness while strong colours make it appear exciting.
The four studies referred to above were well designed by serious researchers in the field of colour psychology. Within their own parameters they show systematic relationships between colour and 'arousal' through physiological measures (Gerard, Ali) and through semantic differential analysis, (Sivik and Kuller).

There are however some fundamental differences between the two sets of studies. In the first two studies the content of colour stimulation was coloured light while in the last two studies the content was colour pigment. Furthermore in the first two studies subjects experienced the colour light stimulation in an abstract form in the laboratory, while the last two studies were carried out in the context of interior and exterior spaces.

Aims of present study
The present experiment aims at bridging the gap between these sets of experiments. Why not measure both physiological as well as affective reactions of people? Why use patches of colour light projected on the retina or colour slides or even small drawings and simulated spaces when we can use surface pigments in real life spaces, the sort of spaces we actually experience. Test not only exposure of 60 secs intervals but longer periods when subjects could be experiencing real environments. The main technique used in this experiment in measuring activation is through EEG. J. Empson (1986) suggested that perhaps "the greatest achievement of electrophysiology for psychology, was the identification of the mechanisms subserving the control of activation in the brain, and the use of EEG in assessing level of arousal".

When a person is awake but relaxed, alpha rhythm abounds. This rather slow, high amplitude rhythm has a tendency to disappear when the person is stimulated but returns when the person is relaxed (see figure 1). Too much stimulation results in continuous blocking of alpha, involving the whole nervous system, a state generally referred to as stress. Thus by measuring the proportion of alpha in EEG it is possible to find out whether an environment is understimulating or overstimulating. Changes in Pulse Rate can also be used as an indicator of activation and stress though more difficult to interpret.

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Fig 1 Typical EEG recordings
At the 1976 Architectural Psychology Conference in Strasbourg, R Küllar reported that there were differential psychophysiological effects in cortical activation as measured by alpha waves in two very different rooms, one painted grey and the other of a colourful wallpaper design. The results showed that the subjects had considerably more alpha activity in the grey room than in the colourful room supporting the general hypothesis that colour in general has an activating effect (Küllar 1976).

EXPERIMENTAL DESIGN AND METHOD

At the Environmental Psychology Unit, School of Architecture of the Lund Institute of Technology a room measuring 3.5 x 4.5m with an adjoining control room where the monitoring equipment was placed, was used for the experiment (see Fig 2).

![Diagram of experimental setup]

**Fig 2** The experimental room and control room used in the study. Sitting on each of the four chairs at the centre of the room, would give the subject access to four different fields of vision (see conditions a–d).

One half of the room was painted red (NCS 1674-Y90R), the other half was painted blue (NCS 1859 B04G). Paint covered the walls, floor, ceiling and fittings. The idea behind this was that the subject just by moving from one chair to another, would be exposed to four conditions:
a) a completely red visual field (R)
b) a completely blue visual field (B)
c) a visual field with its left part red and right part blue (RB)
d) a visual field with its left part blue and right part red (BR)

We chose blue instead of green because the spectral sensivity of the eye is about the same in the blue and the red regions, whilst the sensivity is different in the green region. The general lighting of the room was provided by Luma Colorette, a flourescent tube which has an even spectral emission and good colour rendering (5400 Kelvin, CRI=91). It was important in this study to use colour samples which would satisfy not only the NCS parameters and colorimetric measurements but also the correct subjective evaluation of colour appearance. This test was satisfactory and the two colour samples conformed with the mapping of colour names in Sweden (L. Sivik and A. Hård, 1984). Temperature was maintained at a constant level through the automatic sensor at 22°C. The participants wore light garments throughout the experiment. In order to measure the EEG, electrodes were placed centrally and parietally, over the left and right hemispheres. A pair of electrodes was also used to record the pulse. The frequencies for the EEG analyses were in accordance with clinical classification.

Twenty four subjects took part in this study. Each subject spent 20 minutes in each of the four conditions. Each condition was divided into 3 parts, 'reading', 'fixating' and 'closing eyes'. After the experiment electrodes were removed and the subjects introspection was taken. Time estimation and galvanic skin response measures were taken during this period. We had a set of specific hypotheses the main one being that the red visual field should be more activating, which partly should be shown as a attenuation of the alpha rhythm, and maybe even of the delta and theta rhythms. There might even be a differential activation of the two hemispheres when fixating the dot on the margin between the red and blue visual fields. Depending on the outcome, this would possibly enable us to draw conclusions as to which level in the central nervous system the activation is initiated.

EVALUATION AND IMPLICATIONS OF RESULTS

The data from the 24 subjects were treated by means of several analyses of variance for both EEG and EKG recordings. The most important result of this study was paradoxically that there were no statistically significant differences in the experience of a Red and Blue space at the Central Nervous system. Arousal at the cortical level was the same for Red, Blue, BR and RB conditions. Arousal as measured by reduced alpha, was in fact in the opposite direction from the predicted one: there was more alpha and theta
in the Red visual field than in the Blue one. We found in fact more delta activity in the red visual field than in the blue one (p=.03). Concerning differences between the two hemispheres there were only tendencies which were again opposite to the initial hypothesis.

At the autonomic nervous system level there were no differences in EKG, (pulse rate, Arrhythmia) and Galvanic skin response. Although autonomic measures are not as accurate indicators of arousal and are often more susceptible to individual variation they produced almost identical mean scores for the two conditions. There were differences in all EEG frequencies between the male and female groups but these were not the differences we were looking for. There were no differences between either the male subjects or the female subjects with regard to the Red and Blue space. The fact that we recorded higher EEG levels in the male population in all frequencies may be due to anatomical differences between the two sexes such as the thickness of the cranial, rather than differences in arousal. The differences in pulse rate depend on the fact that women have a slightly faster pulse rate than men. There were also no significant differences in arousal for the left and right hemispheres when exposed to Red and Blue colour respectively and certainly not in the predicted direction.

The results support Sivik's and Küller's findings, that is, provided we control chromatic strength and lightness, there are no differences between the two hues as far as excitement is concerned. Their studies though carried out in a systematic way using the semantic differential technique in the context of interior and exterior spaces lacked support at the physiological level. The results of this experiment give support to their findings.

In his study Gerard suggested also a covariation between affective responses and physiological changes; he demonstrated that the "verbal indicants of private experience were in fact correlated with objectively recorded internal physiological events". Reports in Gerard's study that the subjects reported a feeling of arousal and excitement during Red illumination and a feeling of significantly more calmness and peacefulness during Blue illumination has not been the general finding of Sivik (1970) and Acker & Küller (1976), nor were there any differences in the subjects' introspection in this experiment. In a study involving two seminar spaces one painted Red (BSI 04E53) and the other Turquoise (BSI 16E53) both high in chromatic strength by two groups of subjects (architecture students and laymen), they evaluated the two spaces as equally stimulating (Mikellides 1979).

We have already tested the strongest red in the market (1080 490R). Its actual specified strength was 15% more than the blue sample under standardized condition. In our experiment we also judged the two colours used to be subjectively equal in chromatic
strength and lightness. Yet we found no differences. As things stand at the moment there is no evidence that a red space is more arousing than a blue one and as such this hypothesis is ahead on points. To use a tennis analogy it has the advantage. But it will be a pity to leave the game unfinished. Why not construct two separate identical spaces painted with colours of lower chromatic colour intensity and still in line with the most adventurous colour schemes at home and work? Include in the design colour curtains, drapes and rugs sympathetic to the constructed spaces; leave the floor and ceilings unpainted and have natural light in the room coming through the windows. Ask participants to stay in each room for 2 hours, introducing a variety of tasks to reduce monotony and boredom. If our hypothesis that there will be no differences in cortical arousal between the two colours of equal chromatic strength, is verified, we would have turned our advantage to winning the match.

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Defensible space
Jean Cheguiboff
Yvonne Bernard
CNRS, Paris

THE SPATIAL REPRESENTATION OF INSECURITY

SUMMARY

The feeling of insecurity has most often given rise to examination along sociological lines. The authors of this report have opted instead to have the nature and actual experience of the feeling of insecurity form the basis of investigation. The results presented are of a study carried out among the residents of a neighborhood in Paris: les Halles. In no case did the feeling of insecurity seem to stem directly from the appearance of the surroundings. Nevertheless, whenever anxiety is present, there are characteristics of every area which are of such a nature as to increase or decrease it. We have grouped these under three headings: exit, recourse, refuge. It became evident in the course of the study, moreover, that the parameters of the concept of insecurity were not as clearly defined as had been assumed at the outset.

INTRODUCTION

The term "insecurity" can be used in two different ways. The first refers to a state of fact, the reality of which is established by observation. It is possible to qualify, make an inventory of, and ascribe accountability for the offences and establish a level of criminality. It would thereby be possible to relate certain places or certain types of space with those levels. The second use of "insecurity" refers to a mental state of the perception of a situation, evaluated as potentially dangerous, even if it is not objectively so. It is a matter of what is loosely designated by the term, "feeling of insecurity".

Speaking of the feeling of insecurity gives rise to a new difficulty in the formulation itself of the object of study. Speakers of English use
the term "fear of crime". The literal translation into French, "peur du crime", as it is generally understood by native speakers, is synonymous with "fear of murder". The term "feeling of insecurity", which is usually employed, eliminates the object of fear, retaining only the subjective experience. Its meaning is more flexible and diffused. A survey carried out in a small town in France showed that for 54.6% of the population studied, the "feeling of insecurity" was above all a psychological fear: "fear of everything, to be someday a victim, to lose freedom, to not be able to deal with the environment..." (FONTES et al. 1985).

The expression is thus applicable to various meanings according to their context—fear of illness, fear of unemployment... "Fear of being attacked", which comes closer to the English expression, carries too precise a sense to be understood as an exact equivalent. These differences from one language to another may well be revelatory of the complexity of a phenomenon for which the term "fear of crime" only covers one aspect.

In the extant literature, evaluation of the feeling of insecurity is, in most cases, entirely based on the assessment of behavior in a single situation, considered prototypical. As LEE (1962) puts it: "the most common indicator of fear of crime, by a considerable margin, is a single item asking respondents whether there is any area near their homes where they are afraid to walk alone at night." It is always a very simple question of this type which continues to furnish material to elaborate differential studies (e.g. LARSON, 1982; LISKA et al., 1982; O'CONNOR, 1983; STAFFORD, GALLE, 1984; KENNEDY, SILVERMAN, 1985...)

The choice of this situation over another seems more dictated by common sense than by the examination and systematic selection of insecurity-provoking situations. It is difficult to affirm with certitude that the same results would derive from another question, such as, "Do you feel secure if you leave home with a lot of money on you?"

These methods bring to bear some restrictions on their results. One is left to wonder whether the insecurity felt is entirely evinced by this sole kind of situation. Certain researchers, conscious of this snag, have proposed other methods of evaluation. Van der WURFF and
STRINGER (1986), in the course of a study of the residents of cities in Holland, have so enlarged the field by carrying out their investigations on several types of situations of an insecurity-arousing nature.

OBJECTIVES

The feeling of insecurity appears and develops in the framework of a situation perceived as potentially dangerous. This perception is generally determined by the existence of environmental factors which favor the emergence of a state of anxiety, but it is equally highly dependent on multiple factors characterizing the experience of the perceiver.

Most research has emphasized the effect of sociological variables. The main purpose of the research presented here is rather to study environmental variables and to detect, particularly, which areas favor the emergence of anxiety or quell it.

We have therefore opted for the psychological approach: put in relation the behavioral manifestations (fear, avoidance) and the situation which provoke them. Consequently, our work set us out on two paths:
- to analyze the components of the feeling of insecurity, its origins, its nature, its manifestations.
- to locate the characteristics of the environment that play a determining role in its appearance.

METHOD

At the time of a preliminary phase, nine non-directive interviews were conducted. The subjects, who lived in various sections of Paris, were asked to talk about insecurity. From these interviews, we realized that if we were to remain faithful to our fixed objectives, we would have to refocus the interviews on the personal experience of the subjects in their own neighborhood.

We have therefore chosen to concentrate our investigations on one single neighborhood, asking the subjects to speak about the feeling
of insecurity as it relates to the atmosphere and environment of the neighborhood. It was up to us to study the manner in which the same area could be described differently, according to the speaker.

The neighborhood used is a section of the les Halles district of Paris, which is bordered to the north by the Rue Réaumur, to the south by the Forum des Halles, to the east by the Boulevard Sébastopol, and to the west by the Place des Victoires. In general, the reputation of this area is that it is insecure, as with the entire les Halles district as a whole.

It also offers the advantage of containing, within a limited perimeter, a number of different areas, each having its own different character:
- wide thoroughfares, with heavy automobile traffic but relatively few pedestrians and wholesale outlets which are not conducive to strolling (Boulevard Sébastopol, Rue Réaumur)
- a highly animated market street, which quiets down at night, but still serves as a main axis of movement through the area (Rue Montorgueil)
- very narrow streets which are practically deserted at night except for a few cafés that are meeting places for a mixture of types—students, derelicts, punks, working people...
- the Rue Saint Denis, infamous for its prostitutes and sex shops
- an area which has become very popular ever since a number of well known fashion designers opened boutiques there, but is nevertheless rather quiet during the day and practically deserted at night (Place des Victoires)
- last but not least, the Forum des Halles, one of the liveliest places in Paris, with the exception of the underground part, which no longer draws strollers after the stores close for the day.

The first phase of research was based on a series of non-directive interviews with ten subjects living within this perimeter, with widely varied sociological characteristics. The interviews began with the following request: "Talk to me about this neighborhood from the point of view of your impression, of the atmosphere: how do you feel, especially from the point of view of security". A map was presented to the subject, to show him exactly what area we were concerned with and to help him locate the areas he wanted to discuss.
A second phase was based on individual, semi-directive interviews, conducted among thirty residents chosen at random. The first phase had permitted us, among other things, to establish the pertinence of a breakdown into twelve zones with differentiated characteristics. In the course of this second phase, these zones were indicated on a map of the neighborhood. The subject had to rate them from the most pleasant to the least pleasant and from where he felt the most secure to where he felt the least secure. He had to explain the reasons for his choice. Other questions followed bearing on his own experience of insecurity. We asked whether anything had ever happened to him in one of these areas, whether he had avoided anything there, or whether he felt uncomfortable there to begin with.

Taken together, the interviews of the first and of the second phase gave way to an analysis of thematic content. The amassed data were inventoried and arranged by themes, in such a way as to point up the divergences and especially the convergences of discourse. Those things offered over and over by several subjects were particularly examined, but we also gave attention to certain points, less often made but which seemed to us to clarify some rather generally observed behavior. In spite of a tranversal regrouping by theme, we have kept in mind, in analyzing quotations, the general context of the interview in which they were pronounced and which could modify the meaning.

RESULTS

In the framework of this communication, we will present only two points which seem to us to characterize the specific influence of spatial environment on the feeling of insecurity.

1) The configuration of an area is never, properly speaking, frightening, as such, but it may be more or less reassuring.

The feeling of insecurity is dictated above all by the anxiety aroused by the real or assumed presence of certain populations deemed dangerous: immigrants, derelicts, loiterers.... It is rare for an area to inspire a feeling of insecurity just by dint of its appearance alone. What provokes anxiety is the kinds of people encounters, or fears to
encounter, the preconceived idea of what a neighborhood is like, often induced by its better or worse reputation.

Certain characteristics of a place can, however, contribute to the increase or decrease of this feeling. These are the traits which relate to the possibility of avoidance. We will sum up these qualities under three headlines: exit, recourse, refuge.

**Exit**: People are afraid of areas where the risk exists that escape is not possible. The underground galleries of the Forum des Halles and a passage connecting two streets were described in a similar way by a certain number of people questioned. In these areas, in case of aggression, one runs the risk of being cornered without the ability to get out, either because the exits are purposely blocked, or because they are hard to find on a hurry.

**Recourse**: People prefer areas where they will most easily get help. Streets where there are lots of people inspire more security than deserted ones. If something happens, the impression one has is that one of the people present will come to his aid: The sight of policemen is reassuring in the same way, more for the possibility of their being called upon if need be than for the possibility of their discouraging would-be aggressors by their presence.

**Refuge**: People remember places where they can withdraw from the threat. The streets are more or less marked with the beacons of places where a person can seek refuge if necessary: police stations, cafés, all-night restaurants, clinics... Some streets are deemed more frightening than others, owing to the absence of such places. This can be either due to the fact that they actually are devoid of them, or that the person is not so familiar with the section in question. In this respect, familiarity plays a security-augmenting role by multiplying the number of places of refuge identified as such.

2) The insecurity people talk about is not always the same as the insecurity they actually experience.

The feeling of insecurity in the neighborhood was brought up in two kinds of interviews which are not exactly identical: interviews focussing on insecurity (preliminary phase) and those focussing on the neighborhood (first and second phase).
Insecurity is a subject which is widely covered by the media. The term is semantically rich in disparate notions and connotations for most people living in Paris. From the moment an interview concerning insecurity gets under way, the subjects tend to start taking positions reflecting concepts which they have internalized from what is being discussed around them, so they talk about the actual “fear of crime” – the fear of being attacked.

When the subject is brought up initially as a discussion of the neighborhood itself and on usual activity, insecurity appears in a different light. It is actually seen that certain habitual conduct is not spontaneously linked to what is usually thought of as “insecurity” by the subjects.

Insecurity can be simultaneously denied in terms of its being a problem (I don’t feel insecure in my own neighborhood) and shown to exist in terms of actual conduct (I don’t like coming out of the métro alone at night). These contradictory statements were made by a young woman for whom the perfectly real insecurity felt at that moment does not enter into a discussion of insecurity. It seems less related to the characteristics of the neighborhood or to the state of society than to a kind of accepted fatality of the female condition. Having integrated it at the heart of her most usual activities, she doesn’t think for a minute to incorporate it in a discussion of the “problem of insecurity”.

Fear in big cities, moreover, is far from being limited to fear of a possible physical aggression. In certain badly planned areas, automobile traffic is a very real concern for pedestrians, especially when they are with young children. Certain parts of the Boulevard Sébastopol are avoided because the traffic is seen as too dangerous. Moral insecurity also was brought up by a mother of a family, with regard to the Rue Saint Denis.

Within the perimeters we studied, there are actually very few areas which are deliberately avoided by neighborhood residents specifically for reasons of security. This is the case for a number of women who avoid the Rue Saint Denis because of the prostitution following, and in the aisles of the Forum des Halles, especially the corridors of the métro, because of the poorly marked exits. The hour of day is often
more important than the area: a large number of elderly people avoid leaving home in the evening.

It should be noted that a place can inspire a feeling of repulsion for which it is sometimes hard to tell what is actually insecurity from that which is an aesthetic or emotional reaction. From this angle, there are several places which are fled without the subjects' feeling explicitly insecure. The terms which come up are "sinister", "aggressive surroundings", "noisy" or "depressing". According to who is speaking, it is the main arteries, the Rue Saint Denis, the Rue Turbigo, or the Rue Rambuteau along the Forum which are therefore avoided by a detour, because of their unpleasant character.

The relationship of someone to his neighborhood can be tinged with anxiety without his ever dreaming of using the term "insecurity". However, this discomfort when confronted by an environment to which one attributes a hostile nature is very like a particular form of insecurity.

**DISCUSSION**

Although we have been careful to choose, as the terrain of observation, a neighborhood presenting a collection of varied places and having a reputation for insecurity, the results obtained obviously cannot be completely generalizable. They can, though, constitute the elements of thought for other projects.

It might have been thought that there was a direct relation between the feeling of insecurity and insecurity *per se*; that is, to the objective probability of being the victim of a crime. Our observations suggest that the process leading to the emergence of the feeling of insecurity are more complex and often independent of the simple assessment of risk.

Certain environmental factors favor the emergence of a state of anxiety. These factors are often actually those objectively apt to favor a threatening or aggressive situation: darkness, deserted space without apparent places of refuge, or closed in, without possible exit. However—and this is an interesting result of the study—certain areas
induce anxiety less, because they are seen as offering a way of escaping or handling a hypothetical attack, should the case arise.

Without going so far as to speak in terms of the feeling of insecurity, the subjects express being ill at ease in certain areas. There can be a prevalence of people who look threatening or repugnant. The area can be a place of greater or lesser degrees of attractive or healthy activity. The architecture urbanism can be more or less well suited to human needs, in terms of space and privacy. These different factors, which the subjects are often incapable of analyzing in a rational manner, produce a feeling which comes very close to that of insecurity.

As we suggested initially, analysis of these results leads to the consideration that it would be wrong to reduce the feeling of insecurity to the single fear of being attacked. The spatial environment is apt to activate anxiety independently of a simple, logical calculation of the probability of aggression. The subjective experience of the environment, the impression felt in the surroundings, the feeling of being integrated or not in one's own neighborhood are equally factors to be taken into consideration in the emergence of the feeling of insecurity

BIBLIOGRAPHIE


Alice Coleman, Land Use Research Unit, King's College London, UK

RETURNING TO OUR CIVILISED ROOTS

Civilisation is the advanced social development that is believed to owe its origin to human interaction in cities. But cities do not always have a civilising effect. In early nineteenth century Britain, when industrialisation attracted vast members of rural in-migrants, cities became the scene of crime and social unrest, and this has happened again since World War II with planned out-migration to reduce population density. Why should these two contrasted conditions promote the same sort of social breakdown, when the intervening century of city growth saw a steady fall in crime followed by a sustained low-crime period.

This question was brilliantly illuminated by Oscar Newman’s *Defensible Space* (1972) with its detailed evidence of more crime where more households share the same buildings and grounds. Such sharing has been true of both of Britain's high-crime periods, though for different reasons. In the industrial revolution people were crowding into the cities faster that homes could be built, and settled in dense flocks in large old houses (rookeries) or purpose-built flats (tenements), both of which acquired evil reputations. Both they and their problems progressively disappeared as Victorian builders covered huge areas with single-family terrace houses, and the same law-abiding spirit continued during the rapid construction of semi-detached dwellings up to World War II. But then forward-looking planners with no sense of history re-introduced the tenement under the Utopian label of Modern Movement architecture, and our troubles began all over again.

It has long been recognised that apartment blocks are not fit places to bring up children, and in Britain the first large flad-bred generation has pioneered a succession of public scandals as it reached successive ages. There have been great increases in litter, graffiti, vandalism, and many types of crime, ranging from shop-lifting near schools, the rampages of football hooligans, and theft and burglary in housing estates, to arson, rape, wife-battering and child abuse. As larger numbers of children have been subjected to an upbringing in Modernist blocks, crime has become more vicious as well as more frequent, and has progressively spilled out to victimize areas outside the estates.

In spite of this multiple deterioration in our national character, the central planning and housing bureaucracy in the Department of the Environment has refused to admit that its own official design guides could be to blame. Oscar Newman's work has been denigrated, most unjustly, and for this reason I undertook an independent British study to establish how far his American results were applicable in Britain. My Land Use Research Unit surveyed over 4000 blocks of flats in 50 km² of London, and also over 2000 houses. The results were published as a book, *Utopia on Trial*, in 1985.
Oscar Newman's methods could not be reproduced precisely because London had no detailed crime statistics to match those of New York. The figures were not available on a block by block basis and could not be broken down by design, so we had to use substitute test measures. We began by noting five visible indicators of social breakdown that could be noted for each block as we surveyed its design: litter, graffiti, urine pollution and vandal damage. As we came to suspect that bad designs make their impact mainly by impeding the process of child-rearing, we added a sixth measure: addresses where child behaviour led to the placing of an official care order. All six confirmed the deleterious nature of the designs identified by Newman, and as a result the Metropolitan Police compiled special statistics on nine types of crime in the 129 blocks of the Canter Street Police Division. These proved to be even more strongly related to design than the first six measures.

Another difference from New York was the immense diversity of design, and we identified further deleterious variables that did not occur there but were quite common in London, such as blocks raised up over concrete stilts or garages, or linked together by overhead walkways intended to be 'streets in the sky'. To date we have found 16 variables in blocks of flats and 12 in houses, all of which embody at least one of Newman's disadvartesting mechanisms: anonymity, escape routes for criminals and lack of surveillance.

The diversity of design imposed another methodological difference also. Whereas the public housing projects of New York contain about half a dozen district types of block, those of London hardly have two blocks alike. This makes it impossible to examine one variable while holding other variables constant and made a different analytical method more appropriate. We placed little reliance upon correlation co-efficients (apart from noticing that most of them where very highly significant) and looked to the more informative method of trend lines. Trend lines show the average, or in this case percentage, growth in each test measure as the values of the design variable worsen.

Fig. 1 shows how the five types of environmental degradation are each present in more blocks as there are more overhead walkways radiating from the block. Overhead walkways create anonymity by allowing strangers to walk through the block; they function as escape routes for criminals, and their approach angles impede surveillance and control by the residents. Vandal damage occurs in 23 per cent of blocks without walkways but trebles to 75 per cent of those with six, and furthermore, though the graph does not show it, the latter are damaged much more frequently than the former.

Fig. 2 relates walkways to crime and it is immediately clear that the trend lines are steeper than those in Fig. 1. Bodily harm rises from 10 per cent of blocks without walkways to 100 per cent of those with five. Almost all the design variables have steeper curves for crime than for litter, graffiti, damage, etc., probably because the latter are mindless while crime is gainful and therefore deliberately maximised. The contrast is particularly marked with the walkways variable, which proves to be the most powerful factor in the spread of crime to the greatest number of blocks.
1. Five types of environmental degradation all affect a higher percentage of blocks as the number of overhead walkways increases. The curves are slightly smoothed by the method of running means of three successive values. Similar trends are found for 15 other design variables.

2. Crime curves rise in the same way as the test measures in Fig. 1, but at a faster rate. Robbery seems to be an exception, but this is the rarest crime and its 29 cases are too few to give a genuinely probabilistic trend line.
Fig. 3 tests our hypothesis that design powerfully affects children. It compares two categories of children in trouble: juvenile arrests and children in care. The former has a much steeper curve, crossing over the latter. Juvenile arrests refers to offences taking place in the year of study. Crimes, such as shop-lifting, are committed elsewhere, and plotted by the offender's home addresses. Children in care, by contrast, retain their label for years, even after social workers have had the families moved from problem estates with many walkways to more liveable areas with none. The graph shows that if the design is better, some of the blocks with problem families are not spawning fresh delinquencies, whereas where the design is worse, even blocks without problem families are having new offenders arrested. This is an indication that a move to a better designed block can promote more law-abiding behaviour.

However, all three of the graphs show that even the best design value - the absence of walkways - still has too high an incidence of environmental degradation, crime and problem children. This may be due to all sorts of other factors, which include the other 15 designs. Even though the walkway design is good, other variables in the same block may be bad, and the antisocial behaviour may well be a response to them. As well as looking at each design separately, we also need to study their combined effect, and for this purpose we developed a new variable termed the disadvantage score.

3. Two aspects of defective child development. The children-in-care curve is flattened by transferring families with problems to better designed blocks where fewer arrestable offences are actually committed.
The first step was to examine each variable separately to find which of its values were associated with better-than-chance frequencies of litter, graffiti, vandalism and excrement, and which were associated with worse-than-chance frequencies. The dividing line is termed the threshold value and after calculating it for the original 4099 blocks, we have accepted it as a standard (Table I).

The second step comes when we are commissioned to survey design disadvantage in a problem estate and make recommendations for its design improvement. We record the value of each variable in each block and count how many of them breach their respective thresholds. The total is that block's disadvantage score.

4. Increase in the percentage of blocks having nine types of crime as the number of defective designs per block increases. Even the small number of robberies shows a consistent increase in response to the combined effect of all the design variables.
<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>DESIGN IMPROVEMENT AND ITS EFFECT</th>
<th>Reported By</th>
</tr>
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<tbody>
<tr>
<td><strong>Design Variable (Threshold)</strong></td>
<td><strong>Design Change and Estate</strong></td>
<td><strong>Effect of Design Improvement</strong></td>
</tr>
<tr>
<td>1 Block size</td>
<td>Block partitioned into smaller self-contained sections (Holme Court, Westminster)</td>
<td>Less litter, graffiti and vandalism</td>
</tr>
<tr>
<td>2 Dwellings per entrance (6)</td>
<td>As above (see below, text)</td>
<td>Less litter, graffiti, vandalism, crime, mental illness.</td>
</tr>
<tr>
<td>3 Building height</td>
<td>Top-downing to convert blocks to houses and bungalows (Sunderland, Liverpool, Birkenhead and elsewhere).</td>
<td>Great success; tenants delighted.</td>
</tr>
<tr>
<td>4 Maisonettes</td>
<td>Converted into single-storeyed flats. (Thornhill Estate, Hatton, Cheltenham).</td>
<td>Less litter, graffiti, vandalism.</td>
</tr>
<tr>
<td>5 Overhanging walls</td>
<td>Demolished (Leigham Court, Westminster); Demolished (Ross Court, Westminster).</td>
<td>Crime rate reduced.</td>
</tr>
<tr>
<td>7 Vertical routes</td>
<td>Number of interconnecting routes reduced by re-routing to one staircase or by making the estate self-contained (Holme Court, Westminster).</td>
<td>Less litter, graffiti, vandalism.</td>
</tr>
<tr>
<td>8 Corridor type</td>
<td>As above.</td>
<td>As above.</td>
</tr>
<tr>
<td>9 Entrance position</td>
<td>Re-oriented to face the road (Cantril Farm Estate, Liverpool).</td>
<td>Much less litter and graffiti; vandalism damage ceased. Tenants regarded the change as excellent.</td>
</tr>
<tr>
<td>10 Entrance type</td>
<td>Front gardens added to individual ground-floor flats (Surrey Lane Estate, Wandelworth (Bentor Estate, Cumber.)</td>
<td>Unruly children become polite. Racial harassment ceased.</td>
</tr>
<tr>
<td>11 Doors or open apertures</td>
<td>Leeview Estate. Doors inserted.</td>
<td>See 2 above.</td>
</tr>
<tr>
<td>12 Stiles or garages occupying the ground floor.</td>
<td>No example to date.</td>
<td>As above.</td>
</tr>
<tr>
<td>13 Blocks per site (1)</td>
<td>Fencing to give a block its own site. (Brandon Estate, Southwark)</td>
<td>Litter and graffiti brought completely under control. Fear of crime greatly reduced.</td>
</tr>
<tr>
<td>14 Access points in site perimeter</td>
<td>As above. Only one entrance in the perimeter fence. (Brandon Estate, Southwark)</td>
<td>As above.</td>
</tr>
<tr>
<td>15 Planning areas (4000)</td>
<td>Dismantling by residents (St. Helen's, Lambeth).</td>
<td>Problem area ceased to be a problem.</td>
</tr>
<tr>
<td>16 Spatial Organisation. (Semi-public or Semi-private)</td>
<td>Site divided into independent blocks, with no leftover confused space. Grounds of block divided to give front and back gardens to ground-floor flats. (Leeview Estate)</td>
<td>See 2 above.</td>
</tr>
</tbody>
</table>
Fig. 4 sets out the percentage number of blocks having each category of crime at each disadvantagement score. The trends are extremely clear. The zero-scoring blocks, where no variable exceeded its threshold, did not report a single crime during the year of study, whereas those with 13 or more design defects reported an average of one crime per five dwellings. It is often said that the unknown nature of unreported crime makes known crime statistics suspect, but to overturn the evidence of Fig. 4, the unknown crime would have to be voluminous and in inverse proportion to known crime. I have raised this question in about 20 training courses for senior police and crime prevention officers, and not one has disputed the view that unreported crime is commonest in the same places as reported crime. Their reasons for this view are that criminal families are often unwilling to approach the police if they themselves become victims, and that they intimidate other people by threats of reprisals if they report.

Fig. 4 contains some independent support for this view. The juvenile arrests category refers to offences committed elsewhere and is not dependent upon reporting from the blocks. We should therefore expect its trend lines to show the same pattern as other crimes where the latter are fully reported, and to use above the others where they are depressed by under-reporting. The juvenile-arrests curve fans out in harmony with the others up to a disadvantagement score of 10, and thereafter rises more rapidly than all other types of crime, crossing the lines for theft and damage in premises and vehicles and approaching that for burglary.

Certain critics, e.g. Professor H. Priemus of Delft University of Technology have pointed out that the ascending curves of Figs. 1-4 could possibly mean that the worse design values occur in bigger blocks, and that the increase in the test measures might be no more than proportional to the population. It is difficult to ascertain the exact population of each block, as it is a constantly changing number, but the number of dwellings per block is easily ascertained. Fig. 5 shows how block size changes as the disadvantagement score increases, remaining roughly constant for scores of 0-4, and then noticeably increasing. The broken line on the same graph shows the average number of juvenile arrests per block at each disadvantagement score, and these clearly increase at a faster rate than the number of dwellings, especially when the score reaches 10. Youngsters are apparently seven to eight times as much at risk of having a criminal record if they live in blocks scoring 13 or more than in those scoring 0 to 2. It is no wonder that rising crime has followed the planned multiplication of progressively worse designed flats.

To find the best form of mass housing we looked at houses of different dates (Fig. 6). It appears that all the time houses were evolving in relation to free choice, they were gradually becoming a better environment for child-rearing and environmental case. The peak achievement was the semi-detached home of the 1930s. Who knows what it would have evolved into if there had been another half century of free choice, but in fact that was stopped, first by World War II, and then by planning. As well as re-introducing tenement blocks, planning has also approved progressively more tenement-like layouts for houses, with shared lawns and courtyards instead of individual gardens, and back alleys in place of the secure back to back gardens of the thirties.
5. Dwellings per block increase in number as the disadvantage score worsens, but the number of juvenile arrests increases at a faster rate. Design has a deleterious effect over and above mere size.
The crucial question is whether the anti-social behaviour associated with badly designed houses and blocks of flats can be changed for the better by improving their designs from higher to lower disadvantage scores. Only practical tests can provide the answer. To date these have been rather random. Some are independent ideas that have subsequently proved to be in line with the recommendations in *Utopia on Trial*; others are individual changes selected from those recommendations. None, as yet, are systematic programmes to reduce the score by as many points as possible, although two such programmes are now in their early stages.

This random approach has one great advantage; it tests the change induced by the improvement of a single design. This seems to make a deeper impact than I would have predicted, perhaps because I have based my predictions on the graphs showing the percentage of blocks affected and have not allowed for the greater intensity of problems per block. The first I have heard about many of the cases has come after their completion, so there has been no opportunity for quantitative before and after monitoring, but the qualitative impressions are of great interest. Changing different variables seems to affect different facets of social breakdown.

The first recommendations is to remove any overhead walkways to leave each block free-standing. When four walkways were removed from the Mozart Estate, Westminster, the local policemen monitored crime for five months beforehand to 21 months afterwards, so far. The burglary rate dropped by 55 per cent at the time of demolition, and has not subsequently risen again, even though there has been no further action or expenditure. Walkways are not only penetration points and escape routes in themselves; they also give access to many other escape routes, the lifts, staircases and exits in the other interlinked blocks. It is not only burglars who are deterred by walkway removal. The residents report that teenagers no longer run through the block at 2 or 3 am each night, banging on the doors and waking everyone up. And dogs no longer foul the corridors.

Our second recommendation is to give the free-standing blocks their own properly enclosed grounds. This improves the spatial organisation variable which has proved to be the most powerful factor in the volume (as opposed to the spread) of crime. Because of an initial misunderstanding of *Defensible Space*, we surveyed this variable in a different way from Oscar Newman and our terminology is different, but it has nevertheless proved useful. We reserve the term public for places where the public has the right to be: roads; pavements (sidewalks), parks, etc., and use the term confused space for residential grounds open to the public at large or to the tenants of other blocks. Enclosure can create either semi-public space shared by all the residents of a single block, or semi-private space in the form of separate front and back gardens for the ground-floor dwellings. Private space refers to the dwelling interior.

The creation of semi-public space for the individual block has been observed to result in the reduction or elimination of litter, graffiti and vandalism, as well as in the fear of crime, although no actual crime figures are as yet available. The creation of semi-private space has been observed to have a highly civilising effect upon children. A resident, who is also a
colleague at King’s College, explained how the provision of fenced and gated front gardens in the Surrey Lane Estate, Wandsworth, converted menacing gangs of children into polite individuals who no longer practised racial harassment, and a social worker from the London Borough of Camden described how similar gardens added to the Denton Estate had ‘killed racial harassment stone dead’.

In scientific terms it is good that semi-private gardens were added in isolation and can be identified as a powerful civilising influence upon child behaviour. In human terms, however, it is a lost opportunity, as the same money and materials could have been deployed differently to bring six deleterious designs down to there threshold levels instead of only one. The front gardens could have been located to face the road instead of the interior of the estate, and the back gardens could have met back to back, to preclude free movement between the grounds of different blocks. This layout would have produced single-block sites, with only one access point each, so that outsiders could not take short cuts across the grounds. Some of the bricks thus saved could have been used to build partitions across the upper corridors, which would reduce corridor length, and, effectively, block size also. This takes us into the third step in design improvement: dividing the block into smaller, self-contained sections, so that fewer people have to share the same common parts and can get to know each other more easily.

We are also concerned with road patterns. The most defensible layout ensures that each building is approachable from one side only, with no cul-de-sac, estate roads, paths or alleys penetrating the interior. These features have often been introduced to create safer environments for children’s play, but they are counterproductive in the long run as they deprive children of consistent kerb drill. Traffic sense does not become second nature on pedestrianised roads, and as these designs have multiplied, the death and serious injury rate has risen for 10 to 19 year olds while simultaneously falling for adults. The new 1988 British standard for house design has abandoned these features, including the Radburn-type layout, and reverted to residential through roads with pavements on both sides and back gardens at the rear.

Liverpool introduced this more traditional layout on a difficult-to-manage estate of 508 houses. We monitored design and the test measures before the improvement scheme began, and several months after it was completed. We observed that 1248 design defects had been eradicated - 45 per cent of the total number originally present. There was also a 47 per cent drop in the test measures.

Altogether 22 estates have reported sustained successes following design improvement, and the Prime Minister wants to find some large systematic trials, beginning in October 1988. We hope this will help to bring a real return to our civilised roots.
INTRODUCTION

This research set out to determine which social and physical factors are the strongest determinants of crime, fear, and instability in federally-assisted housing developments. The study examined all federally-assisted, moderate-income developments in Newark, St. Louis, and San Francisco, as well as public housing projects in San Francisco.

In this study the terms "moderate-income developments" and "public housing projects" refer to the two major types of federal assistance programs which are used to build and operate these apartment complexes. The moderate-income developments are privately owned either by non-profit or limited dividend corporations, or by the tenants themselves. They were built under Title 221(d) (3) or Section 236 of the National Housing Act which provide a share of the equity and guarantee low-interest mortgage loans. The public housing projects were built with the federal government providing the total project costs and are then owned and maintained by the individual municipality. Maintenance costs are supposed to be covered by rental income, although the federal government has recently started providing subsidies to housing authorities who house a high proportion of low-income and welfare residents. For the most part moderate-income developments house a higher-income group than public housing. However, the term "moderate-income" is not always an accurate description of the relative economic composition of these sites since some moderate-income sites in this study house as many low-income families as a public housing project.

Altogether, 63 sites were analyzed; these consist of 11 high-rise, 34 walk-up, and 18 row house sites. All of the sites were at least two years old as of April 1976 and house primarily families with children. The majority of residents in almost all the sites are black; 49 sites house 70% or more black households; 12 sites range from 32% to 59% black; and only two sites have no black families. The mean adjusted income of families in these sites ranges from $68 to $7,094, with a mean of $2,366. The sites are relatively small: only 7 of the total of 63 are larger than 300 apartment units; the largest site consists of 772 units; and the average size is 169 units.

The primary source of data for this study is a survey of households conducted in a single stage in late 1976 and early 1977 in which interviews were obtained from residents living in the study sites. Housing managers and city police were also interviewed. Archival data collected from housing management and police files were used to supplement the interviews with residents, management, and police. Each site was visited at least once by Institute staff to document fully the physical design characteristics of the site and to ensure that the correct building type designation had been made.
CAUSAL MODEL AND MEASUREMENT OF VARIABLES

The diagram in Figure 1 illustrates the study's causal model to examine the effects on, and of, two different types of crime: burglary and personal crime.

Figure 1: Theoretical model of the key factors affecting crime (burglary and personal crime), fear and instability

The independent, intervening, and dependent variables are grouped from left to right in these diagram. The arrows running from the independent variables to the intervening variables and to the dependent variables indicate the causal effects anticipated. Each independent variable is expected to affect each intervening variable and each dependent variable. Each intervening variable is expected to affect each variable that follows it in the causal sequence.
The independent variables consist of seven characteristics of housing developments:
1. physical design variables (building size and accessibility);
2. social characteristics of residents (low-income/AFDC, teen-adult ratio, and cooperative ownership); and
3. security service (police service and guard service).

The four intervening variables measure different attitudes and actions on the part of management and residents. Rent collection is a measure of management's success in collecting rent and hence of management effectiveness. It is composed of items taken from interviews with housing managers concerning the total amount of rent owed by residents, management's willingness to accept late rent payments and similar information. Residents' use of space is a measure of how frequently residents use space outside their apartments and was compiled from the survey of residents. Social interaction reflects the frequency and intensity of social contacts between residents and is also composed of items from the survey of residents. Control of space consists of items from the survey of residents that measure their perception of the likelihood that residents would intervene in suspicious of criminal situations.

The four dependent variables are: personal crime rate; burglary rate; fear of crime; and rate of instability. Personal crime is made up of robberies and assaults; burglary of both burglaries and attempted burglaries. Both crime variables are compiled from residents' experiences of these crimes as they occurred within their developments during the twelve month period prior to the interview. Each crime variable is figured as a rate per 1,000 residents. Fear of crime is an index composed of several questions from the survey of residents concerning their perceptions of how unsafe different areas are and the likelihood that certain crimes will occur. Instability is also a composite variable that includes the actual rate of turnover of apartments, the rate of vacancy, the rate of abandonment, and residents' desire to move out of the development as expressed in the household survey. The data on turnover, vacancy and abandonment were collected from the files of housing agencies.

**Building Size**

Building size is an index that combines two physical design characteristics of sites:
1. the number of apartment units that share a building entry or, in the case of outdoor stairways, the number of apartment units that share a stairway; and
2. the building type.

Buildings are classified into four types; row houses; two types of walk-up buildings - regular walk-up buildings and gallerias, which are walk-up buildings with an open, single-loaded corridor; and high-rise buildings.

Building size is expected to affect each dependent variable (personal crime, fear, and instability) directly and indirectly through the intervening variables. We expect that crime, fear of crime, and instability will increase with building size. We also expect that rent collection, use of space, social interaction, and control of space will decrease with building size.
Accessibility
The accessibility of apartments and buildings is a measure of the ease with which an outsider can gain access to the interior of a building or an apartment, either directly (through a window) or indirectly (via the common interior circulation areas of a multifamily building to the doors or windows of each unit). Accessibility is composed of a series of ratings of physical design characteristics including: the position and design of doors and windows and their locking hardware; the position and surveilability of circulation areas, stairs, corridors, and the doors to individual apartments; the presence of high fencing or other real barriers; and the presence of symbolic devices which demarcate areas as private. Because of the unique qualities of each of the three building types (row houses, high-rises, and the two types of walk-ups combined), apartments in each type are vulnerable to intrusion in decidedly different ways.

The accessibility to the interior of row house units is measured solely in terms of the accessibility of the ground floor windows, front and back, since it is the design of the windows which makes row house units more, or less, vulnerable to intrusion. The exterior doors, front and back, are not included in the accessibility rating system for row houses because these are the doors to individual units, not to public circulation areas as they are in walk-ups and high-rises. The doors to row house units, being the entrances to the dwellings of individual families, are always equipped with locks and are almost invariably kept shut. There is too little variability in the condition of the doors to row house units to warrant rating them. (This is true for the doors to individual units in walk-up and high-rise buildings as well.)

High-rise buildings present the opposite picture from row houses. The primary means of access by an intruder to the interior of most individual high-rise units is through the building's common ground floor entrance then through the common circulation areas of the building rather than through the windows to units because the overwhelming majority of high-rise units have windows that are inaccessible from the ground. For these reasons the accessibility of high-rise units is rather solely in terms of the design and condition of the building's common ground floor entry and exit doors.

Walk-up and gallery type buildings share traits with both row houses and high-rises: that is they suffer the vulnerabilities of both. Walk-up buildings are similar to row houses in that the windows of ground floor units - and the windows to second and third floor units in galleries - are vulnerable to access either from the ground, or from the circulation areas. They are similar to high-rises in that the doors to individual units are vulnerable to access via the common building entrances and the common circulation areas which are hidden from public view. In walk-up buildings designed with an outdoor stair usually no common entry door is provided. In such buildings the visibility of the individual apartment door from the interior of other units and from the street below usually helps to decrease the accessibility of the units. Because of these different design features walk-up sites were rated on all three characteristics: the design of windows; the design and condition of common entry and exit doors; and the visibility of individual apartment doors.
Accessibility is expected to have a strong and important positive effect on burglary because accessibility is primarily a measure of the vulnerability of apartments to intruders. The primary motive intruders have for breaking into apartments is to commit burglaries. The accessibility of buildings and apartments is expected to affect negatively residents' use and control of areas outside their apartments. Accessibility is also likely to have negative effects on fear and instability because residents are able to perceive that the areas outside their apartments are open to outsiders and, therefore, will feel fearful and will be dissatisfied with the development as a place to live.

**Low-income/AFDC**

Low-income/AFDC is an index composed of two items: the mean adjusted income of households in the site and the percent of one-parent, female-headed families on welfare (AFDC). The index ranges from a low proportion of AFDC families and a high estimated mean income to a high proportion of AFDC families and a low adjusted mean income. Previous defensible space research indicated that the percent of households receiving welfare and the percent of one-parent families were the two most important social characteristics in predicting robbery rate in New York City Public Housing. These two social characteristics were highly correlated, suggesting that most of the one-parent families in that study were receiving welfare under the program Aid to Families with Dependent Children and that it was primarily the proportion of this type of household that determined the rate of robbery. For some types of crime, per capita disposable income replaced percent of single-parent families and families on welfare as the social characteristic most predictive of crime rate (Newman, 1973).

Because both of these variables, percent AFDC and mean income, proved to be important in earlier research, it seemed important to include them as independent variables in this study. However, entering them as separate independent variables would have resulted in exceedingly high standard errors since the two variables are highly correlated. Entering only one of the variables and excluding the other was considered. However, to use only the percent of AFDC families as the primary social characteristic of sites would have eliminated some of the variation in the level of income between moderate-income sites, where there is often a very low proportion of AFDC families. On the other hand, the use of mean income alone would not capture the particular problems and vulnerabilities of developments that house a high proportion of single-parent, welfare families. For these reasons mean adjusted income of households and percent AFDC were combined to form a single index.

The variable low-income/AFDC is expected to have direct effects on all the intervening and dependent variables. The percent of low-income and AFDC families living in a development will probably: produce rent collection problems for management; minimize residents' use of areas outside their apartments; reduce social interaction between residents; minimize residents' control over areas outside their apartments; and increase crime, fear, and instability both directly and indirectly through the four intervening variables.
Ratio of Teenagers to Adults
The ratio of teenagers to adults is the number of teenagers, aged 10 through 20, in a site, divided by the number of persons who are older than 20. Several recent studies have documented teenagers' involvement in crime, particularly in crimes committed within a short distance of their homes. Therefore, it was important to include a measure of the proportion of teenagers.

Teen-adult ratio is expected to have a direct positive effect on residents' experience of burglary and personal crime, on fear, and on instability. Teen-adult ratio is expected to affect negatively the following intervening variables: residents' use of space and residents' control of space. The effects of teen-adult ratio on these two intervening variables is expected to be reflected in an increase in residents' fear and in the developments' instability.

Cooperative Ownership
The independent social variable cooperative ownership is a simple dichotomous variable which measures whether or not the development was financed within a framework which allowed residents to take title to their apartments through a mortgage arrangement.
Cooperative ownership was introduced for two reasons. First, it is reasonable to assume that, all other social, physical, and managerial conditions being equal, residents' use of and control over areas of their development outside their apartments would be affected by whether or not they had legal title to it. Similarly, residents' desire to move might be affected by whether or not they shared in the ownership of the development. Second, critics of the original defendable space study made the point that residents' identification with an area and their sense of control over it were probably more the consequence of their involvement in the ownership of the development than of building design or the assignment of physical space.

Cooperative ownership is expected to influence directly and favorably residents' use of the areas outside their apartments; their control over these areas; their interaction with their neighbors; their fear of crime; and their desire to move. Cooperative ownership, through the three intervening variables (use of space, social interaction, and control of space), is also expected to have negative effects on all the dependent variables (crime, fear, and instability).

Police Service and Guard Service
The reason for including municipal police service and security guard service as independent variables in the causal model is to control for the possible effects they might have on crime, fear, and instability and thereby to estimate the effects of physical design features and social characteristics as accurately as possible.
The quality of municipal police service is measured by an index of the frequency and nature of police patrolling, as reported by the police themselves. Given the findings of earlier studies, we do not expect that police service will affect either the rate of personal crime or the rate of burglary. The quality of police service is, however, expected to affect residents' fear, in that the visual presence of patrolling police and a quick police
response to residents' requests for assistance can be expected to have an effect in reducing residents' fears. Through its effect on fear, the quality of police service is also likely to influence instability.

Security guard service is a measure of the presence and nature of the security guard services provided at each site. It is measured by items from the managers' interviews and the household survey. Security guard service is expected to have direct negative effects on both types of crime and on residents' fear of crime, and indirect negative effects on instability through crime and fear of crime.

MAJOR FINDINGS

**Primary Causes of Crime, Fear, and Instability**

The total effect of each of the independent variables on burglary, personal crime, fear, and instability, which are listed in Table 1, indicate which are the primary determinants of each of these four community problems. These results suggest that burglary is primarily determined by the accessibility of buildings and apartments and, to a lesser extent, by the ratio of teenagers to adults. The more accessible buildings and apartments are and the higher the ratio of teenagers to adults, the higher the burglary rate. The effect of accessibility (.43) is significant and, by the standards adopted in this study, also large. (Large effects are greater than or equal to .30; moderate effects are between .15 and .29; and small effects are from .06 through .14. Any effects that are equal to or smaller than .05 are considered to be virtually zero).

The effect of teen-adult ratio (.16) is not significant but it is moderate in magnitude and it is the only other effect on burglary that is not virtually zero.

**Table 1: Total Effects of Independent Variables on Burglary, Personal Crime, Fear, and Instability**

<table>
<thead>
<tr>
<th></th>
<th>Burglary</th>
<th>Personal crime</th>
<th>Fear</th>
<th>Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building size</td>
<td>-.05</td>
<td>.11</td>
<td>.41(a)</td>
<td>.39(a)</td>
</tr>
<tr>
<td>Accessibility</td>
<td>-.43(b)</td>
<td>.03</td>
<td>.06</td>
<td>.16</td>
</tr>
<tr>
<td>Low-income/AFDC</td>
<td>-.02</td>
<td>.29(d)</td>
<td>.57(a)</td>
<td>.40(a)</td>
</tr>
<tr>
<td>Teen-adult ratio</td>
<td>-.16</td>
<td>.21</td>
<td>.18(d)</td>
<td>.07</td>
</tr>
<tr>
<td>Cooperative</td>
<td>-.04</td>
<td>.29(c)</td>
<td>.03</td>
<td>.14</td>
</tr>
<tr>
<td>Police service</td>
<td>-.01</td>
<td>.42(b)</td>
<td>.05</td>
<td>.01</td>
</tr>
<tr>
<td>Guard service</td>
<td>-.04</td>
<td>.10</td>
<td>.10</td>
<td>.10</td>
</tr>
</tbody>
</table>

(a) p < 0.1; (b) p < 0.5; (c) p < 0.10; (d) p < 0.15

Personal crime is mostly determined by low-income/AFDC, cooperative ownership, police service, and, to a lesser extent, the ratio of teenagers to adults. Both low-income/AFDC and teen-adult ratio have the expected effects; the higher each one of these characteristics, the higher the rate of personal crime. Cooperative ownership and police service, however, have surprising effects: cooperatives tend to have higher rates of personal crime.
than noncooperators; and the more frequently police patrol, the higher the personal crime rate. The effects of low-income/AFDC (.29) and cooperative ownership (.29) are both significant and moderate in size. The effect of police service (.42) is large and significant, and the effect of teen-adult ratio (.21) is moderate but not significant. It should be noted that building size does have a small effect on personal crime (.11) that is in the expected direction, that is, in the direction of larger buildings having higher rates of personal crime, but the effect is not large enough to allow us to consider building size a determinant of personal crime.

On the other hand, building size is a major determinant of both fear of crime and community instability. The determinants of fear of crime are building size, low-income/AFDC, and teen-adult ratio. All of these effects are in the expected direction. The larger the building, the greater the fear of crime. And the higher the level of low-income/AFDC and the higher the teen-adult ratio, the greater the fear of crime. All of these effects are significant, and the effects of building size (.41) and low-income/AFDC (.57) are both large. The effect of teen-adult ratio is moderate (.18).

Community instability is determined by building size, accessibility, and low-income/AFDC. All these effects are in the expected direction. The larger the building and the greater its accessibility, the greater the community instability. And the higher the level of low-income/AFDC, the greater the community instability. As with fear of crime, the effects of building size (.39) and low-income/AFDC (.40) are large and significant. The effect of accessibility (.16) is moderate.

Cooperative ownership has only one effect of any substance on any of the four types of community problems, and that is the unexpected positive effect on personal crime rate. It may be that cooperative developments become targets for personal crime, in particular for robberies, because outsiders may know they are cooperatives and may assume the residents are likely to be richer than residents of other housing developments. Such a strong relationship between cooperative ownership and wealth, as measured by low-income/AFDC, is not borne out by the results of this study (r = -.30) but within any particular neighborhood, cooperative residents may indeed be wealthier than other residents of the surrounding area and, at the very least, may be perceived to be wealthier.

It should also be noted that unlike building size or low-income/AFDC, cooperative ownership has very little impact on the intervening variables in the causal model. However, the research was not expressly designed to compare the effects of building size with the effects of cooperative ownership. Moreover, there are only 6 cooperative sites in the study: such a skewed distribution makes it very difficult for cooperative ownership to have an effect on anything. Also, not one of the high-rise sites is cooperatively owned. For these reasons, the relatively weak impact of cooperative ownership should be viewed with caution. The question of whether the deleterious effects of building size, say for example in high-rise buildings, can be combated by giving title to the apartments to the residents awaits further research, as does a more rigorous comparison between the impact of physical design and the impact of cooperative ownership.
Police service turns out to be an important determinant of personal crime but in the following way: the more frequently police patrol, the higher the rate of personal crime. The causal model for this study may be misspecifying the direction of the causal relationship between police service and personal crime rate; it is likely that the amount of personal crime is a determinant of police service rather than vice versa and that where the personal crime rate is high, police are likely to patrol more frequently. Guard service has virtually no effect on crime, fear, or instability. Its effects on fear (−.10) and instability (−.10) are in the predicted direction—that is, sites without guard service have higher levels of fear and instability, but these effects are too small to suggest that the absence of guard service determines either of these problems. That guard service should have so little influence is only somewhat surprising. It is likely that the presence of guards is only effective where the guard is able to fully control all the entrances to a building. This can only happen in a high-rise site where a doorman is constantly present at the front door and all secondary exits are kept locked at all times. Of the 21 sites in the study that have any guards at all, there is only one site which meets these criteria. Moreover, the overwhelming majority of sites in the study are row houses and walk-up sites where security guards, if they are present at all, are unable to monitor who enters the many different buildings. What the findings from this study demonstrate then is that the mere presence of guards has little, if any, impact on crime, fear, or instability. Confirmation of this hypothesis awaits further research since, for the most part, guards in this study did not control access to buildings or grounds properly.

Each of the characteristics of housing developments that has effects in the expected direction also affects more than one type of community problem. Building size affects fear and instability; low-income/AFDC affects personal crime, fear, and instability; accessibility affects burglary, and instability; and teen-adult ratio affects burglary, personal crime, and fear. Both the number and the consistency of the effects that these four characteristics of housing developments exert suggest to us that overall they are the major causes of crime, fear of crime, and community instability in federally-assisted urban housing developments in this study.

**Percentage of Variance Explained**

Table 2 lists the cumulative percentages of variance in each of the four dependent variables explained at various stages of the burglary and the personal crime versions of the model. Beginning with the percentage of variance explained by the independent variables only, the percentage of variance is presented for each successive stage of the model. The last figure in each column tells us how much variance in total is explained by the model. The proportion of variance in fear (69%) that is explained is sizeable and significant. Similarly, the proportion of variance in instability is large and significant (67% in the burglary version; 65% in the personal crime version of the model). The proportion of variance in personal crime that is explained (45%) is not as large, but it is still a sizeable amount and is significant. On the other hand, the proportion of variance in burglary that is explained is considerably lower (30%) and is not statistically significant.
### Table 2: Cumulative Percentages of Variance in Burglary, Personal Crime, Fear, and Instability Explained at Various Stages of the Model.

| I | Burglary Model | Percentage of Variance Explained |
|---|---|---|---|
| | | Burglary | Fear | Instability |
| Independent and Intervening Variables | | | |
| Independent Variables | 27% | 63% | 53% |
| Rent collection | 27 | 63 | 56 |
| Use of Space | 27 | 65 | 57 |
| Social interaction | 27 | 65 | 63 |
| Control of space | 30 | 69 | 64 |
| Burglary | | 69a | 66 |
| Fear | | | 67a |

| II | Personal Crime Model | Percentage of Variance Explained |
|---|---|---|---|
| | | Personal crime | Fear | Instability |
| Independent and Intervening Variables | | | |
| Independent variables | 26% | 63% | 53% |
| Rent collection | 37 | 63 | 56 |
| Use of space | 38 | 63 | 57 |
| Social interaction | 40 | 65 | 63 |
| Control of space | 45a | 69 | 64 |
| Personal crime | | 69a | 65 |
| Fear | | | 65a |

\[ a \]

The last figure in each column tells us how much variance in total is explained by the model. The proportion of variance in fear (69%) that is explained is sizeable and significant.

Overall, we can conclude that the causal model allows us to account for a large and significant proportion of the variance in fear of crime and community instability. It allows us to account for a smaller, but significant, proportion of the variance in personal crime. And finally, the model accounts for a relatively small portion of the variance in burglary.

**Police Implications**
The results show that two physical design features (building size and accessibility) and two social characteristics (low-income/AFDC and teen-adult ratio) are the major determinants. The policy implications of this research therefore hinge on our ability to manipulate these four factors. Of the four, three lend themselves easily to manipulation and change: the two social
characteristics and accessibility. The fourth, building size, cannot be altered easily. The only hope for the reuse of large buildings is that a drastic change be made to the social composition of the population living within them. However, the fact that it is easier to alter the social composition of a housing development than it is to alter its physical characteristics does not mean that it is politically more acceptable to do so. In fact, the opposite is true. Physical alterations, although mechanically more costly, are politically more acceptable.
Theo J.M. van der Voordt and Herman B.R. van Wegen
OSPA, Research Institute of Urban Planning and Architecture
Delft University of Technology - Department of Architecture.
P.O. Box 5043, 2600 GA Delft, Netherlands.

A CHECKLIST ON CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN: USEFULNESS AND LIMITATIONS

In the seventies and eighties an impressive number of books and articles were published on crime prevention through environmental design. In order to involve the results of widespread research in design practice in a systematic way, a checklist may be useful. In this paper the framework of such a checklist will be presented. In addition some preliminary results are discussed of a field project that was initiated to evaluate this checklist on its utility and validity.

1. INTRODUCTION

Over the past decades most countries have displayed an increasing crime rate. As a consequence women, the elderly and also men do not feel safe outside, especially at night. Crime and fear of crime have a strongly negative effect on the quality of life. In order to tackle this deeply rooted phenomenon, scientists and politicians have taken various initiatives to elaborate research and action programmes. In search of an explanation of the spatial distribution of crime and adequate prevention strategies, several hypotheses have been proposed and tested by different disciplines. Besides social and cultural factors such as the widespread unemployment, the "no-future syndrome" of poorly educated youngsters or people who are dependent on social welfare, the abuse of alcohol and drugs and the universally recognized norm evasion, it is emphasized by many authors that the design of the built environment is a very important factor too. This theory was already advanced by the well-known Chicago School in the early part of this century (Park, 1925; Shaw and Mckay, 1931). In the sixties and seventies the statement of theoretical principles and practical implications of crime prevention through environmental design displayed a rapid increase, in particular by the publications of Jane Jacobs and the introduction of the defensible space concept by Oscar Newman (1972).

Since then numerous scientific reports and views have been published, many of them focusing on testing the defensible space hypothesis (Pablant and Baxter, 1975; Mawby, 1977; Crowe et al., 1976; Wilson, 1978; Brown and Altman, 1983; Greenberg and Rohe, 1984, etc.), whereas other publications are merely focused on situational crime prevention strategies (see for instance Clarke, 1978/1983), spatial patterning of various types of crime (Poyner, 1981; Brantingham and Brantingham, 1981; Davidson, 1981) or the failure of modern planning principles (Coleman, 1985). Although there is still no communis opinio about the effect of design characteristics, most authors agree that besides "technoprevention" such as adequate fastenings, solid locks, security devices and target hardening, adequate design can con-
tribute to "socioprevention" by creating possibilities of surveillance, both in
a formal way (police patrol) and in a semi-formal (e.g. by caretakers) or
informal way (by residents, shopkeepers, passers-by). In this paper we shall
discuss how these theoretical insights might be put into practice.

2. FROM THEORY TO DESIGN

Theoretical insights and research data on crime prevention are often to be
found in elaborate research reports, hidden between methodological justifi-
cations, or in articles spread over a large number of journals. Practical
application requires a summarizing presentation of information in a form
that is attractive to planners, designers and other participants in the design
process. Nowadays several handbooks are available with design guidelines
and design alternatives and their effect on crime prevention (Newman,
1973; Zeisel, 1974; Hope, 1979; Gardiner, 1980; Wallis and Ford, 1980;
Poyner, 1983). In order to ensure that all relevant aspects are taken into
account, a checklist can be helpful too. In several stages of the design pro-
cess a checklist seems to be an adequate instrument, e.g.

- to involve crime prevention issues in the brief
- to test design alternatives on vulnerability
- to evaluate present situations on vulnerability, prior to well-considered
  rehabilitation programmes.

In the seventies several checklists were published that merely focused on
prevention of vandalism (see for instance Miller, White and Heather &
Matthews, all in Ward, 1973; Sykes, 1979), most of all focusing on technoprevention by target hardening. Recently a checklist has been developed on
prevention of public violence and molestation of women in residential areas
(Stichting Vrouwen Bouwen en Wonen, 1986). In the same period another
checklist has been developed by the Delft University of Technology,
focusing not only on housing but also on schools, pedestrian subways, parks
and parking garages (Van der Voordt and Van Wegen, 1986). In this paper we
shall discuss the design of this checklist. Further, we shall discuss the first
results of a survey that has been started to test the validity of the
checklist as a predictor of vulnerable places in residential environments.

3. FRAMEWORK OF THE CHECKLIST

The checklist is introduced by a conceptual framework, summarizing the
present insights from theoretical discussions and empirical research. Al-
though most attention is focused on physical characteristics of the built
environment, social aspects and management are also taken into account.
All relevant variables are clustered into six factors, which in our opinion
are the main criteria for testing plans or existing situations on vulnerabi-

a. perceived or actual presence of people, with indicators such as
   - degree of mixed land use
- characteristics of routes (through traffic, only residential traffic and so on)
  - vacancy rate
b. personal involvement and sense of responsibility, affected by
  - scale (number of dwellings per entrance/dwellings per block/blocks per site etc.)
  - recognizability of residents and strangers
  - spatial organization of public and private spaces
  - user participation in maintenance and management
c. visibility and clarity, affected by
  - visibility of semi-public and public spaces from the inside
  - visibility of entrance halls, galleries, storerooms etc. from the outside
  - clarity of the situation
  - public lighting
d. accessibility and escape routes, with criteria such as
  - accessibility of buildings and outside areas to residents and strangers, on foot or by car (open versus locked entrances, large-scale balconies access versus partitioning, ditto for corridors and basement storerooms.
  - escape routes via several entrances, emergency exits, backyards etc., both from a victim's point of view and seen from the position of burglars and other delinquents
e. attractiveness (especially important as a condition in evoking feelings of responsibility and care), affected by
  - scale
  - atmosphere
  - use of attractive materials and colours
  - maintenance
f. vulnerability of objects as a consequence of their function or inadequate design, e.g.
  - street-lighting, bus shelters, telephone kiosks, schools
  - (in)adequate fastenings
  - (in)adequate use of materials

For each criterion various questions are formulated in order to stimulate systematic discussion of the vulnerability of a design or an actual situation. A distinction has been made here between points of attention at district level and at block level. Moreover, spatial attention has been paid to extra-vulnerable objects such as schools, parking garages, subways and greenery. Questions referring to housing are for example:

Presence of people:
- Does mixed land use promote actual or perceived presence of people during daytime and at night?
- Are sufficient amenities available, especially for youngsters?
- Are there alternative routes (e.g. a quiet cycle track through greenery during the day, a route past houses at night)?

Involvement/responsibility:
- Does the appearance of the environment prevent people from developing feelings of anonymity and isolation?
- Do exterior places have characteristics of both traffic areas and residential areas?
Visibility/clarity:
- Are exterior places visible from inside the dwellings ("eyes on the street")?
- Is there sufficient lighting?
- Is it clear who is responsible for what and for what activities places are planned?
Accessibility/escape routes:
- Which places are/should be accessible to police patrol and maintenance services?
- Is it possible to call for help in case of danger (e.g., to ring a doorbell, to telephone)?

We deliberately opted for listing questions and not for a list of general recommendations or standards which each design should satisfy. General standards on crime prevention by environmental design are not adequate, for several reasons:

- The vulnerability of a design in evoking (fear of) crime depends both on design characteristics and characteristics of prospective tenants, and also on its location. High-rise housing for the elderly in a quiet neighborhood will be used in a quite different way from the same housing block occupied by problem families with numerous children and situated in an area with a shortage of socio-cultural facilities and leisure activities.
- Measurements directed to prevent one type of crime can evoke a negative effect on other types of crime or fear of crime. For example, roller shutters are a positive means of burglary prevention but are perceived as threatening and thus easily evoke feelings of fear and decay.
- Requirements of crime prevention may conflict with requirements of architectonic quality etc. or in some cases may lead to increased costs.
- Standardization can easily lead to fossilization and stifle the creative development of new design solutions.

4. TESTING THE CHECKLIST IN A FIELD PROJECT

The checklist can be seen as an elaborate operationalization of the concept of vulnerability. In order to test the checklist on empirical validity, four different residential locations have been selected in the Hague, two of them located on an urban renewal estate (Transvaal) and the other two in a postwar modern housing estate (Bouwlust).

The selected locations differ from each other with respect to characteristics of the built environment. However, there are no strong socio-economic differences between the residents of the two locations.

Each location has been investigated on its degree of vulnerability to petty crime by means of the previous mentioned six factors in the checklist.

Afterwards the distribution of crime was determined from:
- police records
- expert's reports
. direct observation
. a victimization survey among the residents of the two districts

The questionnaire concerned the following crimes:
. vandalism and graffiti
. residential theft and burglary
. theft of bicycles
. theft from cars
. theft of cars
. public threat or violence

Besides the location of actual crime it was also investigated which spots, streets and so on are regarded by the residents as unsafe places.
To illustrate how this research project was elaborated we shall now present one case: the Bloemfonteinstraat housing estate (Fig. 1).

**Description of the Bloemfonteinstraat housing estate**
The housing estate is bounded by residential streets and two thoroughfares.
At the end of the residential building there is a community centre that is separated from the building by a playground with a football cage. The housing estate, which was rebuilt in 1978, consists of dwellings for the elderly, situated at street level with access from the street side. Above the dwellings are maisonettes for families with balcony access from the inner court.
The balcony itself is accessed via staircases situated at both ends of the building and an underpass halfway along the building.

![Image](image.jpg)

**Figure 1:** View on the inner court of the Bloemfonteinstraat housing estate
Vulnerability

The design of the project offers different qualities with regard to its vulnerability to criminal activities. Positive aspects are the small scale character of the building, the presence of dwellings at street level and adequate lighting for the greater part of the estate. The location in a densely populated area with a mixture of dwellings, schools, shops and playgrounds causes a visible and perceptible presence of people around the area, especially during daytime. At many places there is sufficient scope for attracting people's attention by ringing doorbells in an emergency or for escaping from threats of violence.

A negative aspect concerns the rather limited possibility of social control in the underpass (poor visibility and general view, unclear differentiation between private and public places). The large number of accesses increases the number of possible escape routes for potential delinquents, thus causing a greater vulnerability to burglary. The streets around the housing block are mainly thoroughfares with no residential character, which strengthens the impression of anonymity. The playground between the dwellings and the community centre exerts a strong attraction on older youths which increases the chance of vandalism. The park near the estate is poorly illuminated and restricts the view of parked cars from the dwellings. Other vulnerable spots are the blind walls at both ends of the building, the projecting letterboxes situated at poorly visible places, the finish of the stairwells (with ceilings in which holes can easily be made) and poorly constructed entrance doors to the storerooms. In Fig. 2 the expected safe and unsafe places are mapped for each criterion, while Fig. 3 shows the overall map generated from these different vulnerability maps.

![Diagram](image)

Figure 3: Overall picture of hypothesized safe and unsafe places
Figure 2: Expected safe and unsafe places according to six criteria
The location of actual crime

Fig. 4 presents a picture of the location of actual theft and burglary, whereas Fig. 5 presents the total map of vandalism. The composition of these maps is based on information derived from the previously mentioned sources and yields all together a fairly complete picture of the criminal activities on the housing estate during the past 3 years. Apart from the actual crime rate it was also found which places are perceived as unsafe. With regard to the inner parts of the housing estate it proves that the underpass, the playground and the park are conceived as particularly unsafe places because of the insufficient lighting. Moreover, some thoroughfares and squares frequented by adolescents evoke feelings of anxiety among the residents. From the marked streets on the map the impression is that also general feelings of insecurity exist that are not specifically associated with particular spots or places.

![Map of Theft and Burglary](image)

- **= residential burglary**
- **= theft from buildings**

Figure 4: Total map of theft and burglary, according to figures from the police and data from a victimization survey

Comparison of the expected and the actual unsafe areas

With respect to vandalism the maps of actual and expected distribution of crime demonstrate a fairly strong similarity. Only two spots on the map shown some divergence. First, the location between the community centre and the primary housing and the places around the park do not display very much vandalism, which is contrary to our expectations. Burglary and theft from buildings correspond to the previously expected places, especially on the streetcorners and in the storerooms.
However, there are also places where in spite of our expectations, burglary has taken place e.g. in the Kempstraat and in the Bloemfonteinstraat. In the Kempstraat burglary is registered especially in the shops there. Perhaps burglars take more risks if the goal is an attractive one. Moreover, the Kempstraat is a thoroughfare and therefore rather anonymous. Probably the high burglary rate in the Bloemfonteinstraat can be explained by the presence of mainly elderly residents, living on the ground floor, which makes them more vulnerable to burglary than other people.

![Diagram](image)

Figure 5: Total map of vandalism

5. DISCUSSION

Although the research project is not yet finished and in fact only two out of four case studies have been fully worked through, it is nevertheless possible to draw some conclusions with regard to the utility of the checklist as a means of judging actual or planned projects on their vulnerability to criminal activities, and its predictable value with respect to actual locations of crimes.

The usefulness of the checklist as a test instrument

To answer the questions put forward in the checklist information is needed about the actual situation. This can be generated from plans, design drawings, interviews with experts, but also by registration and observation of the situation involved. A first difficulty that arises from this method is that each observation is merely a snapshot of the actual situation. Observation during the day or at night, during the week or the weekends might bring forth different information. Frequent observation needs more time, and because it is likely that the listing of expected unsafe places is mainly based on a restricted number of observations this might have a negative effect on the reliability of the criteria 'presence of people',
'visibility' and 'attractiveness'. A second problem has to do with quantifying the six criteria. So far it has proved to be almost impossible to develop an objective way of measuring visibility that can stand the test of scientific criticism. Counting the number of people or the number of windows overlooking a particular street or place does not solve the problem. At best one can tackle this problem by putting in several qualified observers in order to strengthen the internal reliability. In connection with this point there is the problem of assigning weights to the six factors. If some of these factors have a preventive effect on criminal activities and other factors do not, or even evoke negative effects, it is difficult to predict the final effect of the various factors. For the present the overall map compiled in this research project is based on an unweighted summation. Further research will be directed towards gathering more information on those factors that ought to be given more weight.

Some factors are ambivalent with respect to their particular effect on environmental vulnerability. For instance, the presence of people is considered as positive with regard to natural surveillance, which in turn may protect people against violence. At the same time potential criminals like pickpockets may profit from crowded situations.

**The predictive power of the checklist**

As pointed out earlier, the similarity between the hypothesized unsafe places and the spatial distribution of crime is not perfect. The similarity is most clearly observable for vandalism. Vandalism occurs in or near the underpass, at the blind corners of the estate and on the playgrounds belonging to the schools and the community centre.

With respect to burglary from dwellings and cars, and theft of bicycles, we did not discover a strong correlation with environmental characteristics. A concentration of burglary was in fact found at the corners of the building, in the storerooms, but also in the dwellings and cars located in the surrounding streets. It is reasonable to assume that anonymity - caused by the thoroughfares - and disorder - caused by the carelessly parked cars along the streets - have a stronger impact on crime than the positive effect of the presence of people.

Finally, we found a weak relationship between feelings of anxiety expressed by the residents and environmental factors. This is mainly caused by the social climate of the area. The presence of excessive social problems (unemployment, drug addicts, etc.) provides a general feeling of discomfort and anxiety, without clear-cut differentiation into safe and unsafe places.

6. CONCLUSION

The first results of our research demonstrate that a checklist can be a useful aid in testing a design or actual situation on vulnerability. However, the present checklist needs some further elaboration and refinement. In particular, further research is required to assign weights to aspects with contradictory effects on crime prevention. Another important research item is the effect of an object's shape, colour and material on vulnerability to vandalism.

The predictive value of the checklist with respect to the spatial distribution of crime is rather ambivalent. Expected and actual spatial patterns of vandalism display great similarity, but the spatial patterning of residential
burglary and theft from cars is quite dispersed. Some areas prove to be extra-vulnerable in accordance with expectations arising from the checklist (especially along thoroughfares in combination with poor visibility and lack of people who feel responsible), but it is rather difficult to make predictions for a particular spot. From this result we may not conclude that concepts such as 'defensible space' or 'crime as opportunity' are not of great value. But the reason why one particular house or car is burglarized and another is not is often affected by a coincidence. Absence of residents, vulnerability of special groups (the elderly, unattached people), the urgent need for money by a drug-taker, forcing him to take greater risks, the attractiveness of targets, familiarity of delinquents with specific circumstances and so on are all factors that affect the choice of target. Thus knowledge of spatial characteristics will seldom be sufficient to explain spatial distribution of crimes on a housing estate, let alone to predict such patterns.

Nevertheless, the first two case studies have provided important data both for further reflection on crime prevention through environmental design and as a basis for elaborating the checklist.

7. REFERENCES


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Adri van der Wurff*, Faculty of Psychology, University of Amsterdam, Department of Psychometry, P.O. Box 20218, 1000 HE Amsterdam - Netherlands Peter Stringer, Policy Research Institute, The Queen's University of Belfast and the University of Ulster

FEAR OF CRIME IN RESIDENTIAL AREAS:
DEFENSIBLE SPACE AND BEYOND

A socio-psychological model of fear of crime is described, in which environmental influences are represented by the factor 'criminalisable space'. The underlying concept was in part developed through a review of the 'defensible space' literature. Three issues from the review are highlighted here: the charge of determinism; the relative weights of physical and social factors; and the absence of a sociophysical, interactionist approach. More recent concepts of relevance to the environmental study of crime and fear of crime are referred to, e.g. 'signs of incivility'. Attention is drawn to their value-assumptions. 'Criminalisable space' and its empirical use is further elucidated.

INTRODUCTION

Fear of crime and other feelings of unsafety in the residential environment have been linked to characteristics of the environment for a long time (see Tuan, 1979). Work by Jacobs (1961), Rainwater (1966), and Jeffrey (1971), albeit discursive, has set the stage for a systematic and scientific study. However, the nature of the relationship has not been clarified as much as one could hope. Our own research is directed at elucidating the nature of feelings of 'unsafety' and their relationship to socio-spatial characteristics of the neighbourhood. It goes beyond the research of, for example, Skogan & Maxfield (1981) or the victimization surveys which have been carried out in many countries (e.g. Erskine, 1974; Baumer, 1978; Van Dijk, 1978). Although such studies have attempted to measure fear of crime and to assess its incidence (cf. Garofalo, 1979), they lack any in-depth analysis of its nature and content, and they tend to ignore its environmental aspects.

Our argument revolves around the commonplace observation that 'fear' is a personal emotion. We define 'fear' as the perception of a threat to some aspect of the person's well-being, concurrent with a feeling of inability to meet the challenge which the threat poses (cf. Frjida, 1986; Rachman, 1974). People differ in the extent to which they 'see' dangers facing them. Some always see themselves as potential 'victims', whereas others have a more optimistic outlook. In the case of fear of crime, we assume that fear has a strong social component: it is criminals who are the source of the threat one feels unable to resist. Perception of threat will be determined by the presence of criminals and by their characteristics, especially their superior 'ability' in any confrontations. But fear may also be sparked by signs of their presence, or even of their potential presence.

These considerations give rise to a fairly straightforward model. We hypothesize that there are four major determinants of fear of crime: (1) one's view of oneself as
a potential victim; (2) the outcome of a comparison of one's own 'power' with that of potential criminals; (3) the attribution of evil intent to other people in the environment; and (4) the perception of situations and space as 'criminalisable'. A general discussion of the model can be found in Van der Wurff & Stringer (1986, 1987). For the remainder of this paper we will concentrate on the line of thought by which we arrived at this last factor.

The perception of a situation or space as 'criminalisable', as open to criminal activity, can be seen as a subjective, outdoor-oriented mirror-image of Newman's (1972) 'defensible space' concept. Although it was directed essentially at crime and crime prevention, that concept did have a bearing on fear of crime (cf. also Yancey, 1972). In Newman's own words: "Defensible space' is a surrogate term for the range of mechanisms -real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance- that combine to bring an environment under the control of its residents. [...] The public areas of a multi-family residential environment devoid of defensible space can make the act of going from the street to the apartment equivalent to running the gauntlet. The fear and uncertainty generated by living in such an environment can slowly eat away and eventually destroy the security and sanctity of the apartment unit itself." (p. 3-4).

A review of conceptual and empirical studies of defensible space has helped to highlight those aspects of a potential relation between fear of crime and the environment which we wished to capture in our own research. We recognize that the main focus of the 'defensible space' concept is on crime and crime prevention, and that it is in that field that most progress has been made (cf. Brantingham & Brantingham 1975, 1982; Levine, Wachs & Shirazi, 1986; and Perry & Simpson, 1987). Fear of crime and its prevention have been subsumed under those primary interests in the 'defensible space' literature. Nevertheless a review of that literature has proved to be a useful heuristic device for our own more limited purposes.

DEFENSIBLE SPACE: CRITICAL DEVELOPMENTS

Many of the articles on defensible space since 1972 (e.g. Bottoms, 1974; Hillier, 1973; Kaplan, 1973; Mawby, 1977; Merry, 1981b; Ostrom, 1975; Taylor, Gottfredson & Brower, 1981; and Wood, 1982) have been critical discussions of the concept itself, and, in particular, of the (political) desirability of implementing 'defensible space' guide-lines. Undesirable connotations of 'fortification' and 'intense surveillance' were detected in Newman's ideas. One of the major accusations was aimed at an alleged physical determinism and the undue neglect of the role of social variables. Newman (1975, 1976), however, explicitly pointed out that design is a facilitator of 'defensibility' and just one of the causal factors determining crime in the residential environment. He admitted that only appropriate action by the inhabitants themselves could ensure their safety: "Defensible space therefore is a sociophysical phenomenon." (1976, p. 4). Nevertheless, the suggestion of physical determinism and corresponding perspectives of controllability and 'quick and easy' solutions were detected by many in the original (1972) publication; and this may well have been responsible for the enthusiastic welcome given to Newman's ideas in police circles (e.g. Dingemans & Schinzel, 1977; Gates, 1977; and Grenough, 1974).
One conceptual criticism which has not been explicitly brought up in the literature is that the idea of 'defensible space' is almost exclusively directed at the home and its immediate vicinity. More public spaces, and especially any space of which the public/private status is ambiguous, is treated by Newman is inherently unsafe and fear-provoking. We would argue that the absence of defensibility is not necessarily to be equated with 'unsafety'. A lack of defensibility is not sufficient to explain variations in fear of crime between different types of public place. Another criticism, which we would also raise, has to do with the neglect of any distinction between design as such and perceptions based on design features. A design variable such as 'the number of households per apartment-block entrance' would typically be used in the explanation of crime (i.e. the higher it is, the more anonymous the environment, the more opportunity for crime). But it is difficult to see how it could affect fear of crime unless it was mediated by a perception of anonymity and an attitude toward 'strange faces'. The link between defensible space and fear of crime is doomed to remain hypothetical if cognitive processing of this kind is not taken into account.

In addition to the conceptual discussions, there have also been many studies of the empirical validity of 'defensible space' (to name just a few: Booth, 1981; Brown & Altman, 1982, 1983; Chenoweth, 1978; Gillis, 1974; Greenberg, Rohe & Williams, 1982; Mawby, 1977; and Musheno, Levine & Palumbo, 1978.). The evidence for its relation both to crime and fear of crime has been inconclusive. One of the reasons for this might be the researchers' insistence on a physical and design oriented interpretation of the concept and a consequently restricted attention to purely physical aspects of defensible space, such as high-rise housing. That was characteristic not only of Newman's critics, but also of adherents to his ideas. For example, Nasar (1982) argued that even more attention should be given to purely physical features as explaining fear of crime, and in particular to the visual aesthetics of the environment. Coleman (1985) took up the physically-oriented approach to defensible space, and in a very large-scale survey studied its effects on social breakdown (of which fear of crime was one of the manifestations). Like Newman, she ends her book with detailed prescriptions for the layout and design of existing and new housing developments. Her view on the relation between design and social variables is apparent in her conclusion: "Design has not been investigated in isolation. Alternative explanations of the various forms of social malaise have been explored, and while some appear to be definite contributing factors, none has emerged as being stronger than design." (p. 178-179). Hope (1986) raises serious criticisms about the methodological validity of this conclusion, and calls for a more appropriate (i.e. multivariate) testing of the relative importance of design features and social factors, such as poverty and unemployment. Impressive as Coleman's study is, it does not contain answers to the question as to why design leads to social malaise, including fear. It presents Coleman's trial Utopianism, rather than a theory.

The explicit introduction of social variables in empirical studies was accompanied by a similar aura of polarisation. Porter (1980), for example, suggested replacing 'defensible space' altogether by a model of 'place defense', which stressed the role of social control and social action. When Becker (1975) carried out a study of the differential impact of physical and social factors on residents' sense of security, he began from the assumption that "the emphasis in the design literature is on the importance of physical design, when in fact the emphasis should be on the ways in which people interact" (p. 18).
In all this rather extravagant contrasting of physical and social aspects of defensible space the possibility of a unifying conceptualisation was overlooked. Lee (1968) had long since demonstrated the concept of 'neighbourhood as a socio-spatial schema', in which social and physical elements are thoroughly intertwined (see also Ellis, 1982). If defensible space were properly treated as a 'sociophysical' concept, as Newman had already suggested (1976), then research would focus on the interaction of environmental features with social and individual variables. In this way the gap could be overcome which appears to exist between a design approach based on Newman's work and a socially oriented approach which is based on work of Jacobs (1961) and Merry (1981a).

Apart from Newman's own scattered remarks (1972, 1975, 1976, 1980) there are only a few studies which refer to the interaction of social and physical elements of defensible space. Little has been done to integrate empirical findings into an interactionist framework which might offer a theoretical understanding of the relationship between design and (fear of) crime. Repetto (1974) reported on the deterrent effects on crime of opportunities for surveillance and neighbourhood cohesion, but he did not link findings for social and physical variables in a theoretical way. Roncek (1981) looked at the effect on crime of such variables as density, block population, percentage of multi-user structures, percentages of blacks and Hispanics, vacancy-rate and age. He concluded that "the patterns of crime are complex and the interactions of the environment with resident characteristics need to be taken into account." (p. 92). Although Roncek analysed interactions at a statistical level, he did not present an analysis of them at a conceptual level. Brower, Dockett & Taylor (1983), who studied the effects of plantings, barriers, and the presence of other people on perceptions of safety, concluded that their effectiveness also depended on their social context; but they did not elaborate the point.

In a more recent study Moran & Dolphin (1986) defined 11 indicators of defensible space which were aimed "to take the contextual reality of the person-environment relationship into account." (p.397) The indicators, however, were still predominantly physical in nature: for example, lighting, and distance from a housing development. They applied these indicators to telephone kiosks, and found two dominant types of environmental context (public and semi-public) on which the meaning of indicators was found to be dependent. And the research report does not make clear whether the results can be generalized to other types of built environment. Although the study illuminates the necessity of paying attention to person-environment interaction, it does not provide a new look at a more theoretical level.

The idea of 'defensible space' as a sociophysical concept has received insufficient attention even from its originator, as can be appreciated from a critical reinterpretation of Newman & Franck (1982). This study is of particular interest to us because it is often cited in support of the conclusion that defensible space has more to do with fear of crime than with crime itself. An examination of the findings reveals that social-demographic variables, such as income and the teenager-adult ratio, had a stronger relationship to fear of crime than the defensible space variables of building size and accessibility. In the case of crime itself this difference is even larger -design variables had correlations as low as -.05 and .02 with incidence of crime against the person. Disquieting as these results might be with respect to the
validity of 'defensible space', even more alarming from our point of view is the lack of a thoroughgoing interest in socio-physical interaction as one of the determining factors of fear of crime. Although the authors do speak of 'indirect effects' and a mediating factor of 'control of space and present path-analytic findings to support their interpretation, nevertheless, the way in which they measured control of space (by asking respondents the perceived likelihood that they would intervene in three kinds of situation) is at odds with their definition of it as people's [extension of] their sphere of influence beyond the immediate confines of their individual dwelling units' (p. 204). And because they asked about the perceived likelihood of intervention in criminal or suspicious situations, it comes as no surprise that this measurement of 'control of space' correlates as highly as -0.71 with fear and only -0.32 with personal crime.

ALTERNATIVE CONCEPTS

Until now we have been concentrating on studies which fall within the framework of 'defensible space'. We wish to examine a number of alternative concepts which have subsequently appeared, and which promise some relevance to our interest in the relation between fear of crime and aspects of the sociophysical environment. The examples which follow have a predominantly criminological perspective - criminology has in the past provided the majority of studies on fear of crime. (We would mention only in passing the socially oriented line of research of e.g. Merry, 1981a, and Smith, 1986, which stems from urban anthropology. It suggests no distinct role for the built environment in explaining fear of crime. For empirical work along this socially oriented line, see also Hunter & Baumer, 1982; and Kennedy & Silverman, 1985.)

The concepts of 'urban unease' (Wilson, 1968; Lee, 1981); 'disorder' (Wilson & Kelling, 1982), and 'signs of incivility' (Lewis & Salem, 1986) share a common reference to urban decline as a social and physical process. They all are thus interactionist in nature. For instance, 'signs of incivility' are visible physical cues which symbolically signal the decline of previously held social standards and values. All three concepts appear to be interchangeable, a feature which may be attributable to Wilson's part in their coining. At present, the empirical study of these concepts is well underway, and first results look promising (e.g. Skogan, 1987; Skogan & Pate, 1987). However, although there is increasing support for the relation of these concepts to fear of crime, their theoretical underpinnings are rather loose.

The most important criticism of them is simultaneously theoretical and political - as it was with the accusation of physical determinism in Newman's case. Underlying these ideas of 'unease', 'disorder', and 'incivility' there is a strong presupposition of values. Fear is assumed to be provoked by a threat to key (middle-class) values such as a clean neighbourhood, orderly behaviour on the streets, no drinking in public, and so on. The recognition of this kind of value-basis for fear of crime should warn researchers not to confuse it with a legitimate concern about the amount of actual crime in the neighbourhood. For example, it is just a small step to treat the presence of ethnic minorities as a global sign of incivility and neighbourhood deterioration (cf. Merry, 1981a, Smith, 1986). And their is some evidence for such a broadening of the concepts under discussion. In a recent study
in 40 neighbourhoods Skogan (1987) found a .62 correlation between the percentages non-white inhabitants and disorder ratings by residents. He discusses the interrelations between disorder, the white flight from the inner city to the suburbs, and the social and political consequences of a cleavage between whites and blacks. In his approach perceptions of physical disorder (e.g. litter) merge with perceptions of social disorder (e.g. public drinking), and with even more remote antecedent conditions of fear of crime such as the percentage of blacks in a neighbourhood and the social-economic status of its inhabitants. Furthermore, his treatment of these classes of variable is essentially sociological: no specification is given of the way in which such interrelated antecedent conditions actually influence feelings of unsafety.

Taylor (1987) does try to provide such an explanation, by developing a theoretical argument which leads from physical signs of neighbourhood decline to fear of crime. Of pivotal importance is the observation that perceived incivilities are linked to fear (Skogan & Maxfield, 1981), whereas objective measures of disorderly behaviour are not (Taylor, Shumaker & Gottfredson, 1985). This necessitates postulating intermediary processes of perception and interpretation. Taylor concludes: "These considerations add up to a highly conditional relationship between physical decline and fear of crime. The decline must be interpreted as a reflection of decreased concern, investment, or commitment on the part of residents themselves, and it must be proximate, in order to result in a sense of decreased territorial control, which is reflected in more fear." (1987, p. 976).

A somewhat different approach is taken by Perlgut (1982) who introduces the concept of 'manageable space'. It refers to the management by residents themselves of their dwelling environment. The idea is meant to apply to subsidized housing in particular. 'Manageable space' is defined by seven components or strategies, among which tenant organization and management policies (such as maintenance and tenant screening) are included along with physical design and site layout. His approach is in some respects reminiscent of Newman's; but Perlgut (1982) assigns a far more important role to institutional management (however, see Newman, 1980). In 'defensible space' theory management by the inhabitants follows naturally from designing for private and semi-private territorities. An approach similar to Perlgut's (1982) is taken Prak & Priemus (1984)(cf. also Priemus, 1984) in the Netherlands, when they stress the importance of management in post-war housing developments. Perlgut's 'Manageable space' does incorporate physical and social elements and draw attention to the various ways in which the elements can interact; but in essence it remains a 'portmanteau'-term -it offers only a list of elements. No theoretical rationale is provided to link the seven component strategies of 'manageable space'; and interactions are only briefly mentioned in an incidental way.

DISCUSSION AND INTEGRATION

'Defensible space' appears to have been interpreted in too narrowly physical a sense. It is limited in its ability to account for fear of crime outside the dwelling. And it needs to be supplemented by some specification of the ways in which design can lead to fear of crime. The alternative concepts which we reviewed suggest two additional requisites for the composition of a factor linking the socio-physical
environment to feelings of unsafety. The symbolic and referential meaning of physical elements should be incorporated stronger than has been done in 'defensible space' theory. And the use and management of a housing development might play an important role in determining the appearance and the impact of a building.

Establishing the prerequisites for a factor which links the environment to fear of crime is several steps removed from developing an explanatory theory. One of the most important obstacles to developing such a theory seems to be the difficulty of studying interactions between environmental features and socio-demographic variables. Limiting oneself to just one domain is an unacceptable restriction; while any attempt to cover them both can easily lead to an exponential growth in the number of variables to be included. Franck (1984) discusses the differences between positing intervening variables and assuming interaction and she remarks: "While interaction effects are sometimes suggested in the environment-behaviour research, they are rarely if ever measured." (p. 418) There is no example in the literature of a well-developed theory which is directly aimed at assessing the interaction of physical and social elements in determining fear of crime. To date, we can only see tentative examples of such an endeavour. The model presented at the beginning of this paper is intended to help elucidate the relation between fear of crime and the environment. On the basis of the preceding review we are now in a position to present a specification of the model's 'criminalisable space' factor. (For some initial empirical findings in relation to this factor and the model as a whole, see Van der Wurff & Stringer, 1988a, 1988b; and Van der Wurff, Van Staaldruinen & Stringer, to appear).

The perception of a situation or space as 'criminalisable', as open to criminal activity, can in itself be the outcome of several processes. We will discuss four of them. First, one may have experienced crime or crime-related behaviour at a particular place and in a particular situation, and as a result it bears an association of 'crime' and/or 'danger'. Any normal situation is seen, experienced and remembered as a concurrence of social - spatial - temporal characteristics; and abstraction over the social and temporal characteristics gives the idea of a particular place. In this abstraction there still will be traces of the situations on which it is based. By the same reasoning new experiences of and at the same place may eventually extinguish the association with crime or danger. Second, certain places may be socially and culturally stereotyped as 'dangerous places'. Red light districts have such connotations for many people, or, for instance, dark forests at night, deserted houses in a thunderstorm, or blind alleys piled with garbage. Such places are feared even though one has no personal experience of them. Third, places may have characteristics or signs which signal the presence of potential criminals. The difference from the second process is that here it is not the whole environment which is fear-provoking. Litter, faeces, graffiti serve as warning signals insofar as they are associated with particular groups which are feared. The fourth and last process has to do with imagination. 'If someone is up to no good here, I cannot look after myself properly.' An initial concern for one's safety is reinforced by the recognition that the place is supportive of criminal actions. The absence of surveillance is an example of an environmental feature which reinforces rather than provokes fear.

These four processes should not be confused with processes leading to crime. Only the fourth has a counterpart in the criminal's recognition of a place as a good
'working place'. All four processes are clearly psychological. There is no assumption of a direct link between type of physical environment and fear. The dangerous environment is in the eye of the beholder.

Where does this analysis leads us? We have concluded from our literature review that there is a strong need for an interactional approach in examining the relation between fear of crime and features of the environment. Environmental psychology by its very nature lends itself to such an endeavour, and this is exemplified in the above theoretical sketch of a concept of 'criminalisable space' and its underlying processes. The concept runs no risk, for instance, of charges of physical determinism; yet it does have scope to include almost universal phenomena like the fear of women outdoors at night or the fearful qualities of a forest at night.

At the same time, it does not hide the fact that there are several serious conceptual problems still to be overcome. One of them is cultural relativism. For example, we pointed out that a place may be seen as dangerous either on the basis of stereotype -which can be changed in principle; or on the basis of an assessment of its supportiveness to criminal activity -which is supposed to be invariant. Research of considerable ingenuity is needed to ensure that design guide-lines warn against only the invariably 'bad' designs. Another problem might be termed 'psychological relativism'. Given the abundance of psychological processes by which one can become fearful, it is difficult to maintain that design plays a pervasive and ubiquitous role.

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5

Post occupancy evaluation
ADVANCES IN POST-OCCUPANCY EVALUATION: KNOWLEDGE, METHODS AND APPLICATIONS

ABSTRACT

The purpose of this symposium is to describe recent developments in the field of post-occupancy evaluation. The five papers which follow, range from uses and boundaries of POEs and a performance-based conceptual framework for systematic POEs to advances in POE methods as well as applications. First, recent developments are noted and the developments that may represent advances for the field are identified. These include an apparent increase in the volume and acceptance of POEs, and shifts in the sponsorship and in the types of POE programs that are run by certain sponsors. Possible advances include the integration of behavioral and technical assessments, moving toward the application of "total building performance," and the development of greater sophistication in dealing with organizational issues and the clearer discrimination of multiple levels of POE.

TOWARDS A PERFORMANCE-BASED CONCEPTUAL FRAMEWORK FOR SYSTEMATIC POES

Introduction

This paper suggests a more systematic and rigorous approach to POEs through the adoption of the performance concept in building evaluation. Reconceptualizing basic evaluation approaches can improve POE in fundamental ways, resulting in changes to current practice that will integrate previous improvements and proposed new ones. Increased methodological rigor and improved utility of POE results will benefit both the public and private sectors by enhancing the quality of their buildings.

This paper presents the two basic parts of a systematic framework for POEs: the concept of building performance, and the performance evaluation process. These aspects of a POE assume high-quality measures on a performance basis, a formal and rigorous methodology for evaluating measures against appropriate criteria, and a system of dissemination that is useful and accessible to practitioners and researchers alike.

For purposes of clarification, a definition of POE is offered: POE is subsumed by the higher order type of evaluation called "building diagnostics" which has both diagnostic and prognostic capabilities. POE evaluates buildings in use and has short, medium, and long-term implications, the latter being evolutionary, based upon feedforward of POE generated information. Furthermore, POE focuses on the requirements and performance of building occupants' needs, and therefore, technical performance is only considered in so far as it affects the occupants of buildings.
1. The Performance Concept in the Building Process

The "Performance Concept" proposes that POEs be built into design and construction programs of agencies from the beginning as an integral part of the building process. Planning for a POE should begin in the programming phase for a new facility.

Systematic and rigorous POEs are predicated upon the use of the performance concept in the building process. The performance concept facilitates an objective evaluation method by comparing explicitly stated performance criteria for buildings with the actual performance as measured or perceived by building occupants and evaluators.

The performance concept is based on the assumption that a building is designed and built to support, and enhance, the activities and goals of its occupants. Early work on building performance was conducted by Ezra Ehrenkrantz and his associates on the School Construction Systems Development Project in California (Educational Facilities Laboratories, 1967). This work had been inspired by concepts developed at the Institute of Advanced Technology of the National Bureau of Standards (Eberhard, 1965). Subsequent projects executed by the National Bureau of Standards for the Department of Housing and Urban Development and the General Services Administration built upon these initial efforts (Wright, 1971).

Performance Evaluation. Performance evaluation and feedback relates client goals and performance criteria to the actual, objectively and subjectively measurable building performance. The performance concept can help improve the evaluation process by increasing objectivity and clarity of measurement, enhancing communication, providing incentives for innovation, and development of alternatives, aiding decision making, and advancing professionalism. Performance criteria used in evaluation are developed from goals and objectives which in themselves are derived from values held by individuals, groups, and organizations. Frequently, there are differences in values among various groups or units of the same organization.

Building Performance and Evaluation. Because the performance concept in the building process views buildings as dynamic entities, it requires a comprehensive attitude in evaluation. Performance measures are compared to performance criteria, and the differences are used as feedforward into improved planning, programming, design, and construction of future buildings, as well as the creation of data bases or information clearinghouses on building types, attributes, and occupant groups.

The elements of performance that are measured, evaluated, and used in POEs to improve buildings include three major categories: technical, functional, and behavioral. Although there are other building performance elements such as location and economics that influence physical performance and affect owners, organizations, and building occupants, these three elements are the most important.

2. The Performance Evaluation Research Framework

The performance evaluation research framework (Figure 1) connects the evaluation of buildings with: 1) measurement technology, 2) data bases and information systems (including clearinghouses), and 3) the development of performance criteria for buildings.

Measurement Technology. Measurement technology employs all those techniques and technological aids that are used in data collection and analysis of POEs. They include interviews, questionnaire surveys, direct observation, mechanical recording of human
behavior, measurement of light and acoustic levels, video recording, mapping of behavior, and still photography.

**Figure 1: The Performance Evaluation Research Framework**

**Programmatic Statements and Performance Criteria.** It is essential that performance measures collected by POEs be compared with specific performance criteria in the form of programmatic statements which are contained in the program for a given facility. While these criteria can be of a general nature describing the design intent as expressed in the program (e.g., provide visual and acoustical privacy), a POE should document how the design was expected to meet these criteria. In this way, the findings from each POE can be compared to other POE findings which address similar issues.

Performance criteria and guidelines are usually developed from data bases and information systems for a given agency and/or building type and from the programmatic criteria for a given facility. These criteria and guidelines are usually documented in technical manuals, design guides, or in specialized data bases. The criteria are building-specific and address particular sets of occupants and building functions. As such they are an evolving and improving set of performance “benchmarks” for a given building type. Performance criteria and guidelines feed the entire building process, and thereby the cyclic process of improving building performance can be accomplished.

**Performance Evaluation Criteria.** Explicit performance criteria need to be developed for purposes of evaluation and use in POEs. One needs to differentiate among the following:

- Criteria concerning the current use of a building.

- Criteria pertaining to the original, intended use of a building, as documented in the program.

- Criteria that pertain to the state-of-the-art in a given building type.
• Criteria which relate to management of the client organization versus those which pertain to the end users/occupants and

• Criteria as internalized knowledge and experience which the evaluators may apply as experts regarding certain building types.

A POE Process Model. General models of the POE process have been described by several authors in their writings (e.g., Daish et al., 1980; Marans and Spreckelmeyer, 1981). While there are variations in the process, depending on the nature and objectives of the respective POEs, three levels of effort can be generally distinguished in POE work. Preiser and Pugh (1986) described this as the "POE Process Model" and used it to outline the levels of effort involved in a typical POE. Thus, the model presented in Figure 2 is a further development of that POE Process Model (National Research Council, 1987, and Preiser, Rabinowitz and White, 1988).

![Figure 2: A Post-Occupancy Evaluation Process Model](image)

Levels of effort refer to the amount of time, resources, and personnel, the depth and breadth of investigation, and the implicit cost involved in conducting a POE. The three levels are: 1) indicative, 2) investigative, and 3) diagnostic. Each higher level requires more data gathering and is more comprehensive than the previous level, as depicted in Figure 2.

1) Indicative POEs give an indication of major strengths and weaknesses of a particular building's performance. They usually consist of a walk-through and selected interviews with knowledgeable informants.

2) Investigative POEs go into more depth. Objective evaluation criteria are explicitly stated.

3) Diagnostic POEs require considerable effort and expense, they are time consuming, and utilize sophisticated measurement techniques. They correlate physical environmental measures with subjective occupant response measures, thus providing a higher degree of credibility for the results.
In carrying out a POE, there are three basic phases with three steps in each, as shown in Figure 2.

**Benefits and Limitations of Current POE Practice.** Each of these POEs can result in several benefits and uses. Recommendations can be tied back to the client to correct problems. Lessons learned can influence design criteria for future buildings, as well as provide information about buildings in use to the building industry. This is especially relevant to the public sector which designs buildings for its own use on a repetitive basis.

The many benefits which result from conducting POEs provide the motivation and rationale for developing POE programs for the following reasons:

1) **Short-Term Benefits**
   - Identification and solutions to problems in facilities
   - Pro-active facility management responsive to building user values
   - Improve space utilization and feedback on building performance
   - Improved attitude of building occupants through active involvement in the evaluation process
   - Understanding of the performance implications of changes dictated by budget cuts
   - Informed decision making and better understanding of consequences of design

2) **Medium-Term Benefits**
   - Built-in capability for facility adaptation to organizational change and growth over time, including recycling of facilities into new uses
   - Significant cost savings in the building process and throughout the building life-cycle
   - Accountability for building performance by design professionals and owners

3) **Long-Term Benefits**
   - Long-term improvements in building performance
   - Improvement of design databases, standards, criteria and guidance literature
   - Improved measurement of building performance through quantification

3. **Conclusion**
The performance concept and framework for systematic evaluation of the built environment as presented in this paper is a much needed and timely methodological approach toward achieving higher quality in buildings, accountability in the building process, and ultimately better building utilization and user satisfaction. Making explicit the performance requirements that are expected from a building, designing a building accordingly, and eventually comparing the actual performance of the building with that which was initially stated in the building program is the basis of the performance concept advocated for use in POEs.

**Notes**
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Robert B. Bechtel
Department of Psychology, University of Arizona
Tucson, AZ 85721 U.S.A.

ADVANCES IN POE METHODS

ABSTRACT

Design research should now be differentiated into Pre-Design Research (PDR) and Post Occupancy Evaluations (POEs). While most methods overlap, the different purposes of these two types of research influence selection of methods and analyses and modify methods to suit each. Simulation is the only method peculiar just to PDR and is rapidly advancing to a micro stage through electronic advances. The self-report controversy continues for all methods that use self-report forms of answers. The newest field, the transactional approach, also stirs controversy. Industry and government clients are preferring expert and focussed groups and these may be in danger of crowding out the more tried methods of social science.

PURPOSE

This paper will review the most recent methodological advances in environment and behavior research but first makes a distinction between POE and Pre Design Research (PDR). Methods are reviewed from this new point of view.

PRE DESIGN RESEARCH

When Bechtel and Srivastava (1978) reviewed POEs done on housing, it became evident that POEs constitute the bulk of work done in the entire field of E&B research. They discovered over 1,300 published studies on housing alone and many more have been done since then. Furthermore, the survey did not include POEs done on other buildings such as schools, hospitals, etc.

Another type of research has been confused with POEs and this is better called Pre Design Research, or PDR. The purpose of this kind of research is to collect new information so that a new entity such as a building, park or city can be designed. While POEs focus on design as it exists in a standing building, PDR has a broader range of information to collect in order to pursue the many hypotheses of a future design or to go beyond hypotheses to collect information on the broadest scope of user needs. PDRs are information gathering operations more than the evaluating or testing operation of a POE.
FURTHER DISTINCTIONS

In POEs the design decisions have already been made. In PDR the information is needed in order to make those decisions. POEs are retrospective, PDR is prospective. While most of the methods used in E&B research will overlap, at least one method, simulation, is almost exclusively used for PDR.

The statistics used to analyse POE and PDR data greatly influence the methods chosen. Because PDR is broad gauge and inclusive the statistics tend to be more those of association, while those of the POE, because they are testing and looking for significance of differences, tend to be those of statistical tests of significance. The PDR will use more correlations, factor analyses and similar tests and the POE will use more t tests, ANOVAs and other tests of significant differences.

A POE evaluates the behavioral response of a building's occupants to the building as they experience it. As such, it is a performance measure because it measures whether the building performs as intended. A deeper significance is applied to POEs, however, as over time they become an instrument of quality control. This means that in much the same fashion as quality control in manufacturing influences the design and construction of products, so the POE becomes the measure of quality in building design.

PDR, by contrast, measures the needs and requirements for people who will occupy a future building and the data become input for the programming process of design. This is where confusion arises since POE information on past designs is also used in programming. In fact, any good designer will borrow from both POEs and PDR as part of programming. Also, PDR is in many ways a performance measure, but only a suggested performance measure for the future, which must await a POE for confirmation as a tested performance standard.

In another ideal sense the PDR is a pre measure while a POE is a post measure for the experiment which is a building. Unfortunately, this ideal situation is seldom realized. The most obvious reason is the design fee process which is more favorable to PDR than it is to POEs. Seldom does a client feel the need for evaluating a building after construction when funds have already been stretched to make a building the best possible.

Two sources of additional conflict also arise from this circumstance. The first is the understandable reluctance of a client to evaluate a considerable investment where the chance is it could have been done better. The second is an ethical and scientific question of whether the people performing the PDR
should be the same who do the POE. This is both an ethical and scientific issue because if the same people do both they may influence the POE outcome favorably. The PDR performers will always be suspect if they obtain favorable results doing a POE. The pressures toward favorable results are often very subtle, and therefore, it is best to avoid suspicion by having an entirely new team do the evaluation.

In my own experience, however, I sometimes find that the team doing the POE does not know enough about the events of programming to do an adequate job. This becomes the PDR-POE dilemma: how do the PDR performers do their job well enough so that the information helps programming in such a way that the programming decisions are clear enough for the POE? The only answer is meticulous documentation of procedures and decisions.

**PDR TECHNICAL ADVANCES.**

As mentioned previously, simulation is the one method that seems to be used almost exclusively for PDR. An excellent example of innovation in this method was the Reizenstein Carpman, Grant and Simmons (1985) study. The problem addressed was whether a hospital should place a parking entrance near a patient drop-off point as a convenience for the people bringing patients. A potential problem could develop because other people coming to the hospital might see the entrance and choose it rather than the regular parking entrance, causing traffic congestion. The study simulated automobile trips by moving a fish-eye camera around a model with the new entrance and then a model without the entrance. Subjects were asked which entrance they would pick as the video paused at decision points. Even though signs were clearly visible in both models, subjects chose the new entrance enough times to produce a fair certainty of congestion. The new entrance was not built.

This study took only a few weeks and only a little over two hundred dollars to complete. It provided a clear and efficient PDR method for making an important decision and it provided an example of how modern electronic methods can make PDR information more available at this micro level. No longer must an entire building be contemplated before PDR is justified, it can now be applied to smaller units like entrances.

Having said that simulation is almost exclusively for PDR, it is now necessary to mention the one known instance in which it is definitely a post event although not POE and that is the use of photographing models via TV tape to reconstruct accidents (Severson, 1988). This is a useful device for court cases as evidence for either the defense or prosecution.
CONTROVERSES OVER POE AND PDR METHODS

1. Focus Groups
A method that has been around for some time and has been borrowed from marketing research is the use of "focus" groups. This method is similar to the charrette and earlier participatory design methods from the sixties (see Daish and Kershaw, 1986 and Icafano, 1986). The only reason for including this as a recent "advance" is that it has been rediscovered and is becoming increasingly popular.

Focus groups are a collection of people brought together to answer questions about a building that exists or about a proposed design, hence, these groups can be used for either POEs or PDR. Usually the group is considered to have expertise in some area such as maintenance or management but it could also be a group of housing residents. Usually these groups are non-randomly collected so there are problems of representativeness (see Marans in Bechtel, Marans and Michelson, 1987). The controversial aspect of focus groups comes from their use in government and industry.

The bulk of POE work has shifted from academic settings, which peaked in 1973 (Bechtel and Srivastava, 1978), to government agencies and private industry. More and more government agencies are requiring POEs and PDR on their buildings (e.g., Vischer, 1985; Picasso, 1985). In this regard, the work of the General Services Administration (GSA), the Veteran's Administration, the Air Force and the US Army Corps of Engineers have already been cited (see National Academy Press Report, 1987). The US Postal Service (Kantrowitz et al., 1986) is a recent addition to the list of government agencies.

Sweden, with its Building Research Institute and New Zealand (Daish, 1980) have also experimented with institutionalizing POEs in the building process and Sweden regularly incorporates POE findings in code reviews.

Eichinger (1985) reports how the VA uses expert panels, selected from personnel who are veterans of previous design changes, who are brought to the site of a new hospital and given a set of pretested questionnaires to evaluate significant new designs. The same method is reported by Taylor et al. (1987) as the mainstay for evaluation of scenic outdoor environments.

Daish (1980) reported a method that has yet to be tested in the US, the "most knowledgeable person" technique. This is a variant of the expert panel. In this case the most knowledgeable person in a given area, e.g., Maintenance, is chosen by an expert panel to be the most knowledgeable person in their field. This method has yet to be compared with more traditional methods including the expert panel but it has the saving of time and money as its
largest recommendation.

2. Standardized Questionnaires
A search of PDR and POE literature shows that most of the work continues to be eclectic and continuing to use more than one method as a matter of course. An exception to this observation is the new and revised social climate scales developed by Rudolph Moos and his colleagues at Stanford University (Moos and Trickett, 1986; Moos and Moos, 1986; Moos and Spinard, 1986). Usually the scales are composed of 90 or so items and divided into six to ten subscales which measure different environmental qualities and they have been used in a variety of settings such as classrooms, homes, offices, nursing homes and mental hospitals. Although the main point of these scales is the global assessment of social climate, they have been used to point out issues relating to job stress, environmental support and others.

Moos has always had a strong environmental interest (Moos, 1985) but the social climate scales have not been very widely used in either PDR or POEs. The reasons for this neglect are not apparent.

3. Transactional Research
The transactional model of research is producing a new method for both POE and PDR work (Oxley et al, 1986) but it is not without controversy (Kaplan, 1987; Altman et al, 1987). Essentially, the transactional approach is to recapture the wholistic quality of the environment by collecting data through extensive observation and interview follow-ups based on that observation. It seeks comprehensiveness while recognizing the unique qualities of every setting. This method is somewhat reminiscent of Barker's (1968) behavior setting survey, but is less quantified and less arduous. Criticism (Kaplan, 1987) states that it does not provide the traditional controls found in hypothesis-testing research. Proponents of the work (Altman et al, 1987) assert that traditional methods leave too much information out of the data collection and do not permit a truly contextual picture of behavior.

So far, too few studies have been done to evaluate the usefulness of the transactional model (for it is more a model of method use than a new method), but usually these more comprehensive methods of data collection have proven useful to PDR and POEs, especially PDR where the emphasis is on more global behavior.

Over time some instruments and methods of data collection have gained favor. Chief among these has been subjective self-report measures like the semantic differential (see Bechtel, 1975; 1987). The controversy over self-report measures is now entering its thirteenth year. It continues to be discovered by new researchers and uncomfortably avoided by some older ones. Daniel
and Ittelson (1981) have pointed out that self-report measures can often confound the verbal response with (what should be) an environmental response. In their classic study Starr and Danford (1979) showed that the words "lawyers office" produced the same semantic profile of responses from subjects as did the actual environment of a lawyer's office. Thus, there was no difference in self-reports from those who were looking at words that labelled an environment from those who were actually responding to a specific environment labelled by those words. If self report measures like the semantic differential are to be used for measuring attributes of the physical environment, there must be some assurance that it is the physical environment that is being measured and not a verbal label of that environment. In short, there can be no assurance it is the environment being measured unless the instrument used has been shown to discriminate between the verbal and the distal world and between generically similar environments. This is the requirement for discriminant validity first raised by Campbell and Fiske in 1956 (see also Fiske, 1982 and the exegesis in Bechtel, Marans and Michelson, 1987).

Much misunderstanding still exists concerning this controversy. Some still feel it demands no self-report measures should ever be used to measure environmental attributes. On the contrary, this would only eliminate one class of possible confoundings. The fact is, all measures which do not discriminate between verbal and non-verbal responses should be pre-tested for discriminant power before being used to measure any environmental attribute. This certainly does not mean that one can never use semantic differentials or adjective check lists but it may mean that certain adjectives which do not discriminate between verbal and environmental stimuli can never be used.

The Scenic Beauty Estimate (SBE) (Daniel and Boster, 1976; Brown and Daniel, 1984) continues to be used on outdoor POEs and avoids this confusion by using a non-verbal numerical scale and pretests for discriminant validity in addition. The SBE produces mathematical modeling for management decisions in parks and forests.

CONCLUSIONS

It may yet be too early to call it a trend, but time and budget demands of industry are creating pressures against the use of the more costly and time consuming methods which are the stock in trade of social scientists. There seems to be a preference on the part of many clients in these agencies and industries for the quicker and more prestigious expert panel. The expert panel enables the client to rub elbows with the best experts in a given field. This has a tendency to boost the client's ego and to produce unchallenged statements from the experts. A relatively anonymous social scientist has some difficulty sounding expert
among the luminaries and challenging the elite.

Yet the validity of this method must be challenged. Can it be demonstrated that experts can provide better and more economic information than more conventional methods for PDR and POEs? Perhaps there are circumstances where one is used more effectively than the other or where both need to be used simultaneously. At present there is no basis for making judgments about the viability of traditional social science over the panel of experts.

The only solution to this problem is a carefully crafted experiment comparing and contrasting these methods with standard social science techniques. Does the expert panel produce more useful information than a survey of user needs? Does the expert panel cost compare favorably with such a survey? The larger issue is whether the social scientists will have the courage to gather the resources and make such a test. If not, I see the pressures toward more frequent use of ad hoc groups forcing out the use of the only methods known so far to test validity and reliability of results.

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ADVANCES IN POST-OCCUPANCY EVALUATION APPLICATIONS

ABSTRACT

Advances in post-occupancy evaluation (POE) applications are looked at from two points of view. First, recent developments are observed and, second, those developments that may represent advances for the field are identified. Developments in POE applications include an apparent increase in the volume and acceptance of POEs, shifts in the sponsorship of POEs, and changes in the types of POE programs that are run by some sponsors. Possible advances include the integration of behavioral and technical assessments, moving toward the application of "total building performance." Other changes due to sponsor demands include a growing awareness of "bottom line" measures of performance in POE. Possible changes due to experience with large scale POE programs which may also advance the field include the development of greater sophistication in dealing with organizational issues and the clearer discrimination of multiple levels of POE.

INTRODUCTION

First, some definitions. The term "POE applications", as used here, is meant to imply POE as it is practiced by (or for) clients who intend to, or preferably do, make use of the results to change and improve the way they program, design, build, manage, or use their environments. The title of this paper, "advances in POE applications," suggests not only change, but progress; not only doing things differently, but doing them better.

How can we measure the advance in POE as it is applied in real world settings? This is not a trivial question and reminds us that our knowledge of POE applications is limited in terms of how much we know about what is actually happening out there. Even more critically, our thinking about the application of POE and environment and behavior (E&B) research in general proceeds without an accepted conceptual framework which would explain the activity of applied research. That is, theory in E&B tends to be viewed as explaining phenomena, rather than describing or explaining the process of developing information and acting on the person-environment system.

Other observers have commented recently on the application of E&B research -- which is the essence of POE. Kantrowitz (1985) asked the rhetorical question "has E&B research made a difference?" and answered that it has as research has become more applied in its orientation, as clients have recognized its potential contributions, and as research programs have become more institutionalized.
Shibley (1985), in discussing building evaluation in large organizations, proposes at least two criteria for their success. First, that evaluations be in the "mainstream" — that is, embraced as the usual way of doing things — in relation to long range planning and policy decisions within an organization; in other words, that their results "count" to decision makers. Second, that they be shown cost-effective in generating this information. Zimring and Wener (1985) suggest that if the field is to advance, standards are needed to ensure the quality of information generated by even the "quickest" and "dirtiest" of POEs. This paper will suggest a number of other measures in addition to these, and will attempt to report on the movement in each of the following areas:

- Are more POEs being done?
- Are POEs being applied in "new" contexts or facility types?
- Are "new" people doing or supporting POEs?
- Are new techniques or technologies generating new POE applications (or vice versa)?
- Are POEs being done better?
- Are POEs measuring new kinds of outcomes?
- Are POE results being communicated more effectively?
- Is POE having more impact?

ARE MORE POEs BEING DONE?

Perhaps the most difficult question to answer is this quantitative one. There is no more current data on the volume or monetary value of work being done in this field since Bechtel conducted his survey of housing POEs for the United States Department of Housing and Urban Development in 1978. However, there is anecdotal evidence which can be cited on both the positive and negative sides of this issue; and conditions seem to vary greatly among countries. On the positive side, one can cite two factors. The first is the institutionalization of POE at the national level in several countries (Australia, Canada, New Zealand, and perhaps others). In the United States and Great Britain, POE also appears to be widely practiced, with lesser levels of activity in Germany and Israel. The second is the emergence and continuity of private firms able to subsist doing (at least in part) POE work. Some of these firms have been active for a number of years, but there seem to be more now and, with a larger number of firms, many have specialized in particular user or facility types (e.g., the Project for Public Spaces which studies plazas and airports, and other firms which specialize in offices, health care, and so forth).

On the negative side, it is possible to identify governmental agencies (particularly in the United States) which sponsored POE studies in the past, but are no longer, or have reduced their support. The National Science Foundation and National Endowment for the Arts provided money for early conceptual work on POE, but appear to be less involved at this time. This may be because they see their role diminishing as POE becomes better understood and accepted, leaving sponsorship to the agencies and organizations which can benefit directly from use of research results.

Also on the negative side is the level of sponsorship by U. S. federal agencies such as Housing and Urban Development and the Department of Energy, both of which
had been major sponsors of directed POE studies and both of which appear to have greatly curtailed, if not abandoned, their programs.

While the magnitude of this reduction and the reasons why it has taken place are unclear, it may reflect shifts in priorities or perceptions which are particular to these organizations. Because, at the same time that some U. S. agencies have reduced funding for POE, many others have stepped in to fill the gap. Examples include the General Services Administration, Postal Service, some state governments (e.g., Massachusetts) and many private clients and voluntary organizations. The Veterans' Administration, which had in the past been a major sponsor of POE, is beginning to use POEs again — this time in a highly applied fashion, studying post-move and start-up impacts.

It appears that POE is becoming better understood and more accepted. Many recent graduates have now been exposed to a course in POE; and there is now a POE textbook available, easing future training (Preiser, et al., 1988). Staff and managers in many client organizations are familiar with the term and are more likely to see its value and include it as an integral part of the facility management cycle. POE seems to be shifting into a demand-driven mode, where clients are defining the need for research, as compared to the prior "supply side" mode, where researchers had to convince reluctant clients that they might get something of value from a POE.

ARE POEs BEING APPLIED IN "NEW" CONTEXTS OR FACILITY TYPES

Environment and behavior research largely began with studies of public sector housing and institutional facilities. More recently, POEs have been performed on private sector facilities, including office, retail, and "hospitality" (restaurants and hotels). Kantrowitz (1985) reviewed recent developments in several of these areas. Clearly, for private clients to support POE, it must prove itself useful — and apparently it is doing just that. At the same time, increasingly effective POEs (and resulting design guides) are being developed for more traditional public sector clients (e.g., Welch, Parker and Zeisel; Regnien and Byerts).

ARE "NEW" PEOPLE DOING (OR SUPPORTING) POEs?

POEs have been done in the past by environment-behavior researchers and some design professionals. In discussing the experience of their firms in conducting design research, Symes, Duffy and Ellis (1985) conclude that a new generation of design researchers whose education and experience span social science and design will be required to bring about an effective synthesis of skills needed in this field. Could it be that improvements in POE cited elsewhere in the present paper are, in part, a result of the emergence of this hybrid practitioner?

An additional emerging category, that of "facility manager" may also impact POE practice. Facility managers appear to be defining themselves as responsible for carrying out or managing tasks that span from strategic planning to janitorial and maintenance (Margulis). Somewhere in this spectrum falls POE, and facility managers recognize that evaluation and feed-back are essential to their ability to manage effectively. One sees POE results reported in facility management trade journals (e.g., Gere Picasso's recent article in Facilities Design and Management.
which briefs facility managers on how to develop and in-house POE) and discussed at their conferences (e.g., International Facility Management Association [IFMA]).

It can be argued that the existence of the discipline of facility management will have an impact on the diffusion of POE; as large organizations develop in-house skills and integrate all aspects of planning and control, evaluation will become a more obvious thing to do. And, with professionals inside of organizations whose job it is to look after the facilities, it may be easier to sell POEs.

ARE NEW TECHNIQUES OR TECHNOLOGIES GENERATING NEW POE APPLICATIONS?

The availability of new technologies may influence how POEs are applied, their cost, and the time they require for completion. Conversely, the contexts in which POEs are performed may require new techniques (not necessarily hardware). We have seen POEs which utilize such recent technologies as videotape (to record walk throughs, interviews or focus groups, and to present results), lap-top and hand-held computers (e.g., the "datamite"; for field data collection), on-line questionnaires (where the respondent can connect to the researcher's computer, answer questions and have results processed instantaneously), and the use of electronic bulletin boards (where remote sponsors of a POE project can keep informed and trade messages). Widespread and affordable "desk top publishing" (with personal computers driving laser printers) is allowing researchers to generate more attractive, readable and effective POE reports. The development of increasingly sophisticated and realistic computer aided design (CAD) simulations and interactivity (allowing one to "walk through" an unbuilt project, change colors at will, and inexpensively simulate alternatives) will probably have an impact on the ability to do "pre-construction evaluations" of alternatives.

"New" low tech POE methods have been stimulated by the demands of applications (many from or inspired by the organization development field). An example is the "walk through" or touring interview (Shibley; Gray et al.), which entails the simultaneous, directed, in-person assessment of an environment by several parties who see the place from different perspectives.

ARE POEs BEING DONE BETTER?

Are we learning to do POE applications better (or smarter)? I would not argue that evaluation methods, per se, have been improved, or even that there may not be poor quality POE work being done in some instances. But, there is evidence that POE practitioners are thinking more about the information needs of their clients and of designers, how to gather that information most efficiently, and how best to present it. In this sense, POEs may be being done better: with more direct, obvious and useful payoff to the client. This is evident in several relatively recent developments which are reviewed below.

First, there is a growing awareness of the role that POE plays in organizational change (Farbstein, et al., 1988). Some observers feel that POE consultants are more sophisticated about the POE's organizational context and what characteristics may be required to get results used effectively (Richard Wener, personal communication).
Craig Zimring (personal communication) points out that we can observe an increasingly better match of POE methods and products to our clients' goals and needs.

An example of this improved match, is the recognition of needs for differing levels of POE in what may be an ongoing research program (Shibley, 1985; Harvey, Zeisel and Schiff, 1987). The first level may be diagnostic, intended to identify the range of problems and issues which need to be looked at in more depth. Often, this stage will involve a wide range of people from within the organization, as well as a broad spectrum of expertise on the evaluation team. This approach should not be denigrated as "quick and dirty," but rather seen as laying the foundation for further research. Results of this initial stage range from immediate feedback and fine-tuning (see Kantrowitz, 1986, p. 123 for an example of fine tuning to get optimal energy performance) to problem definition, to "buy-in" of the organization.

The next level of POE may include detailed assessments of a single building or a set of similar buildings. A single building study may serve to test programmatic assumptions. If POEs are completed on a sufficient sample of similar buildings, conclusions may be drawn which are applicable to other buildings of the type, and to the documentation of that knowledge as design guidelines. Thus, POE results are used in the next generation of building designs.

The final level of POE would focus in greater detail on a particular functional area or technical issue which had been identified as needing further study. This operational approach to defining levels of detail is being utilized in such POE programs as those of the New Zealand Ministry of Public Works, Health and Welfare Canada, Public Works Canada, the California Department of Corrections and the U. S. Postal Service (Zimring, 1987).

ARE POEs MEASURING NEW KINDS OF OUTCOMES?

Environmental design researchers struggled for many years to get performance-based notions accepted in facility programming applications (Preiser, 1988). The notion was that POEs would measure environmental performance. The initial performance measures were largely related to such outcomes as habitability, satisfaction, and task effectiveness. More recently, new concepts and measures of performance have been integrated into POE practice.

The first is the notion that POE should measure "bottom line performance" which can be expressed in terms of dollar costs. Brill (1984, 1985) began use of the term in discussing office design, showing many of his findings to affect worker productivity (while also reporting other findings which were felt to be important but could not be measured in dollars). POEs of correctional facilities have pointed to such bottom line, hard dollar costs as replacement of vandalized equipment, provision of health care services, staff time lost, and public liability (Wener, et al., 1987). The U. S. Army's Construction Engineering Research Laboratory (CERL) demonstrated a return of 77-to-1 on the cost of research which lead to productivity and morale improvements in an office building. Recently the Postal Service has embarked on a program to measure productivity in relation to design, not only in terms of worker productivity, but also in terms of marketing effectiveness (USPS). These concerns demand new conceptual and methodological approaches to POE and
require that environmental design researchers coordinate efforts and findings with economists and financial analysts.

Another emerging direction for POE is the concept of *total building performance* which demands the integration of behavioral and technical factors in a more comprehensive evaluation scheme. The total building performance concept is consistent with the notion of environmental systems and holistic approaches which have been with the field since its beginning.

It requires expertise from a range of disciplines in addition to environment and behavior research. The need for such an approach arose from problems which were confronted by POE researchers examining health and behavioral effects in sealed buildings (required by recent energy conservation standards). The effects could only be understood by looking simultaneously at the totality of factors (as understood at this time), including behavioral, managerial, chemical, epidemiological, technical (including lighting, HVAC, etc.), and so forth. All disciplines had to be present together to begin to discover the complex interactions that were occurring. The concept has been shown to be relevant to general situations as well, where impacts and outcomes need to be looked at broadly. Inherent limitations can be built into behaviorally oriented POEs that ignore technical or physical design issues just as much as with technically based building research which ignores user/behavioral interactions and effects.

Good examples of POE work within the total building performance paradigm include the Department of Energy sponsored studies of non-residential passive solar buildings (Burt Hill, et al.; Kantrowitz, 1986), and Public Works Canada's office studies. Other examples are cited in a publication of ASTM (Davis, 1986) which has a task group working on defining total building performance.

**ARE POE RESULTS BEING COMMUNICATED MORE EFFECTIVELY?**

There are many examples of POE results which are being more effectively applied to feed forward into future generations of building designs in the form of design programs, guidelines and standards. This is not necessarily better research, but better "packaging" and communication of results. While some practitioners have been working for years to make effective and readable reports, their recent work shows much more sophisticated use of typography and illustrations (compare Zeisel, 1975 [Charlesview Housing] to Welch, Parker and Zeisel, 1984 [Independence Through Interdependence]).

It is important to recognize that many designers and managers may not be very interested in research results *per se*, but rather in being shown what the research demonstrates that design should do. When Farbstein and Kantrowitz asked a convocation of very busy and results-oriented design managers from U.S. Postal Service offices around the country whether they wanted to perform POEs themselves, to read about the results, or to be given design direction based on the results, they almost unanimously asked for the latter only. They were glad that the research was being done, insisted that the design direction be well founded in that research, but did not feel that they or the architects whose work they manage had time to read research reports.
An intermediate approach is taken by Carpman, et al. (1986), who provide brief summaries of research findings juxtaposed to clear design direction. Similarly, Brill, et al. (1984 and 1985), in reporting on results from a large scale empirical study of offices, took great pains to make the data immediately imageable and understandable to lay people. More recently, they have produced a users' manual and instructional videotape to reach office users directly (Dixon, 1988).

IS POE HAVING MORE IMPACT?

There is some evidence that POE results are beginning to have a greater impact on building design, management and policy. Despite the fact that some previous sponsors of POE studies are no longer as active as they once were, the past five years or so have seen a growing number of examples of high visibility, high impact POE studies, many of which have already been mentioned. Other facts that contribute to this conclusion are the wider dissemination of findings through such client- or user-dominated outlets as the American Hospital Association, Building Owners and Managers Association, American National Standards Institute, National Institute of Corrections, Gerontological Society, and many others. Again, many articles about POE or reporting results have appeared in the design, trade and popular presses. A design research awards program sponsored by the National Endowment of the Arts in 1985 supplemented Progressive Architecture magazine's on-going annual program in giving recognition and publicity to some of the best POE work. Finally, the on-going POE programs in large governmental organizations, while only examples and not yet the dominant mode, provide a number of models for others to emulate.

THE RELATIONSHIP BETWEEN PRACTICE AND THEORY

Kurt Lewin's statement to the effect that there is nothing so practical as a good theory is often quoted at E&B conferences. And, based upon the review of research applications, researchers' experiences in the "real world" can also have a stimulating effect on theory — sometimes leading to the development of theoretical constructs, and at other times pointing out the need to explain observed phenomena or processes and to integrate them within a new theoretical synthesis (Kantrowitz, 1985). An example of this stimulating contribution from the applied to the theoretical can be seen in the recognition of "bottom line measures" which require the identification and quantification of environment-behavior effects in terms of their economic value (dollars gained or saved). Total building performance, which in itself is a quasi-theoretical construct, required a new synthesis in relation to problems observed in field — especially indoor air pollution and energy utilization.

FUTURE DIRECTIONS FOR POE APPLICATIONS

The purpose of this paper has been to discuss emerging trends in POE, many of which are both recent and gratifying to supporters of the field. While we would not simply extrapolate these trends into the future, among the possible scenarios which may unfold are:

- further acceptance of POE within private and government user agencies
• a greater degree of understanding about how to intervene in complex organizations
• technologies which allow more effective user participation and more efficient data gathering; and
• a greater penetration of research findings in use (as design and policy guidance).

There are even more controversial potential developments. One is an apparent tendency toward a degree of standardization of the process of rating buildings, which is a variant of POEs (Davis, 1986). Standardization is likely to be embraced by some client organizations as making POE more accessible and efficient, but may be resisted by researchers if they feel that their individual contributions — or livelihoods — are threatened. Finally, it is also possible (particularly in the United States) that POE results may increasingly be used as ammunition in lawsuits concerning defects in the designed environment (in professional or product liability cases).

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POE has evolved from research applications-oriented activity over the past three decades. Building types and clients have also changed—in the U.S. large, private sector firms are increasingly utilizing POE. Research in POE also continues emphasizing the interaction between, and the relative influence of, environmental and non-environmental variables, as well as the development of databases for POE utilization.

INTRODUCTION

Post Occupancy Evaluation (POE) as a distinct area of research, scholarly activity and application is now twenty five years old. POE is recognized and valued as a process that can improve, and help explain, the performance of the built environment. During this quarter century history, research and applications in this area have constantly expanded and now encompass significant activities beyond those found in the environment-behavior literature.

The "Dorms at Berkeley" Study (Van Der Ryn, 1967) and the School and Office studies conducted at the Building Performance Research Unit (Markus, 1972) and the Pilkington Research Unit (Manning, 1965) respectively, was the seminal research which created this area. These projects demonstrated that this type of analysis or appraisal was one in which work could be "useful, usable and used";

1) that the results of POEs had potential benefits to the users and owners of buildings as well as to architects designing similar buildings;

2) that techniques to conduct Post occupancy evaluation were available, replicable and reliable; and
that it was being used.

This paper examines the evolution of Post Occupancy Evaluation and the spectrum of contemporary activities in this field to discern patterns in the use and boundaries of POE. This examination includes: (1) the types, size and complexity of the buildings investigated; (2) The types of variables that were included in the evaluations; (3) the relationships among the variables studied; and (4) the intentions of the POE.

The 1960's - Pioneering Uses and Boundaries of POE
The term post occupancy evaluation is not used in the earliest POE research in the 1960's such studies were part of the still infant field of environmental design research and were called environmental analysis or, in Britain, building appraisals. Few grants were available, but dormitories were, with willing and cooperative students. The "Dorms at Berkeley" study (Van Der Ryn, 1967) was followed by other dormitory studies that explored additional variables in increasingly systematic ways. This work was concurrent with research and theory in environmental design. Concepts, such as sociometrics, proximity, territoriality, and privacy, developed in environmental design research, were applied in POEs.

The nature of the buildings and the variables studied during these earliest POE's were limited. Institutional buildings with clear boundaries and formal rules such as dormitories, mental health centers, children's environments and hospitals were obvious vehicles for these exploratory years of POE research. In the larger buildings only selected areas were evaluated. Studies included limited numbers of users and they in turn had limited choices. The physical environment was relatively small in scale, fixed, and provided few options. The variables examined were limited to areas such as sociometrics in dormitories, perceived levels of daylighting and the adequacy of desk workspace and storage. Disadvantaged users were a focus of this early POE research. These users require a close "fit" between the environment and their needs; problems could be easily identified and significant improvements readily demonstrated and disseminated.

These first projects demonstrated the value of POE and their scope and complexity was appropriate for this phase of POE development. The sum of these limitations on projects of this time, combined with the less than adequate state of knowledge in designing buildings at that time produced results that were "useful, usable and used" - and set the stage for a second generation of evaluations.

The 1970's - Systematic and Rigorous POEs
The scope, number, rigor and size of POEs increased
significantly in the 1970's. Dozens of major projects were conducted during this decade. Housing, especially elderly and public housing and schools were often the subjects of evaluations. The first multi-building studies were conducted. Technical and functional factors were added to the scope of POE activities after the earlier emphasis of almost entirely behavioral research and more sophisticated data gathering and analysis methods were used as part of POEs.

Of the dozen milestones of POE research in the 1970's the work by Newman (1973) particularly stands out in terms of scope - it examined data from 100 housing projects - and in influence. Newman's work linking the incidence of crime to housing form and disposition, site design, and circulation, was provocative and well publicized - it even appeared in Time magazine. This study effectively changed housing policy at the federal level as well as stimulating the renovation of existing public housing projects - renovation that still continues today.

Although this may have been the most well-publicized POE, others were also influential. This included work that provided a perspective on the importance of project management to users' satisfaction in multifamily housing (Francescato et al, 1979). This evaluation included a number of projects and used sophisticated statistical analysis. McLaughlin's (1972) study of hospitals was also a multi-facility study. This innovative POE focused on the frequency of change and renovation in the major functional areas of hospitals and related these findings to the life cycle costs of providing increased built-in flexibility - a concept widely used today. This remains one of the few projects that links POE to economic costs and benefits.

All three of the above-mentioned studies used multiple buildings for data gathering and comparative analysis, a major change of direction for POE research. The buildings were larger, though they were still, for the most part institutional settings - a result of much increased funding from government agencies. These studies also began to find strong links between the design of the environment and behaviors, such as the increased incidence of crime. Multimethod approaches to POE also were initiated during this decade as well as projects which first demonstrated the importance of non-architectural variables, such as management and building operations, on users. Finally these, and other, research based POEs provided the credibility that POEs could provide valuable and significant results.

The 1980's - POEs in Practice
The major change in the POE field in the 1980's has been the development of POE into an applied activity. A stream of sophisticated research-based POEs still continues however - the BOSTI office study (Brill, 1984) is a significant example. This
5 year study examined over 70 private and public sector office environments and included responses from over 5000 workers. This study intended to explore the relationships among specific physical factors, job satisfaction, productivity and performance, as well as ease of communication in the workplace.

The 1980's has also seen POE integrated as a standard part of the construction and building management process. A number of U.S. government agencies use POEs as routine procedures some time after construction, primarily emphasizing technical and functional evaluations (Building Research Board, 1987).

The rapid growth of IFMA - the International Facilities Management Association - founded in 1980 and which has grown to over 4000 members (1987) in just 6 years, is an indicator of the interest in this area. POE is considered a standard operating procedure in IFMA literature.

PATTERNS IN THE USE AND BOUNDARIES OF POST OCCUPANCY EVALUATION

There are some clear trends in the uses of POE over time. However the definition of the boundaries of POE, in terms of being "useful, usable and used," is still buried.

The Use of POE as an Applied Tool

The 1970's saw POEs funded as research whose results had varying levels of influence in improving building performance. POE in the 1980's has been accepted by a number of major building organizations as a standard part of the building construction and management process. The Naval Facilities Engineering Command, for example, has been using POEs for over 10 years and conducts about a dozen POEs each year. The Post Office does the same as standard operating procedure (Building Research Board, 1987).

The size and number of buildings affected has also increased greatly - at the last EDRA participants reported on projects which will have enormous impact, including the Canadian Hospital Evaluation done at a national scale, the California Department of Corrections project which will influence over a billion dollars of construction and the U.S. Postal Service Project potentially affecting post offices across the U.S. (EDRA 18, 1987). POEs are routinely used in a number of other building types: hotels, retail stores, shopping centers and office buildings, particularly by owners who manage large numbers of facilities and have an ongoing development and renovation program.
The Use of POE in the Private Sector
In the 1960's and 70's the bulk of the funding for POEs was provided by the government and this is reflected in the proceedings of the earlier EDRA conferences. However 85% of new building construction in the U.S. is done by the private sector and in the 1980's the private sector is increasingly using POE as a standard activity.

The International Facilities Management Association, for example, has now published "benchmarks" for office buildings, based on national surveys. These provide facilities managers with normative criteria to evaluate and manage their buildings. Some of the most intense POE-related activities occur in the retail area. Large chains use demographic statistics which are directly linked to market survey data, to produce local lifestyle and purchasing profiles. This information is used to locate and target individual stores. Retailers regularly survey their customers and sales to monitor shopping habits and modify their product selection. While many stores in a national chain may share the same name, each store is customized to respond to its user population.

The emergence of the private sector developer, owner and lessor of large numbers of real estate properties has occurred since the late 1970's. This trend occurred largely in the retail, office and lodging sectors where most of the POE efforts have occurred. Efforts by this group are applied research POEs due to the intense competition in this area. For instance the Marriott Corporation is now well into the process of building 300 "Courtyard" hotels across the country - a plan that calls for opening one hotel each week for the next few years. POE was used in the design of this new "product" which is aimed at the mid-priced market. Full size rooms were built and modified as hundreds of customers were surveyed on room attributes. This process included the use of full scale final prototype hotels that were used to "tinker" with the final product (Wall Street Journal, 1985).

The early work in POE was primarily focussed on environments and users that were constrained or regulated - hospitals, children, the elderly, dormitory residents, schools, residents of public housing. The success of these studies and their usefulness was due in part to the constrained nature of these environments and/or their users. Fewer POE studies have been done in larger, unregulated and more complex environments such as retail centers, recreational and entertainment facilities; and mixed use complexes, though there has been important and continuing work done on public plazas (Whyte, 1980). Environments with such choices are much more complex; however the current work in retail environments and urban spaces are important directions in this area.
Expanded Boundaries of Understanding the Links Between Environmental and Non-Environmental Factors

What is the role of environmental and non-environmental factors in affecting behavior? In Peters and Waterman's "In Search of Excellence" (Peters, 1982) which analyzes factors in the success of well run corporations, physical facilities are rarely mentioned as contributing to excellence. In fact the culture of the "skunk works," located in a "dingy loft" some miles away from the main corporation, is attributed with some success. Communication is mentioned, as well as its relationship to proximity and opportunity for discussion, but by and large the physical environment is not considered significant. Marans and Spreckelmeyer (1981) have developed an interesting model of the work environment which emphasizes the relationship between environmental and non-environmental factors including person and job characteristics. This is an area of POE research which needs considerable effort. Can a scale or measurement techniques be developed for gauging the relative influence of physical variables in different situations? The difficulty of this goal cannot be overstressed but it is a significant boundary for POE research in which very little work has occurred.

Expanded Boundaries of POE Due to Technological Advances

During the next 10 years technological considerations should play an important role in the POE process. This will include advances in three areas 1) monitoring the environment 2) the development of databases and clearinghouses and 3) simulations of the built environment. On the other hand technological considerations will be making the environment itself more dynamic. Existing settings will not be used as much for traditional activities as computers and communications technology changes the way persons work, shop and recreate.

POEs have developed considerably over the past 25 years but the environments studied did not change very much. The school or dormitory or workplace of 25 years ago is not too dissimilar to the same facilities today. Current trends, however, point to significant shifts in activity patterns over the next decade. There is the first wave of a serious shift to independent workplaces due to the use of communications and computer technology. Some tasks in the corporate world have already made inroads in this direction with some success. This is an shift of the environmental boundary that may be a significant opportunity for POE research.

This same technology provides opportunities for the use of clearinghouses to share data and for the networking of practitioners in this area. POE has had a poor record of coordination among researchers in terms of the development of measures, methods, criteria and analysis techniques. Up to now this may have, in fact, been advantageous for the field. The
variety of approaches to POE provided a large "test bed" for the
emergence of the more successful strategies. At this time
coordination of such techniques and data may be appropriate
through central organizations, probably entities associated with
specific building types, such as IFMA or EDRA. Advances in the
computer modeling of environments in both three-dimensional and
environmental characteristics provides another available tool to
propose design solutions and their effects in a number of areas.

As the POE process has proven itself to be "useful, usable and
used" it may have come to its most difficult juncture; many of
the "easy" answers have already been found. The next
breakthroughs in POE will be in understanding larger, more
dynamic environments with more choice and where the physical
environment is one of many factors influencing the performance
of the people and the facility.

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Craig M. Zimring*, College of Architecture, Georgia Institute of Technology, Atlanta, Georgia, 02164 USA

POST-OCCUPANCY EVALUATION AND IMPLICIT THEORIES OF ORGANIZATIONAL DECISION-MAKING

ABSTRACT

It is argued that the technical model adopted in many post-occupancy evaluations involves implicit theories of normative organizational decision-making that do not always support effective action. These theories seem to be appropriate in some situations—where objectives and values remain relatively stable and decisions are made by well-defined groups with clear authority, for example—the theories are incomplete or inaccurate in more complex and changeable situations. A POE program by the California Department of Corrections is discussed and some implications for other POE programs are suggested.

INTRODUCTION

I have been given the task of addressing the relationship of theory to Post-Occupancy Evaluation (POE). Rather than focusing on theories of user behavior or building functioning, I will discuss some of the "implicit theories" of organizational decision-making (March and Olsen, 1982) that have been fundamental to the way I, and others, have conducted POE.

POEs are applied studies intended to support decisions about how buildings are planned, programmed, designed, built, managed and maintained. Evaluators often try to be effective by adopting a "technical expert" role (Saegert, 1987). In this role the evaluator does such things as develop evaluation criteria from the client's goals or some other source, develop methods that objectively test the fit between the criteria and performance of the building, and provide suggestions for improving this fit (Friedmann, Zimring & Zube, 1978; Preiser, Rabinowitz & White, 1988).

This technical role assumes that organizational decision-making is based on the rational setting and pursuit of goals and objectives, and attempts to support this process. Specifically, the organization presumably surveys and assigns clear priorities to objectives, assesses the range of available actions, and makes decisions that optimize or satisfice outcomes with respect to the objectives (Morgan, 1986).

My experience suggests that the technical role can be effective in supporting decisions where decision-making is consolidated and decision-makers make decisions based on stable and widely agreed-upon objectives. Where decision-making is dispersed, or values are changing
or in conflict, this role has less impact. These points will be clearer if we compare the impact of results of two recent POEs. Both are part of the current California Department of Corrections/Kitchell Capitol Expenditure POE program.

THE CALIFORNIA DEPARTMENT OF CORRECTIONS/ KITCHELL CAPITAL EXPENDITURE MANAGERS POST-OCCUPANCY EVALUATION PROGRAM

In 1980, in response to seriously overcrowded prisons and burgeoning state population growth, the California Department of Corrections (CDC) initiated a prison construction program to more than double California's prison capacity by 1991. At a cost expected to exceed $4.5 billion, this is one of the world's largest public construction programs. In order to provide a large number of prisons quickly, the CDC and their program planner Kitchell Capital Expenditure Managers (Kitchell CEM) developed a prototype system where standard building designs and building components would be refined and repeated up to 100 times around California.

In 1983 the CDC and Kitchell CEM initiated a POE program to learn about the performance of entire prisons and of prison components. It was intended that this would serve as input into the programs and designs of future prisons and as an aid to fitting out new prisons as they were finished. The program is jointly conducted by planners from Kitchell CEM and correctional administrators from the CDC; data is collected by both organizations as well as by staff of the facility being evaluated.

A broad range of issues has been studied in POEs of several California prisons, such as communications between inmates and officers, control room functioning, durability and safety of cell furnishings, kitchen operations, and use of common dayroom space. This program has evolved into a multi-level program that includes: "profile assessments," rapid overviews of operating facilities; "issues studies," that focus on particular concerns of decision makers; and, "comprehensive studies," that examine the interrelated functioning of multiple departments in a prison. (This division is similar to that used in the Public Works Canada POE program and others; Harvey & Zeisel, 1987.)

A typical study begins by attempting to develop evaluation criteria based on available programs and policy documents and by interviews with decision-makers. Data-gathering methods include structured methods based on these criteria such as questionnaires with inmates and staff, direct observation of inmate and staff activity, analysis of disciplinary reports, complaints and other records, and measurement of ambient conditions. More flexible participatory methods are usually also included; these allow the viewpoints of participants in the setting to emerge. Such participatory methods include interviews and walkthroughs with administrators, staff, and inmates.
The program has been quite well accepted by the CDC and Kitchell CEM. Its scale and complexity has increased and Kitchell's Director of Planning and Programming, Mark Goldman, has identified over 100 specific programmatic and design changes that can be directly traced to POE recommendations.

THE ROLE OF IMPLICIT THEORIES OF ORGANIZATIONAL DECISION-MAKING IN POE

We have adopted a technical role in the CDC POE program that includes both rules about how we should behave and implicit theoretical notions about how organizations make decisions. We have generally seen our role as supporting decision makers in making better, more rational decisions by objectively studying how well completed prisons fit the expressed goals of decision-makers and by suggesting solutions to improve this fit.

In one POE, for example, it was discovered that epoxy paint is not a good surface for shower room walls and floors; although initially less expensive than ceramic tile, epoxy paint peels and chips and requires frequent repainting. It has a much higher long-term cost than ceramic tile. Specification of shower surface material was clearly within the authority of a group of prison construction program managers from Kitchell and the CDC, who met weekly to decide such issues.

Moreover, this finding raised little controversy about values. There was general agreement among decision-makers that showers should be reasonably clean and pleasant and that life-cycle costs should be reduced (where initial cost is not too much higher). The POE recommendation was adopted immediately in a single meeting; all new prisons in California will have ceramic tile showers.

Sometimes, however, decision-making has been made by several groups or actors with different goals. In addition, goals have changed, or were not widely held, or the goals that were expressed were not the goals-in-action (see Argyris & Schon, 1978, for a discussion of this distinction). This meant that we could not rely on the goals established at the beginning of the program to form the basis of evaluation criteria.

For example, many functions of new California medium-security prisons are controlled by officers in a control room that is separate from the inmate area. Although the control room was originally planned to have been raised only a few feet off the day room floor and to be surrounded by bars, it was decided to glaze the windows and further raise the floor to improve surveillance and to enable the control room to be cooled by mechanical air conditioning rather than by the evaporative coolers used in the inmate areas. This allowed a further set of possibilities: the control room could be darkened so that inmates could not easily see in from the dayroom and tell what the officers were doing.
Because of the role of the control room in the prison design, these changes represented a very complex decision-making process, with several different groups making decisions. Top corrections department decision-makers had a role in deciding the general concept of the control room, which dictated that some officers should be partially separated from inmates and placed in a control room, whereas other guards would patrol the floor of the housing unit. (This represents what the CDC views as a "mixed model" of supervision. The officers stationed in a separate control room open and close the electric locks on the cell doors and outside doors, whereas other officers spend time in the housing unit with inmates. The "floor officers" presumably get to know inmates and hence can diffuse problems before they get serious.) Facility programmers specified the glass, mechanical systems and general control room layout; staff in the prisons reduced the lighting.

The original control room design was seen as part of a transition to a "direct supervision" model of incarceration which emphasizes the role of continuous and easy interaction between inmates and officers. Despite its intention, the final design bears a remarkable resemblance to the panopticon, Jeremy Bentham's 1794 prototypic prison design that has been used by Foucault as an example of the spatialization of power (Foucault, 1979). The control room design became a solution to the problem of how to separate inmates and officers.

This was not a conspiracy to change policy. Each group operated from premises that were reasonable given the pressures facing it. Top decision-makers set the broad policy direction, such as establishing the mixed supervision model as a transition to an approach that requires less central control. Facilities programmers raised the control room and glazed it to help make the staff more comfortable and to aid visual surveillance of the housing unit. The officers felt uncomfortably "on display" in the brightly-lit control room, so they reduced the lighting. None of these decisions involved a conscious decision to subvert the original intention to move toward more interaction between inmates and officers, but they all had that effect.

Top decision-makers and some mid-level administrators had moved into their jobs from other social service programs in California, and they tended to support a model of corrections that emphasized interaction between officers and inmates and presumably supported a less separate control room. However, there seemed to be an implicit agreement by many of the other actors about the appropriate technology of control by officers (separation, distant visual supervision, a focus on aid coming from outside the housing unit, etc.).

The new solution and its assignment to new problems posed a problem for us as evaluators: We couldn't use the original goals or understanding of the problem as the basis the evaluation. How could we have been most helpful in supporting future decisions about control rooms? Should the control room have been evaluated using the original criteria of allowing easy and immediate communication between officers and inmates? Should it have been approached from the perspective of
providing as complete isolation as possible for officers? Our POE focused on technical aspects of the control room on which there was agreement, such as that the design of the control panel should allow error-free control of cell doors. We made suggestions for improvement of the control panel, which were accepted.

The CDC/Kitchell CEM POE program is primarily staffed by mid-level managers, who did not see it within the program's purview to challenge major program directions. We very cautiously made our observations that the final control room design seemed to reflect a different policy than had been originally proposed. This observation did not figure prominently in any policy debate, and in fact the primary effect of the POE program has been on specific aspects of the design or facilities program rather than on broader policy.

In the shower tile example, the values of reasonably pleasant shower rooms and reduction of life-cycle costs were widely shared and unchanging, and decisions about the outcome was clearly assigned to one group who saw no trouble in making the decision. These seem to be the most likely circumstances under which an evaluators' technical role can influence decision-making. In the second example, decision-making was dispersed and there were at least implicit disagreements about the goals of the control room design. As a result, we evaluators had little impact on policy.

THE ROLE OF POE IN INSTITUTIONAL LEARNING

Rather than simply supporting decision-making, much POE, including the California Department of Corrections POE program, has been justified on the basis that it provides more efficient learning processes for organizations and architects. That is, that POE not only supports decisions but it helps decisions improve over time. For example, Dennis Dunne, then California's Deputy Director of Corrections for Planning and Construction, said, "Post-Occupancy Evaluation allows us to get it right on the second or third prison rather than on the seventh or eighth." As Mark Goldman's list of 100 impacts attests, we have had a cumulative effect on California prisons. However, the technical role we have adopted is primarily directed at what has been called "single-loop learning" (Argyris, 1976), focusing on specific questions of whether outcomes achieve goals, rather than on reflective "double-loop" questions of whether goals and objectives are appropriate, or whether goals-in-action or policies-in-action fit espoused goals or policies.

In the shower tile example, we provided information about the performance of shower surfaces with respect to management's criteria of pleasantness and low maintenance. Because there was relatively little disagreement in values, and decision-making was concentrated in one group, our results had direct impact. In the example of the control room design that apparently signalled a conflict between policy-in-action and espoused policy, we were less successful in affecting
learning because at least some of the questions were reflective kinds of questions that we were not well equipped to address. I am not suggesting that environmental design consultants suddenly attempt to sell ourselves as management consultants. However, when the consultant reflects to the organization the issues that arise during the course of a POE (or programming or other activities) he or she may help the organization to function in ways that go beyond the technical questions the evaluator was originally asked to address.

For example, it may be of long term importance to the CDC to understand that the way decision-making is distributed may result in a solution that no one particularly intended to produce. In addition, there were important organizational political relationships that surfaced in the development of the control room that could help the organization manage its intergroup relationships in a positive way. For instance, because of the rapidly growing inmate population, the CDC had to open new prisons without the final security perimeter being completed. As a result they felt some special pressure to satisfy the officers' union. Although I have no direct evidence to support this contention, it seems at least possible that some people who had concerns about the directions that the control room design was going might have not pressed such concerns. The process that produced the final control design was not necessarily bad, but had we established better ways of providing such feedback, information about the role of politics in design decision-making might allow the CDC to use politics in a positive way.

Both single-loop and double-loop learning can be quite useful. As in the shower example, it is often very important to learn the consequences of decisions that are likely to be repeated with the same criteria. In this sense we have helped produce better prisons than probably would have been produced otherwise. But our theory of decision-making has been flawed, or at least incomplete, in that we have been of less help to the California Department of Corrections in helping them maintain consistent and flexible policy-in-action and to reflect on whether policies need to change to accommodate changed conditions.

**STEPS TO A REFLECTIVE POE**

It seems that a new model of POE is called for that is based on a broader view of decision-making and learning. This POE must allow both technical and reflective modes of operation to be focused on both single-loop and double-loop learning.

Some steps toward a reflective POE might include:

1. Rethinking POE as an organizational intervention rather than technical problem solving. This shift in perspective suggests that evaluators need to ask a range of questions that are not typically addressed in the POE literature. (And there are many more than were
raised in this essay.) These questions allow evaluators to be more effective in the role of supporting environmental decision-making. Some important questions include: How is decision-making distributed? What premises do the various decision-makers use in making decisions? How have these changed over the course of the building project? What are the links between individual and organizational action? Most organizations value appearance of overall rationality, but the question is, of course: rational from whose perspective? If the evaluator tests the impact of objective-driven programming decisions, for example, whose goals should be used as the basis of evaluation criteria? (The answer to this question may strongly affect how POE information is used.) Do the results suggest new, perhaps valuable, policy directions?

2. Rethinking the role of evaluators with respect to the client. Robert Shibley and Linda Schneekloth (Shibley and Schneekloth, in press) have recently argued that the technical positivist approach of much of environment and behavior research provides an inappropriate basis for action. They have argued that at least part of the problem rests in communication problems between evaluators and clients due to the professional socialization of evaluators (Habermas, 1970a, 1970b). To be effective, evaluators need to adopt a more vulnerable attitude toward clients and be genuinely open to their perspectives. In a study of creative researcher/practitioners, Schneekloth and Shibley found that effective consultants attend to such things as appreciating context, conducting critical theory, creatively framing problems, determining ownership of the product, and clarifying values (Schneekloth and Shibley, 1987).

3. Retiring the concept of POE. I have been an avid supporter of post-occupancy evaluation, but it may be time to recall it. In any complex building process, there are values, premises, decision processes, issues and so on that change over the course of the process; the fixed notions of POE that we have adopted tend to reify values and objectives. We need a different approach to environment-behavior research that eschews the artificial compartments that we have assigned to POE, programming, and other activities. Rather than primarily focusing on post hoc analyses of buildings as input into future decisions, POE can be incorporated into a comprehensive program of managing information and learning that includes standards-writing, feasibility studies, programming, design review, and maintenance scheduling. To be useful, this program must allow for changing goals as well as the multiple perspectives of different actors in the building process.

Overall, this analysis suggests that a new body of theory is required if environmental design researchers are to be useful in supporting decisions about how buildings are planned, designed, renovated, regulated, managed, regulated and maintained. This theory recognizes both a different theory of how organizations make decisions and a new theory of action for evaluators who must see themselves as participants and decision-makers.
This analysis also suggests a range of research questions. For example, it is unclear how environment-related decision-making operates in various kinds of organizations, and it would be very useful to document these processes. Also, it is important to explore how double-loop learning can occur in action-oriented environmental research perhaps by exploring and analyzing situations where such learning occurs.
NOTE

1. For their comments on previous drafts I am very grateful to Sandra Howell, Jan Carpmann, Donald Schon, and Fred Zimring. This paper is similar to a paper presented at EDRA 19, Pomona, California, May 1988.

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Organisatrice et présidente: Marion Segaud

TABLE RONDE ESTHETIQUE ET TECHNOSTRUCTURE
(Round table: Aesthetics and technocracy)

Introduction

Nous partons du constat fait en France, de l'émergence d'une "entreprise publique de logement" produite et gérée par des organisations bureaucratiques. Les constructeurs n'ont plus pour clients des personnes civiles (des Sujets) mais des organisations qui ont de l'espace du logement et de son utilisateur, une vision quantifiée; cette vision laisse peu de place à l'esthétique. La question se pose de savoir si un tel constat peut-être établi dans d'autres champs que celui de l'architecture ou de l'aménagement, dans celui de la création musicale, par exemple.

Depuis quelques temps l'on assiste à un désengagement de l'Etat du secteur du logement social, ainsi qu'à un nouveau rapport entre le global et le local; le glissement du quantitatif au qualitatif manifeste également une réorientation de la compétence technocratique vers celle de l'usager. On parle de la qualité de la vie, mais également du cadre de vie. De la même façon on peut constater un regain d'intérêt pour la conservation du patrimoine esthétique qui devient même un enjeu politique important dans certaines Municipalités; d'où l'apparition de nouveaux professionnels, spécialistes de l'esthétique en aménagement du territoire et en urbanisme.
LA QUALITE ARCHITECTURALE EN BELGIQUE : ANCIENNES ET NOUVELLES TENDANCES SOCIALES.

RESUME

Le retour ou plutôt le renforcement du point de vue qualitatif dans la politique du logement en Belgique et plus largement dans l'intérêt pour l'environnement naturel et construit se situe au point de convergence de diverses tendances. Certaines sont présentes depuis très longtemps déjà, alors que d'autres apparaissent comme des phénomènes contemporains. Et ainsi:
- Le privilège accordé depuis longtemps par la politique publique du logement en Belgique pour la promotion des groupes moyens et de la maison unifamiliale.
- La symbolique de l'habitat rural qui trouve aujourd'hui un regain d'intérêt.
- La marginalisation relative des groupes moyens, leur retour vers l'espace local.
- La crise interne au champ scientifique.

ANCIENNES ET NOUVELLES TENDANCES.

Le retour ou plutôt le renforcement du point de vue qualitatif dans la politique du logement en Belgique et plus largement dans l'intérêt pour l'environnement naturel et construit se situe au point de convergence de diverses tendances. Certaines sont présentes depuis très longtemps déjà, alors que d'autres apparaissent comme des phénomènes contemporains. Il est utile d'élémentariser un certain nombre de ces tendances, en soulignant leur propre évolution dans des champs sociaux précis (note 1) pour montrer ensuite quels peuvent être leurs effets cumulés, lesquels, en apparaissant de façon agglomérée, produisent une problématique contemporaine qui peut être perçue comme une "mode".

POLITIQUE DU LOGEMENT ET MAISON INDIVIDUELLE.

La notion de qualité architecturale et la valeur qu'on veut bien lui accorder, se sont toujours mieux matérialisée, aux yeux des gens, dans la maison individuelle plutôt que dans le logement collectif. Tout se passe en effet comme si le bien privé, facilement identifiable comme tel, prédisposait au soin et aux efforts de conservation, alors que le bien public, de par sa nature, que lui confèrent la propriété et la responsabilité collective, restait lié dans les esprits à quelque chose de
facilement dégradé ou dégradable. Cette image se renforce encore si on envisage, le logement au sens strict et non plus comme un bien en général, tout le monde ayant bien en tête des exemples concrets de grands ensembles se détériorant à grande vitesse et ce, malgré la bonne volonté des gestionnaires et même de la plupart des habitants. De fait, il s’agit là d’un jugement social largement conditionné par des mécanismes de répartition des logements qui faisaient se correspondre logements collectifs et classes populaires d’une part, et maisons unifamiliales et groupes moyens d’autre part. D’où l’idée banale qu’on ne respecte et protège bien que ce qui est à soi et qui se présente comme tel d’une façon facilement visible.

C’est là une première hypothèse : l’intérêt et la recherche pour la qualité architecturale se révèlent d’autant mieux qu’il s’agit de promouvoir l’habitat des groupes moyens, en particulier par la promotion de la maison individuelle. En Belgique, ce mécanisme apparaît avoir une ampleur manifeste dans la mesure où la maison individuelle a toujours fait l’objet d’un effort de promotion spéciale. Ainsi par exemple, au sortir de la seconde guerre mondiale, la plus grosse partie des efforts de reconstruction des logements s’est portée sur la maison individuelle alors que les immeubles collectifs publics ne constituent aujourd’hui encore qu’un douzième du parc total. Ceci a pour conséquence que la valorisation architecturale qu’on peut observer apparaît moins comme une nouveauté ou encore comme une rupture par rapport au passé.

A ce propos, on peut formuler une hypothèse plus précise: tout est passé et s’est passé comme si, à travers la politique publique belge d’aide au logement, l’assistance aux plus pauvres avait permis (ou même caché) la promotion des groupes moyens. (note 2) On peut étayer cette proposition à partir de l’analyse de deux mécanismes de fonctionnement de la politique publique: la définition des attributaires et le type d’aides accordées.

Tout d’abord le type d’aide: Il serait trop long de détailler ici l’ensemble des mesures publiques prises sur près de 100 ans (la première loi sur les habitations ouvrières datant de 1889). On veut par contre surtout insister sur le fait qu’une grande partie de ces aides favorisent directement la propriété, ou encore la supposent comme une condition préalable. Et c’est le cas notamment pour les exemptions fiscales. Ce sont là des exonérations ou des remises d’impôts, qui, non comptabilisées dans les rubriques "aides au logement social" n’en fonctionnent pas moins bien comme des incitants publics qui favorisent largement la propriété. De la même façon, et ceci est essentiel à souligner dans une interrogation sur l’émergence de revendications qualitatives à propos de l’habitat, les aides à la rénovation (encore à l’œuvre aujourd’hui) supposent presque nécessairement que la propriété du logement par son habitant soit préalable. Parmi les autres mesures bien connues mises en œuvre dans ce même but, il faut citer les primes à la construction et à l’achat, les prêts à taux réduits et encore la vente de maisons construites par la seconde société nationale au logement: la Société Nationale Terrienne (note 3).
Par ailleurs, dès le début du siècle, l’attribution de l’aide va se réaliser selon des mécanismes formels et abstraits: il s’agit essentiellement de la condition suivante: les bénéficiaires peuvent prétendre à l’aide à condition de ne pas dépasser une certaine limite de revenus. Ainsi, sous prétexte d’éviter une forme de "désignation sociale" des personnes à assister, on s’abstient de définir des groupes précis qu’il faudrait aider (note 4). On fonde par contre l’essentiel du mécanisme d’aide sur l’initiative des familles qui doivent elles-mêmes se constituer comme demandeuses (note 5).

Il serait faux cependant d’affirmer que ces mécanismes d’attribution bénéficient de manière prioritaire aux couches moyennes seulement. Par contre, il est pertinent de souligner qu’ils tendent à favoriser une manière spécifique de vivre, ou encore un mode de vie qui, sans être nécessairement le propre des couches moyennes, leur convient cependant le mieux et n’est accessible qu’à certaines fractions des classes populaires.

Autrement dit, sans être nécessairement voulu comme tels, ces deux mécanismes, aide massive à la propriété et type de définition des attributaires, instaurent les groupes moyens ou les fractions supérieures des groupes ouvriers comme les bénéficiaires privilégiés de la politique du logement en Belgique, en étant effectivement ceux qui en "profitent" le plus. Leur mode de vie centré sur la famille (et notamment l’éducation des enfants, susceptible elle aussi de leur apporter une promotion sociale globale) et sur l’épargne, qui conjuguée avec le travail salarié, était précisément ce qui garantissait l’accès à la propriété, était le plus compatible avec le soin et la recherche à apporter à la maison : celle-ci rendait possible ce projet social, tout en étant le symbole.

L’IMAGE DE L’HABITAT RURAL.

Le poids de cette première tendance est renforcé par une autre, aussi ancienne : l’image de l’habitat rural a toujours été très présente en tant que modèle formel et visuel de la politique publique du logement. Parler d’habitat rural évoque ici quelque chose de vague et précis à la fois. En effet, s’agit-il de fermes, d’habitations dont les occupants exercent tant soit peu une activité liée à la terre, de logements situés à la campagne ? Pour aller vite, il importe surtout de dire qu’il s’agit d’un modèle qui se traduit de façon générale dans une maison individuelle isolée ou mitoyenne avec, et ceci est certainement très important, un jardin attenant. La seconde hypothèse peut donc se formuler comme suit : l’idée de la recherche de qualité dans la maison s’est toujours très fortement concrétisée par le soin que les familles apportaient à la maison elle-même et aussi au jardin. Nombreuses aussi furent les mesures publiques en Belgique qui, directement ou indirectement, renforçaient ces habitudes lesquelles étaient, on le pressent bien, liées à tout un mode de vie, pour ne pas dire à un esprit moral socialement construit, accepté et finalement partagé.
Encore une fois, on ne peut pas reprendre ici l'ensemble de ces mesures, mais, n'en évoquer aucune reviendrait à sousestimer le poids de ces habitudes massivement adoptées en Belgique.

Ainsi par exemple, après la première guerre mondiale, les premières primes à la construction n'étaient accordées qu'à la condition que les maisons fussent construites en dehors des villages et distantes d'un nombre de mètres prescrits. D'une façon générale, on peut dire que toute cette période fut influencée par l'idée que le modèle d'habitat rural permettrait le combat le mode de vie ouvrier dont les excès étaient montrés comme la cause de tous les troubles de l'ordre social. Ainsi, on peut aussi observer que des recherches sur le patrimoine architectural rural furent entreprises alors et directement à la source de l'inspiration des projets de quartiers d'habitations publiques (note 6). L'idée était alors que par ce patrimoine matériel mais aussi moral et social, on allait pouvoir suggérer une certaine forme de qualité formelle mais aussi tout un mode de vie qui devait réformer la société. Certains y décrivaient là une entreprise machiavélique des groupes au pouvoir. Peut-être faut-il voir ces efforts de façon un peu plus nuancée, en soulignant qu'ils pouvaient être d'autant mieux acceptés qu'une très grande part de la population comptait des immigrés récents et que par ailleurs l'urbanisation qui était ainsi à l'oeuvre concernait certainement les grands centres, mais plus encore les banlieues (note 7). Dans cette perspective, même l'habitat collectif était aussi concerné par ce modèle, la grosse majorité des réalisations étant la construction en banlieue de "cités" sociales qui se composaient de maisons construites en rangées avec toujours un jardin attenant (note 8).

En 1935, la Belgique se dota d'une seconde société nationale de logement dont les modalités d'action étaient assez particulières: favorisant uniquement l'accès à la propriété (par un système de prêts ou de construction de maisons en chantiers groupés), cet organisme imposait des conditions minimum pour la dimension des jardins et aussi certains usages qui furent obligatoires jusqu'il y a peu: il y avait pour les bénéficiaires l'obligation de tenir un petit élevage et d'entretenir une jardin potager. Plus douce mais peut-être plus efficace encore est l'action que cette même société a accomplie (et accomplit encore) auprès de tous les bénéficiaires en diffusant une revue de vulgarisation de conseils à propos de la maison et du jardin (note 9). Il s'agit là d'une opération qui, toute empreinte de suggestions, et non pas de mises en demeure, devait placer la maison et son aménagement au centre des préoccupations domestiques des familles.

On pourrait énumérer longtemps ces mesures ou ces actions, qui toutes convergentes, n'ont fait que de produire un ensemble de pratiques, d'habitudes et de façons de penser particulièrement aptes à adopter ou à renforcer les nouveaux créneaux économiques et commerciaux structurés par l'ouverture des "brico-center" ou des "gardencenter" (note 10). Sans les avoir attendus et depuis longtemps déjà, bon nombre de familles en Belgique, animées par la "Ligue du coin de terre et du foyer" ou encore par les "Cercles horticoles" qui l'ont remplacée étaient passionnées par la pratique du jardin et le plaisir de l'aménagement et
de l'entretien d'une maison. C'était d'ailleurs là une sorte d'indicateur de moralité ou de courage, collectivement admis, que de montrer sa capacité à entretenir son jardin, sa maison et à être propriétaire de cette dernière. Et finalement le regain d'intérêt écologique pour le jardin ou les nouvelles façons d'aménager la maison n'ont fait que renouveler des comportements et des façons de penser acquis et transmis pour beaucoup depuis des dizaines d'années.

En fait, si ces deux premières tendances ne sont pas exclusives à la Belgique, Ce sont plutôt les caractéristiques suivantes qui sont remarquables : le fait d'avoir été massivement adoptées et intégrées aux pratiques des familles, et ce, de façon précoce. On doit de plus remarquer que ces mesures publiques se caractérisent par une intervention très locale : à la fois sur base de sociétés locales de construction et de prêts et sur l'initiative des familles demanderesses. Ainsi, la recherche (ou l'absence) de qualité architecturale produit des résultats visibles qui ne peuvent être imputés à des promoteurs lointains mais dépend des responsabilités collectives et individuelles partagées par le pouvoir local et les familles. Ces dernières peuvent y trouver là une forme d'expression de leur identité sociale.

LA POSITION RELATIVE DES GROUPES MOYENS.

La crise économique frappe aujourd'hui non seulement les groupes sociaux les moins qualifiés professionnellement, mais aussi les groupes moyens en général, en déstabilisant de nombreux agents des fonctions publiques et en imposant des contraintes strictes, qui limitent le nombre d'emplois. De façon peut-être assez inattendue, cette tendance générale a des répercussions sur le regain d'intérêt que représentent les espaces locaux et donc la qualité qui y est recherchée. Ceci se réalise par des mécanismes qui exercent leurs effets de façon conjointe.

On observe que la crise et le blocage des emplois qui en résultent ont amené les acteurs à désinvestir au niveau de leurs activités professionnelles et de la promotion effective, mais aussi symboliques qu'ils pouvaient en espérer. Ainsi par exemple, la profession d'enseignant est typique à cet égard : marquée par la disqualification, la démobilisation, mais aussi une certaine forme de fonctionnarisme.

Par contre, la défense de l'espace local confondu parfois avec l'espace résidentiel, et celle de son patrimoine - et ici la dimension collective est tout à fait variable - peuvent apparaître comme un nouveau lieu d'investissement pour des acteurs se valorisant par leur capital culturel et leur fonction d'intermédiaire (note 11).

Un autre mécanisme, qui renforce le premier, est la création de sous-statuts professionnels. Mises en œuvre dans le but de diminuer le nombre de chômeurs, ces mesures ont permis le renforcement de bon nombre d'associations qui sans elles n'auraient jamais connu un tel développement, ou même qui n'auraient jamais vu le jour. Parmi ces groupes, beaucoup ont une dimension locale et ont pour but la valorisation des qualités qui lui sont attachées.
Le fonctionnement de ces groupes, grâce à ces nouveaux statuts professionnels temporaires, a eu pour conséquence de remettre au travail des personnes sans emploi (redistribution qui a touché de façon privilégiée les chômeurs dotés d'un capital scolaire plus élevé) mais aussi de développer de façon beaucoup plus efficace des projets ayant pour but l'amélioration de l'habitat et de la qualité de la vie en général.

Il est clair que cette nouvelle tendance peut avoir une dimension beaucoup plus collective que les deux premières, mais ceci ne signifie pas pour autant qu'elles aient des effets contradictoires dans la mesure où elles renforcent globalement les exigences par rapport au cadre de vie.

Il y aurait ici à faire une classification fine de ces associations qui, d'une façon ou d'une autre, consolident les revendications de qualité par rapport à l'espace local et qui se sont trouvées sensiblement renforcées du fait de la crise dans les secteurs d'emplois traditionnels et des mesures semi durables qui ont été mises en place pour gérer ce problème du sous-emploi. De fait, leurs objets de réflexion et d'action pourraient se diversifier à partir des trois points suivants (au moins) : la mise en valeur du patrimoine architectural et urbanistique, la liaison entre le cadre et le mode de vie associatif et participatif des habitants et l'amélioration matérielle des habitations. Cet dernier objectif est le fait de groupes qui veulent par leur action compenser qualitativement et à l'égard de populations précises les lacunes d'une politique publique du logement qui se définit par des critères abstraits d'intervention et donc qui laisse pour compte les habitants les plus démunis.

Ainsi derrière le terme général de "rénovation", il faut souligner de très nombreux types de pratiques. C'est là une restauration scrupuleuse du patrimoine, alors qu'ailleurs, il s'agit de travaux visant exclusivement à assainir les logements. Les associations préoccupées par ce dernier objectif sont plus nombreuses en milieu urbain, à la fois parce que les problèmes y apparaissent plus sérieux, (note 12), mais aussi parce que la mobilisation se réalise de façon plus efficace et plus rapide sur base d'une logique d'action déjà ancienne : celle des comités de quartier.

LA CRISE DE LA SCIENCE.

La mobilisation effective et l'élan nouveau qu'ont trouvés ces associations, conduisent à considérer comme une quatrième tendance avec l'hypothèse suivante : le renouveau pour l'espace local et la mise en évidence de ses qualités se renforcent par la crise qui touche actuellement la science et l'université.

Il faut mentionner tout d'abord la critique essentielle qui est portée au modèle de réflexion et d'action des années soixante-dix : cette tendance lourde qui actionnait à la fois le levier de l'industrialisation, de l'urbanisation et du développement économique en général. C'est à travers toutes les disciplines que se manifestent une volonté d'interdisciplinarité laquelle se traduit concrètement par la mise en
relation de composantes et d'acteurs divers, y compris parfois des consommateurs. Ce même mouvement s'accompagne aussi de la création de problématiques qui, même si elles apparaissent comme mineures, sont peut-être plus centrées sur le quotidien, la vie des gens (note 13). Ainsi, la science reste le lieu essentiel à partir de quoi dire et analyser la réalité, mais c'est de son espace reconnu que s'amplifie la critique. Car l'unanimité et l'enthousiasme pour un développement inconditionnel ne sont plus la seule règle du discours.

On voit cette diversité dans les façons d'explorer la réalité, de susciter des solutions devenir plus évidente encore quand on sait que la crise de l'emploi touche également l'université. Bon nombre de jeunes à qui est refusée une carrière académique ou scientifique se retrouvent pour un temps (plus ou moins long) dans les associations dont on a parlé plus haut.

Par ailleurs, l'échelle spatiale à laquelle se construisent les problématiques n'est pas indifférente aux problématiques elles-mêmes. Si le modèle lourd des années soixante-dix était à l'échelle de la macro-économie, on voit également réapparaître aujourd'hui l'espace local comme lieu pertinent d'interrogation : plus proche de la vie des gens dans ses aspects multivariés, plus proche de la nature (et ici l'espace rural apparaît presque comme un symbole), mais aussi mieux apte à être défini dans tous ses aspects qualitatifs. En d'autres termes, l'espace local s'impose aussi comme un lieu pertinent à partir de quoi s'interroger, analyser et agir.

**DIVERSES REVENDICATIONS DE QUALITES.**

L'idée selon laquelle il y a assez de toits mais qu'il faut maintenant des "toits de qualité" n'est pas neuve en Belgique (note 14). Mais en définitive, la recherche et la promotion qualitative ayant trait à l'habitation, à l'architecture et à l'environnement construit ne manquent pas de diversité, surtout si on considère une période de temps relativement longue. Qu'il s'agisse de rénovation de toiture ou d'une nouvelle conception de la circulation piétonne entre les maisons, de fait, toutes ces réalisations apparaissent très différentes, quant à leur objet, leur statut, tantôt le résultat d'initiatives individuelles, tantôt celui de l'action de petits groupes. Et ce ne sont pas nécessairement les critères et les classements esthétiques qui peuvent nous aider à y voir une certaine cohérence.

Brèvement, on a évoqué ici quatre tendances qui, chacune pour leur part, contribuent à une recherche de qualité architecturale. Dans la première on souligne que ce souci est prioritairement centré, au début du siècle, sur la maison individuelle : il s'agit de faire de la maison le pôle à partir de quoi se construit tout un mode de vie, moralisateur d'abord et plus tard promotionnel. On montre ensuite comment le rural sert d'image concrète pour réaliser cette priorité qualitative. Le rural apparaît comme une ressource symbolique et un modèle d'urbanisation notamment à l'occasion du développement des banlieues, dans les années de croissance entre 1950 et 1970. La crise qui frappe aujourd'hui les
groupes moyens en leur imposant une forme de déclassement les conduit à se réinvestir dans l'espace local. Ce dernier apparaît aussi remis en évidence dans la critique qui touche également l'institution scientifique. On voit donc ces deux dernières tendances se conjuguer pour refaire de l'espace public local le lieu où s'investir, pour en promouvoir les qualités à la fois au niveau du mode de vie des gens, mais aussi comme échelle pertinente pour penser et analyser la réalité.

Même si ces tendances semblent parfois se redoubler, cet ensemble peut rester malgré tout relativement incohérent et l'on veut suggérer ici une hypothèse générale, qui quant à elle, propose une autre forme de mise en ordre : tout se passe en effet comme si, à travers ces recherches, il s'agissait pour les groupes moyens d'affirmer ou de réaffirmer leur position relative, et de revendiquer des attributs matériels ou symboliques pouvant le mieux l'exprimer et ce, malgré ou plutôt selon des contextes économiques et sociaux très différents.

Ainsi dans une période de forte croissance du travail salarié (avec toutes les conséquences au niveau du mode de vie des familles que cela supposait), on voit les groupes moyens tenter de s'affirmer différents des ouvriers et de se distinguer par leur capital culturel et technique et la promotion sociale qu'ils pouvaient en espérer. (note 15). Aujourd'hui dans un contexte décrit comme une crise, on voit la croissance des années soixante et la démocratisation qui l'a accompagnée produire une saturation certaine. Il s'agit donc de retrouver ou recréer de nouveaux espaces matériels mais aussi abstraits (comme celui de la science), à partir desquels recréer de nouvelles positions d'intermédiaires reconnus comme tels.

C'est ici une hypothèse qui, comme telle, peut apporter sa part d'éclairage sur la réalité et ses évolutions. En gardant à l'esprit ce jeu constant qui structure les positions sociales et surtout leurs rapports réciproques, c'est-à-dire leurs réadaptations mutuelles et successives, on peut éviter de porter des jugements qui, même s'ils prétendent relever de critères esthétiques (classer du plus beau au plus laid), apparaissent très vite comme des jugements moraux, ou tout simplement sociaux.

NOTES.

1. Le terme champ est ici utilisé comme un concept sociologique précis : production d'un enjeu social défini par des acteurs plus ou moins spécialisés et dotés de capitaux différenciés. Cfr les travaux de P. Bourdieu.
3. Société qui de fait se trouve en voie de régionalisation dans le cadre des transformations institutionnelles belges.
4. Il s'agit là pourtant d'une revendication qui apparaît de plus en plus souvent, et spécialement en milieu urbain. Ainsi, certains groupes
revendiquent-ils de meilleures conditions de logement pour les immigrés ou les plus démunis de telle ou telle commune bruxelloise.

5. Ceci suppose en effet toute une démarche d'initiative des familles qui passe d'abord par la simple information sur l'existence des différents types d'aides.

6. Il faut ici citer notamment les travaux de A. Puissant, architecte renommé, dont une des originalités fut à la fin de la première guerre d'entreprendre l'analyse des inventaires architecturaux à la campagne et d'en incorporer certains éléments dans les constructions destinées aux couches ouvrières urbaines. Ainsi les divers conseils qu'il prodigua de façon régulière dans la revue mensuelle de la Société Nationale d'Habitations à Bon Marché.

7. Il est clair que si les migrations furent nombreuses en Belgique dès le début du siècle, elles le furent dans une proportion relativement moindre que dans les pays voisins et que par ailleurs très vite, la population des grands centres cesse de croître rapidement à l'opposé des communes périphériques et des villes moyennes.


9. Cfr la revue mensuelle de "La petite propriété terrienne" éditée par la Société Nationale Terrienne à l'intention de tous les bénéficiaires de son action.


12. Tout se passe en effet longtemps comme si la faible densité de population et la proximité à la nature occultait les problèmes du logement à la campagne.

13. Ainsi par exemple, pour le domaine qui nous occupe directement, on voit apparaître au sein de l'université l'étude de l'habitat rural.


H. Raymond, Professeur de Sociologie, France - Université Paris X Nanterre, 2 rue de Rouen, 92001 Nanterre

TECHNOSTRUCTURE ET ARCHITECTURE : L'EXEMPLE CORBUSEEN

A partir de l'exemple de la grande vague d'urbanisation française (1950-70) on établit l'émergence d'une technostructure et les liens privilégiés qu'elle entretient avec l'architecture. Les projets urbanistiques de reconstruction des villes de Saint Dié et de La Rochelle nous serviront à montrer toute l'ambiguïté de l'humanisme de Le Corbusier qui pose la question du rapport de l'architecte avec les "monstres froids" issus de la technostructure.

Il peut sembler paradoxal d'évoquer un lien entre technostructure et architecture, dans la mesure où l'un et l'autre paraissent aussi éloignés que possible. La technostructure évoque le livre de Burnham, la sociologie des organisations et tout le débat qui tourne autour des monstres froids que peuplent désormais les nations les plus développées... et les autres. À l'opposé, il semble que l'architecture, art et profession libéraux vivent à chaud le drame de la société moderne dont elle donne une représentation à l'aide de conflits de doctrine abondamment illustrés.

Si nous avons été amenés à établir et à décrire la relation entre technostructure et architecture c'est que l'observation des faits relatifs à l'urbanisation française entre 1945 et maintenant, conduit à se poser la question. Au reste, la Direction de l'Architecture est aujourd'hui en France, un service important du Ministère de l'Équipement, du Logement, de l'Aménagement du Territoire et des Transports ; cette Direction figurant largement comme l'équivalent d'un sous-secrétariat d'État, relève d'un Ingénieur des Ponts et Chaussées.

Une telle observation pourrait servir de point de départ à un procès de tendance qui ne saurait être dans l'esprit d'un sociologue. Elle justifie simplement une investigation qui s'appuie sur un autre ordre de fait: le phénomène Le Corbusier. Déjà, dans Art et Technique, P. Francastel se référait aux écrits de Le Corbusier et posait la question de son rapport aux "monstres froids" ne pouvant cacher son irritation devant l'ambiguïté de l'humanisme de l'architecte.

Nous avons été voir, chez cet architecte que se réclame de l'État, ce qu'il en fut sur le terrain. Une telle enquête offrait l'avantage de le confronter avec la bureaucratie française ; elle présentait l'inconvénient que les deux actions urbanistiques d'envergure proposées par l'architecte, se sont soldées par deux échecs. Cependant les deux projets de reconstruction de Saint Dié et de La Rochelle dans l'immédiat après-guerre (1945-47) nous permettaient d'établir les rapports entre technostructure et Mouvement Moderne in statu nascendi.

SAINT DIE : LE CONTRE-PROJET CORBUSEEN

C'est l'un des cas où se pose le problème de la reconstruction ex novo ; elle a été méditée pendant quatre années par un ensemble d'experts enurbanisme dont les travaux de G. Verpraet (L'espace de la qualification professionnelle des urbanistes, DUP/MELATT, 1987) retranscrivent l'émergence. Il n'est donc pas étonnant que le MRU (qui succède sans heurts à son homologue de Vichy), nomme un architecte local pour diriger les travaux de la re-
construction. Le projet de Le Corbusier apparaît donc plutôt comme un contre projet. Celui-ci avait été sollicité par l'Association des Sinistrés de la ville de Saint Dié dont l'un des animateurs est un industriel (J.J. Duval) "acquis aux idées de la Charte d'Athènes". Il y a donc au départ un groupe de pression favorable aux idées de Mouvement Moderne, dont l'action aboutira à faire nommer Le Corbusier comme architecte conseil de la Reconstruction de la ville.

Il va s'en suivre une lutte idéologique entre trois partenaires: l'architecte, les pouvoirs, le "populaire". Rappelons, pour plus de clarté, que la France est pendant cette période sans cesse dans l'attente de grandes échéances électorales: toutes les grandes institutions vont être renouvelées: le poids du public est considérable. Il s'y ajoute le fait que les opérations de Reconstruction concernent doublement le public: par le logement et par la propriété du sol.

En même temps que Le Corbusier est nommé, le conseil municipal désigne une commission d'urbanisme composée des membres de la municipalité mais également des représentants des syndicats et des associations de sinistrés. Les conditions d'une lutte idéologique de fond sur le logement sont ainsi créées.

Dès avant la nomination de Le Corbusier, les partisans de la Charte d'Athènes pressentaient cette lutte: leur idée était de la mener sur le terrain pédagogique; cette idée est récurrente dans le Mouvement Moderne, mais ici il s'agit d'une véritable pédagogie du projet.

**LE PROJET LE CORBUSIER**

Il est présenté à l'architecte en chef André début Septembre 1945; en gros on peut dire que Le Corbusier remplace Saint Dié par une ZUP au Nord de la rivière, par une zone industrielle au Sud; il prévoit d'établir "d'un côté de la Meurthe, sur la rive gauche, les manufactures de types "usines vertes" en éléments standards. De l'autre côté du fleuve sont répartis les habitations sous forme de 5 unités d'habitation "grandeur conforme" contenant 1600 logements ainsi que des services communs. Enfin, des maisons familiales individuelles seront disposées le long de routes qui aboutissent au coeur de la ville où se trouve le centre civique.


Ce projet est supporté par cette partie de la population représentée par l'Association des sinistrés composée d'habitants dont un groupe d'industriels "modernes" (J.J. Duval). Mais la majorité des sinistrés se regroupe sous l'égide de l'Association populaire des sinistrés (qui rassemble des représentants syndicaux et de nombreux petits propriétaires) s'oppose vivement aux idées de Le Corbusier. La presse locale attaque également le plan corbusien. L'une des représentante syndicale envoie alors un véritable memorial au Ministre rappelant les conceptions populaires en matière d'urbanisme; ce document dispose que dans le centre il sera possible d'implanter des immeubles de quelque hauteur et que la périphérie devrait laisser place aux maisons individuelles; ce document présente un véritable manifeste de la
volonté populaire de retrouver une ville dont la morphologie et la typologie ne s'écartent pas d'un modèle traditionnel. Il est intéressant de noter que le collectif est identifié au "collectivisme" par la CFDT et que l'Association Populaire des Sinistrés refuse le béton (qu'elle nomme "ciment") comme trop froid.
Dans ces expressions populaires du refus du Mouvement Moderne, on trouve un argumentaire qui s'est maintenu en France jusqu'à nos jours.
Malgré son opposition à la population, c'est donc au troisième partenaire, l'État, et plus précisément au Ministre qu'il allait s'adresser pour renverser les résistances. Il va même jusqu'à lui faire croire que tout est commencé, cherchant ainsi à le mettre devant le fait accompli. Dans sa correspondance, il note combien les conditions sont, à Saint Dié, exceptionnelles pour mettre en application ses théories et combien les destructions lui permettent de travailler dans les conditions optimales de "tabula rasa".
Après plusieurs mois de polémique, le 12 Février 1946, le Conseil Municipal adopte le plan Malot-André, très proche du plan Réal.
Cet échec éclaire certains aspects du rapport entre technocratie et architecture, dans une situation à trois partenaires: l'architecte, l'État, les usagers. Il apparaît que dans une situation caractérisée par une pression du public, l'appareil de l'État pouvait difficilement s'engager à fond dans une expérience urbanistique et architecturale de l'ampleur de celle que proposait Le Corbusier. Faut-il en déduire que la technocratie de l'aménagement possède une sensibilité à l'opinion?
Dès la première résistance au plan Moderne (il est vrai très radical), les échelons de la technocratie reculent: d'abord les échelons départementaux qui continuent à soutenir l'architecte André; ensuite le Ministère qui limogera André en Février 1946 mais qui laissera passer le plan Réal.
On trouve un autre exemple d'urbanisme à trois partenaires à La Rochelle; là également la technocratie s'avérera impuissante à promouvoir l'urbanisme du Mouvement Moderne. Nous ne pouvons ici relater toute l'histoire de cette autre expérience; nous en dirons juste quelques mots:

LE CAS DE LA ROCHELLE
Contrairement à la mission somme toute assez vague qu'il avait à Saint Dié, Le Corbusier va être nommé urbaniste en chef par le Ministère de la Reconstruction et de l'Urbanisme, tâche qui implique une action suivie et coordonnée. Le contrat stipule que "sauf cas exceptionnels qui feraient l'objet d'une autorisation du Ministre", ce poste interdit de construire, en tant qu'architecte sur la commune intéressée. Il n'est pas douteux cependant que le Ministre lui-même ait souhaité une "expérience Le Corbusier" et que l'architecte ait voulu donner "toute sa mesure". Les premières traces d'un tel projet se lisent au niveau de croquis qui comportent deux grandes bandes coupant la péninsule de La Pallice à partir d'une ligne médiane qui suivrait en gros le boulevard Nord du bassin de l'Ouest dans la direction de l'Est; au Sud de cette ligne, l'habitat; au Nord, la zone industrielle. Le dessin indique le "parti" que l'architecte va tenter de maintenir tout au long de ses fonctions d'urbaniste. C'est un "geste architectural" qui manifeste un zoning dont les grandes caractéristiques sont déjà présentes; le reste, ce sont des modifications de l'idée telles que les imposent les fluctuations de
la situation administrative. Soutenu par les plus hautes autorités, son projet sera finalement adopté par le Conseil Municipal le 27 Avril 1946. Ce projet comporte la construction d'un immeuble "à usage collectif pour environ 350 appartements de diverses catégories avec, bien entendu des services communs indispensables"; l'unité d'habitation de grandeur conforme est donc intégrée dans les projets d'urbanisme de La Rochelle. Pourtant c'est dans la même séance que l'architecte, à propos de la construction d'Habitations à Bon Marché sur un terrain communal, va s'opposer au Conseil et compromettre son projet.

Il faut se rappeler que la France est en proie à une "crise du logement" qui est devenue l'enjeu majeur des programmes électoraux. Nous avons fait l'hypothèse que cette crise est formulée en des termes qui dépendent de la structure hiérarchisée des partis politiques et que donc:
- elle devient une crise centralisée (dont la solution est à Paris);
- les solutions et les programmes portent désormais sur des enjeux quantitatifs alors même qu'au niveau local, ils sont qualitatifs.

Si Le Corbusier fait trainer l'affaire des HBM pourtant entérinée par le Conseil Municipal c'est qu'il a en vue une solution radicale à la crise du logement; il l'exprime à travers la constante référence aux Unités d'Habitations.

Sa lettre de démission indique clairement qu'il se considère non pas comme urbaniste de la ville mais bien comme urbaniste-architecte pour réaliser un urbanisme "à trois dimensions"; cette idée n'est rien d'autre que celle d'une unité entre urbanisme et architecture considérée du point de vue de l'urbanisme.

Il commente d'ailleurs ainsi les projets municipaux pour le quartier résidentiel:
"Le terrain du Littoral sera enfin de comptes occupé par des maisonsnettes et par des jardins potagers; et alors cet immense et admirable terrain aura une densité de 10 à 15 habitants à l'hectare". A cela il oppose son attitude qui "dessine sur le terrain" les contenances nécessaires à une population de 18000 à 20000 habitants. Dans cette formulation on décèle une certaine prudence car dessiner les contenances ne peut être compris que comme une synécdoque pour dessiner les plans des Unités d'Habitation.

En Juillet 1947 Le Corbusier est en face du dilemme suivant:
ou bien accepter que sa future zone résidentielle soit implantée un HBM dont le caractère "à bon marché" n'est pas douteux, ou bien maintenir sa position de geler le terrain en attente d'une population virtuelle; c'est cette seconde solution qu'il choisit; elle est toutefois difficilement tenable pour quelqu'un qui est chargé des plans de Reconstruction et dans l'ambiance de crise du logement qui sévit en France.

Dans ses notes il parle avec une certaine amertume de l'imputations qu'on lui fait d'être "fasciste"; une telle amertume nous semble justifiée car si nous examinions avec quelque attention "sociologique" le comportement des acteurs dans les mois qui vont amener l'architecte à démissionner, il nous semble clair que les technocrates ont une vision de l'Etat totalement différente de celle de Le Corbusier; c'est une vision très liée aux rapports des "corps" les uns avec les autres; l'urbanisme se présente ainsi comme un arbitrage permanent entre des exigences diverses (industrielles, militaires, politiques) que des fonctionnaires d'horizons divers sont chargés à la fois de présenter et de représenter: de présenter, puisqu'ils instruisent les dossiers dont l'arbitrage doit se faire au nom de l'Intérêt Général; de représenter...
puisque, dans certains cas, ils sont eux-mêmes engagés dans l'activité dont ils présentent le dossier.

L'urbanisme apparaît en définitive, comme une solution d'équilibre, on oserait dire comme l'optimisation variable de ces intérêts. En fait, cet ensemble d'attitudes est tout à fait tributaire d'une réalité de l'État français, hiérarchisé, centralisé, cloisonné par des Corps dont les frontières correspondent plus ou moins aux délimitations de l'activité sociale (les Ponts et Chaussées pour l'Urbanisme, les Mines pour les usines, Polytechnique pour la SNCF). Les réseaux se retrouvent "au contact" sur toute la France avec la nécessité de leurs conflits et l'inéluctabilité de leurs arrangements. Mais tout cela n'est concevable que dans un État où les Corps jouissent de domaines plus ou moins réservés et, du sommet à la base, agissent d'une manière harmonisée préalablement.

La pensée de Le Corbusier est très loin, certes de cette cohérence; il se sent, il se voit comme le délégué du Ministre et c'est à lui seul que, en définitive, il envisage de remettre les décisions; de là des appels à l'autorité que certains jugeront "naïfs", d'autres "fascistes".

Contrairement à ce que l'on pense trop souvent dans les milieux de l'architecture, ce recours à l'autorité n'est pas la marque d'un État fort, mais plutôt l'inverse; ni non plus la marque d'un État centralisé, mais plutôt celle d'un État qui pratique la délégation locale des pouvoirs; l'erreur de Le Corbusier pourrait donc provenir d'une méprise fondamentale sur les mécanismes de l'autorité.

Fasciste, Le Corbusier? Nous serions davantage enclins à penser que son modèle d'État est anglo-saxon et qu'il fonctionne, lui Le Corbusier, comme agent fédéral en mission extraordinaire.

Il nous semble que dans le cas de Saint-Dié comme dans celui de La Rochelle, la technostucture était prête à accepter de Le Corbusier un modus operandi qui concordait assez bien avec sa propre vision des méthodes à employer pour les problèmes d'urbanisme. Au reste jamais ces méthodes ont été critiquées, ni de près, ni de loin par les divers échelons de l'organisation.

Le malentendu qui existe dès le départ concerne le rapport qui peut exister entre la Charte d' Athènes, document idéologique qui cimente l'alliance entre le Mouvement Moderne et la technocratie française et l'architecture de l'architecte. Pour celui-ci, ces deux éléments sont inséparables, tandis que les divers échelons de l'Administration ne voient pas du tout comment le problème peut même se poser. On peut dire que, au fond, l'Administration et le Ministère ont compris la Charte d'Athènes mais pas le Modulor.

Par ailleurs, entre 1944 et 1947, l'urbanisation, c'est la reconstruction; on ne peut pas faire d'urbanisme en l'absence des intéressés. Viendra celui de la grande vague d'urbanisation des années 50-70; c'est à ce moment que le Ministère français passera de l'urbanisme concerté à l'urbanisme autoritaire. C'est une histoire et une sociologie qui restent à faire.
COMPETENCE ESTHETIQUE ET ARCHITECTURE

C'est à Kant que l'on doit remonter pour une théorisation un peu consistante du jugement de goût qui aboutit à la constitution du public, entendu comme instance active. Nous nous servons de ce repère théorique pour montrer l'existence d'une empirie semblable qui émerge dans le rapport entre les français et l'architecture domestique et publique. Après un oubli sévère, la compétence de l'habitant est ici convoquée. Nous tentons de montrer quelques caractéristiques significatives de cette conscience esthétique commune au populaire français.

La mise en place en France dans les années cinquante d'une vaste entreprise publique du logement a eu deux conséquences: l'une - que je qualifierai de formelle - est l'émergence puis l'aboutissement du Mouvement Moderne qui va enfourcher le destrier du logement social, l'autre se trouve au niveau des habitants qui vont disparaître en fusionnant dans cette sorte de magma que qualifie bien le terme "logement de masse". La rencontre entre cette masse et ce type d'architecture va marquer celle-là de manière indélébile; si bien que la conscience esthétique française en général se trouvera façonnée par cette rencontre conflictuelle.

ETAT DES LIEUX
Depuis quelques années les gestionnaires du logement social sont aux prises avec de graves difficultés financières, conséquences de l'augmentation des loyers impayés et du manque à gagner que provoque la fuite des habitants hors de ce type de logement. Les Offices HLM ont réagi en faisant appel aux techniques du marketing et l'on voit périodiquement dans les médias, des campagnes publicitaires cherchant à combattre l'image désuète et négative que le public a du logement social. Il y a donc une tentative pour changer l'image de marque d'une part et d'autre part, il existe un vaste mouvement qui vise à la déprivatisation, au désengagement de l'Etat par l'appel à l'accession à la propriété.

Pour que de telles actions portent leur fruit, encore fallait-il qu'elles s'appliquassent à un produit de quantité et l'on assiste également depuis quelques années à des opérations de réhabilitations formelle et psychologique. En effet, il ne s'agit pas seulement de réparer les outrages du temps sur le béton mais aussi de réconcilier les habitants avec un cadre de vie dégradé spatialement et socialement, d'où l'appel (juridiquement obligatoire) à la concertation sinon à la participation. On peut comprendre ce retour vers l'habitant comme reconnaissance de sa compétence en matière d'habitat. Est-ce là enfin, la prise en considération par les institutions des études des psychosociologues qui avaient, il y a vingt ans, insisté amplement sur cette compétence? Une telle assertion est incertaine cependant notre propre travail va dans ce sens et nous pouvons affirmer qu'en matière d'esthétique, cette compétence est bien présente.

ETABLISSEMENT DU SUJET ESTHETIQUE
Parler de compétence esthétique de l'habitant c'est exhumer celui-ci de la masse dont nous parlions plus haut, c'est le faire redevenir Sujet. Cet éta-
blissement trouve son origine au XVIIIème siècle, moment privilégié où la théorie esthétique va "couvrir" la naissance de l'empirie. On assiste alors à un déplacement de la réflexion esthétique qui, de l'analyse de la production du Beau, glisse vers celle de sa réception, d'où les multiples débats sur la signification, le contenu et l'application du goût. En devenant relatif, le goût quitte le domaine de l'objectif (le goût balisé par les règles organisées en cortège normatif) pour entrer de plain-pied dans le subjectif.

Un tel glissement va trouver une apothèse avec Kant et sa Critique de la Faculté de Juger. Celui-ci se place d'entrée du côté du spectateur car il met en son centre un sujet dont les caractéristiques renvoient soit à des manifestations de phénomènes, soit à des préformations à travers lesquelles les phénomènes se manifestent à nous. L'accent est mis sur l'expérience dont l'importance a d'abord été reconnue par les anglois, position adoptée rapidement par le reste de l'Europe. Il s'agit donc d'un fait historique.

Kant nous donne des éléments pour comprendre un sujet raisonnant qui, grâce à son jugement réflexif, s'élève pour ainsi dire au-dessus de lui-même; cette réflexivité est importante à double titre:
- elle institue le sujet comme Sujet,
- elle a elle-même une base empirique, celle du raisonnement et de l'entendement.

La mise en évidence du sujet recevant fonde à notre sens, l'intérêt que Kant peut présenter, pour les sociologues actuellement, plus d'ailleurs que la manière (somme toute assez dépassée) dont il établit cette subjectivité. De cet établissement du sujet kantien nous retiendrons la possibilité de jugements esthétiques et l'idée que les jugements de goût sont communs à tout homme donc universels. Ainsi subjectivité et universalité sont certainement ce que le sociologue peut exhumer de l'esthétique kantienne. Il n'y a pas selon le philosophe un contenu a priori du Beau qui pourrait recueillir l'assentiment de tous: "dès que l'on porte un jugement sur des objets uniquement d'après des concepts, toute représentation de Beauté disparaît. On ne peut donc indiquer une règle d'après laquelle quelqu'un pourrait être obligé de reconnaître la beauté d'une chose".

Ce qui est commun par contre à tous, ce qui fait consensus, c'est la possibilité d'un jugement; cette possibilité instaure selon nous, la notion de public.

Un autre aspect du Beau nous apparait important, c'est la caractéristique que lui donne Kant de participer à la communication sociale, car dit-il "le Beau n'intéresse empiriquement que dans la société et si l'on admet que la tendance à la société est naturelle à l'homme, mais que l'aptitude et le penchant pour la société c'est à dire la sociabilité, sont nécessaires à l'homme en tant que créature destinée à vivre en société et constituent une propriété appartenant à l'humanité, on ne peut manquer de considérer le goût comme une faculté de juger ce qui permet de communiquer même son sentiment à tout autre et par conséquent comme un moyen de réaliser ce qui exige l'inclination de chacun".

C'est donc la sociabilité qui établit les conditions mêmes de l'esthétique.

ESPACE DOMESTIQUE ET ESTHETIQUE

Ce retour à Kant nous a confortée dans cette quête d'un sujet que nous avons menée ces dernières années et qui visait à rassembler quelques éléments pour consister une sociologie du goût en architecture.

Nous avons ainsi tenté de cerner une conscience esthétique commune au
populaire français. Nous en donnerons ici un bref aperçu..
En ce qui concerne le vécu de l'espace domestique, il y a en France une étude qui fait fondation, celle de l'Institut de Sociologie Urbaine sur l'Habitat Pavillonnaire (Haumont, Raymond, 1966). Elle a montré que la qualification des espaces intérieurs et extérieurs de la maison était en grand partie liée à l'opposition que font les habitants entre le sale et le propre. Cette opposition ne concrète pas simplement des espaces spécifiques (qui seraient consubstantiellement l'un ou l'autre) au sale et au propre; elle comprend également une appréciation morale puisque le sale résulte souvent d'un manque d'entretien ou de négligence et à travers lui, ce sont les autres habitants qui sont incriminés; d'une manière générale on fait toujours l'amalgame entre la propreté d'un quartier par exemple et une opinion positive sur ses habitants et vice versa.
Ces opinions ne sont pas tant esthétiques que morales. On sait à travers nombre d'enquêtes que le sale, quand il n'est pas combattu ou contenu dans des espaces appropriés implique une notion de délétion qui sous-tend elle-même la réprobation.
Contrairement à ce que l'on pourrait penser, le rapport entre le sale et propre n'est pas un rapport dans lequel le second terme devrait être éradiqué. Le populaire estime au contraire que, dans tout espace habité il y a du sale et du propre; tout est donc dans le rapport entre les deux, c'est-à-dire dans le maintien du sale à sa place, place que l'on veut, bien évidemment le plus restreinte possible. Tout est donc dans le rapport et même dans l'apparence car en effet on fait une distinction entre le sale et le "faire sale". Il y a bien évidemment un lien entre cette catégorie et le type d'habitat; là aussi les enquêtes ont montré que dans le collectif, l'un des aspects les plus redoutés des habitants c'est la saleté, considérée comme le produit des autres et également comme la conséquence du manque d'entretien sur laquelle apparait aux yeux du populaire comme un gage de convivialité.
Ces normes sont régies par un système de conventions qui concernent chacune de ces deux catégories; une fois inculquées, elles permettent aux individus de se reconnaître mutuellement et de se situer par rapport à une culture commune. C'est à cette condition qu'un modèle de convivialité peut fonctionner comme une sorte d'éthique qui témoigne de la moralité générale.
Le rapport du sale au propre est donc fort complexe puisqu'il met en jeu les relations mêmes des individus les uns par rapport aux autres. Il n'y a pas de dispositifs matériels "propres" ou "sales" en soi et, contrairement à ce que pensaient les Hygiénistes du XIXème siècle, l'un et l'autre ne sont pas dans les "choses". Ils sont une relation sociale aussi bien qu'une relation à l'environnement. On peut alors se demander en quoi ces deux notions peuvent-elles influencer l'esthétique?

LA DYNAMIQUE DE L'ESTHETIQUE
Si le rapport propre/sale est témoin d'une sociabilité, d'une conformité à des normes (qui peut d'ailleurs passer par un rituel, celui de l'entretien par exemple), il est également un rapport esthétique, ou plutôt c'est le passage du sale au propre qui est en même temps un passage vers des notions qui ont trait à l'esthétique de la maison où le Bien mène inéfablement au Beau.
Il existe dans l'esthétique de la Maison, une portion immergée dans le quotidien qui tend à confondre le Bien et l'ordre moral avec le Beau que l'on
peut saisir à travers l'observation de la pratique des habitants; ceux-ci s'attachent sans cesse à produire du Beau avec leurs propres moyens, par le passage au propre, au neuf, à l'entretenu, etc.,

Nous avons à faire là à l'exercice de pratiques quotidiennes que nous avons appelé le "travail du négatif" car il résulte de l'effort de l'habitant pour, à travers des pratiques déterminées, faire émerger l'esthétique en ses catégories. Ce travail consiste ainsi à faire transiter l'espace domestique du laid vers le beau, du sale vers le propre, du sombre vers le clair et ceci par des opérations de correction et/ou d'addition que reflètent bien les termes "arranger", "décorer", "entretien", etc..

Ce que nous venons de décrire relève d'une compétence quotidienne qui individualise l'habitant, qui le réhabilite en quelque sorte comme sujet du goût architectural.

A partir des années cinquante, le Mouvement Moderne trouve en France son principal appui dans la technocratie du logement et son terrain d'expérimentation dans l'entreprise publique de logement; ce sont des masses importantes qui vont être confrontées avec un Mouvement qui apparaissait alors comme avant-gardiste. Une telle situation aboutissait à exposer des populations en voie d'urbanisation à ce que l'on pouvait considérer comme un mouvement d'avant-garde. Conformément à ce que demandait le promoteur André à Le Corbusier, le Mouvement Moderne partait à la conquête de la classe ouvrière. On se souviendra du reste que Le Corbusier assurait le Ministre de la Reconstruction dans une lettre que la CGT allait former des moniteurs pour apprendre aux ouvriers à habiter dans les logements qu'il construirait. Ces espoirs ont été déçus et il est sans doute peu de couches sociales dans lesquelles l'architecture dite "moderne" est moins populaire que parmi la classe salariée la plus modeste.

Le résultat, paradoxal sans doute pour une esthétique de l'architecture, a été une réaction de rejet qui, parti des couches les plus humbles de la société française, a diffusé vers le haut. On peut dire que l'architecture "post-moderne" n'a sans doute d'autre post-modernité que la réaction que le Mouvement Moderne a provoqué dans le public. Cette réaction montre au moins que la pédagogie négative de ce Mouvement n'a pas opéré en vain: elle nous semble confirmer pleinement nos assertions concernant le rapport entre public et architecture; nous sommes arrivés à une époque où les conséquences d'un mouvement esthétique peuvent se faire sentir à partir des couches les plus périphériques de notre société. Comment une esthétique nouvelle pourra-t-elle se développer à partir de cette influence réciproque? La disparition des avant-gardes est peut-être l'un des aspects d'une situation dont les éléments essentiels sont encore à venir.
C. Papers
Architectural and psychological theory
Kimberly Dovey, Faculty of Architecture & Planning*,
University of Melbourne, Parkville, Victoria, 3052, Australia.

PLACE, IDEOLOGY AND POSTMODERNISM

ABSTRACT

The phenomenological approach to environmental meaning is considered in relation to social theory and postmodernism. Phenomenology exhibits a concern with the experiences and meanings of 'place' while certain recent social theory focuses on the manner in which social structure and ideology constrain and reproduce such meaning in everyday life. It is argued that the phenomenological approach needs to be integrated with such theory for both a rigorous understanding of place experience and for the questioning of ideological constraint and reproduction. Postmodernism, as a pastiche of formal meanings, reduces meanings to references. It appropriates meaning and borrows legitimacy from both phenomenology and social theory without questioning the legitimacy of existing ideologies. The community design framework is proposed as one that permits the restructuring of design practice through an ideologically self-critical place-making process.

INTRODUCTION

It is my view that despite significant achievements over the years in the field of human-environment studies, we have remained somewhat confined in our theoretical outlook and in our effects on the built environment. One of the achievements, it seems to me, is in the acceptance and proliferation of phenomenological approaches to the field. While much of the debate has been about the methodological opposition between phenomenological and empiricist approaches, my concern here is to explore the relations of phenomenology with certain social theories and with the theory and practice of postmodernism.
The phenomenological approach is by now well understood and I will reiterate only some major tenets here. It involves a concern for the experiences of 'place' and 'placelessness' and a distinction between the insiders' and outsiders' experience of the same place (Relph, 1976). Methodologically it stresses the priority of qualitative research methods (Seamon, 1982). Distinctions have been made between phenomena such as 'sense of place', 'spirit of place' and 'home' (Tuan, 1980; Dovey, 1985) and the relationship between the meanings of place and placemaking process have been explored (Dovey, 1984). The underlying current of phenomenology is that human experience of the world in everyday life is the beginning point for a rigorous understanding of environmental meaning, that one cannot assume a pre-reflective world separate from the experience of it. Over the years of my involvement in such an approach I have been increasingly concerned about two problems with it. The first is that a focus on experience can involve a certain blindness to the pronounced effects of social structure and ideology on that experience. The second is that in the theory and practice of postmodernism many of the meanings of place have been appropriated in a manner that reduces them to a formal image. I will address these one at a time.

EFFECTS OF IDEOLOGY ON PLACE EXPERIENCE

In a famous passage Marx (1971:21) argues that "It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness". From this view phenomenology is research into a kind of 'false consciousness' and a focus on experience runs the risk that underlying ideological structures will remain buried and hence powerful. Bourdieu (1977) argues that not only does social structure determine consciousness, but that these structures are reproduced through the built environment without ever coming to consciousness. In this view the built environment embodies a set of taxonomic principles, divisions and hierarchies between things, persons and practices which reproduce the social order. As part of the taken-for-granted context to everyday life, architecture reproduces social structure and ideology more effectively than if it were brought
to consciousness. "The most successful ideological effects" argues Bourdieu, "are those that have no words, and ask no more than complicitous silence" (1977:188).

I am by no means arguing any kind of social structural determinism, but rather making a general point about the subconscious effects of ideology as a kind of 'frame of reference' for everyday life. Ideology underlies place experience and placemaking process at all levels - beliefs about the 'good life', the 'nice house', about property, individualism, power and efficiency. And the built environment is a primary medium for the techniques of establishing, legitimizing and perpetuating oppressive social structures, ideologies and power relations. Without an understanding of the ideological context, design and research activities that aim to make the experience of place more delightful or agreeable, can serve to keep existing oppressive structures more rigidly in place. On the other hand, a problem with this kind of social or structural explanation of place experience is that it requires a pre-reflective structure to be asserted. This not only robs phenomenology of its epistemological strength, but it also assumes an elite and superior viewpoint. If one were to approach the tasks of environmental change from such a viewpoint then the risk is that an equally oppressive ideology may well be imposed from above, a risk for which some communist cities serve as chilling reminders.

While 'ideology' has a specific meaning in traditional Marxist thought as linked to 'false consciousness' it also has a broader meaning in recent theory as a necessary relationship between consciousness and the structures of the material world (Dickens, 1980). Warf (1986:274) argues that 'ideology' can be "broadly defined as the set of beliefs and assumptions necessary to operate in the world, (it) is the medium through which consciousness and intentionality operate." As such, 'ideology' is integrated with the 'web of meaning' we call culture. While ideology limits experience and action, it is also necessary to experience and action. To transcend ideology would be to render the world meaningless. What is needed for human-environment studies is a framework which integrates social theory with phenomenology and which rejects both social
determinism and the idea of a completely autonomous subject. This is close to the aims of Giddens' (1984) theory of 'structuration' which focusses on the dialectical relationship between social structure and human agency. As Giddens makes clear, social structure both enables and constrains such agency which in turn produces and reproduces social structure. Agency, in relation to the built environment, may be construed as the human capacity to change or maintain physical settings, relations with it and human relations within it. This includes everything from the capacity to pay the rent, move house or town, get access to a job, influence planning decisions, renovate, extend, demolish, design and build. The lesson for human-environment studies, it seems to me, is that the phenomenological lifeworld, constrained as it may be by ideology, is the locus of human agency and therefore the point at which the reproduction of social structure may be effectively called into question. What is needed is an ideologically self-critical phenomenology that does not assume the autonomy of the subject, integrated with social theory that accepts place experience as a primary generator of human agency in relation to the built environment.

POSTMODERNISM AS AN EXPROPRIATION OF MEANING

The task of integration, however, is complicated by the current dominance of the theory and practice of postmodernism in environmental design and its claims about environmental meaning. The demise of modernism in architecture is claimed by Jencks (1984) and others to be due to a crisis of meaning to which postmodernism offers the appearance of a resolution. However, postmodernism as an architectural style addresses the problem of environmental meaning in a manner that reduces it to a quality communicated through built form, detached from social context (Harris & Lipman, 1986). Through its borrowings from semiology in particular, the significance of place in people's lives is reduced to the signification of meaning through a pastiche of formal images, albeit often designed with wit, irony and aesthetic skill.

This detachment of form from social context has allowed a seemingly radical break with modernism to proceed without a
critical examination of the ideological context. Indeed it is increasingly argued that postmodernism represents the commodification of meaning under the aesthetic guise of a revival of meaning (Harries, et al., 1982) and is serving a significant role in reproducing the ideology of capitalism (Jameson, 1984). Dickens (1980) argues that many postmodern theories of environmental meaning lead to commodity fetishism, a quasi-religious idolatry of form which focusses attention away from the social relations of production and use of the building. The fetish for form meshes well with the increasing dominance of the commodity exchange value of places over their use value in everyday life. Environmental meaning becomes a means towards the end of exchange value. And the qualities of lived experience in the built environment, based in use value, become secondary to the quantities of exchange value. So the priority of the lived, a primary tenet of the phenomenological approach, is lost. Lived experience as a packaged commodity becomes reduced to its image.

Postmodernism appropriates the meanings of and thereby borrows legitimacy from both phenomenology and social theory. In relation to phenomenology, the intangibility of concepts such as 'sense of place' is exploited to legitimize environmental design projects without rigorous argument. Design decision is then justified in terms of the users' experience of place, as assumed by the superior knowledge of the designer. In this way 'sense of place' is appropriated into the aesthetic mystique of the architecture profession, protected by its intangibility from rigorous analysis. A second mode of appropriation of place experience in postmodernism is in the attention to 'sense of place' as a privilege for the winners within the market economy. Thus there is a trend towards the design of islands of place experience in a sea of placelessness which are concomitantly islands of affluence in a sea of decay. Thus Davis (1985:113) sees the "intent of postmodernist architecture in its ambition not to hegemonize the city in the fashion of the great modernist buildings, but rather to polarize it into radically antagonistic spaces. This profoundly anti-urban impulse... seems to me to constitute the real Zeitgeist of postmodernism". There is a parallel here in the commodification of entire neighbourhoods of pseudo-
vernacular housing and pseudo-public space, surrounded by a security fence (Cooper Marcus, et al., 1987). Both of these appropriations are aspects of the commodification of place experience.

Postmodernism also appropriates theory, and thereby legitimacy, from social theory. In this regard there are two main streams. The first, exemplified in the theory of Tafuri (1976) and in the works of Rossi, involves a claim for the autonomy of architectural meaning within a world of universal types. In this way environmental meaning is claimed to be revived and buttressed by its autonomy against a world of consumer capitalism. While environmental meaning may well be embodied in the autonomous realm of archetypal form, the separation of such meanings from social life and the production process leaves them vulnerable to being subsumed, commodified and exchanged as formal images.

The second stream borrows from the aesthetic theories of the early Frankfurt School which saw art as a weapon against the totalizing power of the structures of instrumental reason. There are works of postmodern architecture which appear to have taken literally Adorno's call to fashion perspectives "that displace and estrange the world, reveal it to be, with its rifts and crevices, as indigent and distorted as it will appear one day in the messianic light" (quoted in Frampton, 1982). Social conditions are thus 'referred to' as part of the pastiche. However, such references are often illegible to all but the architectural cogniscenti, and when such designs are built, they interfere neither with the accumulation of capital nor with the reproduction of social order. By incorporating the discourse of social theory postmodernists manage a variation on Jencks' (1984) notion of dual coding. Yet instead of communicating simultaneously in elite and popular codes, they appear simultaneously to embody meanings of both social resistance and capitalist production. Thus social criticism is co-opted and subsumed into the process of the production of environmental meaning.

There are two important characteristics that these examples of postmodernism have in common. The first is a definition of
environmental meaning which is stripped of significance in phenomenological terms and stripped of human agency in Giddensian social theory terms. What is ignored is the fact that meaning is generated at least as much by social process as by built form, that meaning grows through human agency in everyday life as well as being anchored in built form. The second common characteristic is in the use of a detached aesthetic discourse as a cover for the appropriation of meaning. One of the strengths of a phenomenological approach to human-environment studies is that it is neither dominated by nor excludes aesthetics from its domain. It does not detach aesthetics from social life but treats it as an important and integral part of the everyday lifeworld. Aesthetic meaning, whether integrated or detached from everyday life, is exposed to the appropriations and commodifications of the economic context. Yet the detached preservation of the autonomy of 'aesthetics', while it does not protect the meaning from commodification, does protect the autonomy of the profession, its power over built form and its role as an agent of capital - it reproduces social order. In summary, postmodernism as aesthetic style represents an expropriation of meaning in everyday life. The syndrome is that the concern to capture and communicate meaning through built form strips the form of its primary source of significance in social life. Postmodern architecture tends to deliver more and more meanings of less and less significance.

DECONSTRUCTING AND RECONSTRUCTING DESIGN PRACTICE

Dear (1986) argues that as distinct from its dominant style of pastiche, the dominant method of postmodernism is the 'deconstruction' or 'unpackaging' of the 'texts' or primary discourses of various fields. In human-environment studies these 'texts' are the built environment itself, the theories and the practices of environmental design. Following Dear, I would argue that the deconstruction method can be put to use within human-environment studies without reconstructing a facile pastiche of form stripped of social content. But if we are to take seriously the manner in which social process brings meaning to form then what must primarily be deconstructed and reconstructed is the structure of design practice. The task here
is to bring to consciousness the manner in which the definitions of design processes and the roles of the agents within them are structured according to certain interests, primarily the interests of capital in the maximization of exchange value and the interests of the state in reproducing social order. Thus the task is to deconstruct the contexts within which designers practice, the forms of reasoning they use and the ways in which design communication may be distorted by political and ideological forces. Whose interests are served by framing a design problem in a certain way, by setting tight time frames, by the size of the budget or by producing highly geometric drawings or false perspectives? The work of Habermas on systematically distorted communication may be useful for such an analysis of the environmental design process (Habermas, 1970; Mayo, 1985).

Such a deconstruction implies a reconstruction and the locus of human agency, the phenomenological lifeworld, is the locus of this reconstruction. As Warf (1986:279) argues:  
"it is in... the careful dissection of the 'intuitively obvious' and discovery of the limits to the thinkable - that the greatest strengths of phenomenology are to be found, for it offers a means with which to explore the constitutive role of ideology in everyday life and the shaping of the social texture of places through the participation of purposeful residents."

The design process represents an opportunity for the reconciliation of form and process, of architecture with social context and for the re-assertion of the dominance of use value over exchange value. A key question here is the agency of professional designers in the design process. Are they to be agents in the commodification of meaning, the suppliers of a continual series of fashions for the meaning market, and thereby the legitimators of existing social order? Or are they to be facilitators of human agency in the grassroots production of meaning? This latter role implies a framework of community or participatory design. Such a framework permits the designer to address problems of distorted communication as it permits the integration of environmental design with the processes of production. Hester (1987), for instance, has shown how community design can involve the identification and
development of unrecognized community resources and modes of production together with participatory design processes and the preservation of meaningful places. A community design process does not imply that the users of the built environment necessarily have the answers or the resources, only that the opportunity for environmental change is also an opportunity for personal and social change.

There is a further problem, however, in that Postmodernism also appropriates the meanings of participatory design, subsuming it as one kind of postmodern practice and subjecting it too to a formal analysis which reduces it to its images. Thus Jencks (1984) argues that participatory design is an important aspect of postmodern practice, where it serves the role of preventing design from degenerating into meaningless pastiche. This, however, is a variation on the reduction of meaning to formal image, it is a reduction of the role of human agency to that of legitimator rather than producer of environmental meaning.

CONCLUSION

The oppositions between phenomenology, social theory and postmodernism, the intersection between these rival claims to environmental meaning, lead, in my view, to a kind of critical phenomenology. This is a theoretical ground for human-environment studies that accepts the primacy of experience yet with a critical awareness of ideological constraint. It leads to a practice of participatory design or community design where participation is seen not as a panacea for anyone else's crisis, not as a means of legitimation, but as a basic democratic right to the exercise of human agency. It leads to a kind of design practice wherein the design process is an opportunity for the exercise of human imagination, the imagination of a better and more just world in social, economic and aesthetic terms. The forms that result may or may not diverge radically from existing designs but the break with existing power relations ensures a less commodified production process and a renewed depth of meaning. As Dickens (1980:360) argues it is possible that "the forms of non-commodified designs would be much the same, but their human use and symbolic qualities would no
longer be secondary to their role as commodities". If some of the social theorists are right then such non-commodified design processes will both be resisted and have their meanings appropriated by the dominant social order at every stage. Thus they will be both denigrated as ineffective and subsumed within dominant modes of practice. Yet if some phenomenologists are right then the meanings of the places they produce will persist and be reproduced long after the postmodern images have lost their exchange value.

References:


Howard Harris, South Glamorgan Institute of Higher Education, Cardiff
Senior Lecturer, Faculty of Art and Design
Alan Lipman,* University of Wales, Cardiff
Personal Chair, Welsh School of Architecture, UWIST, P.O. Box 25, Cardiff, CF1 3XE - Great Britain

FORM AND CONTENT IN CONTEMPORARY ARCHITECTURE - ISSUES OF STYLE AND POWER

ABSTRACT

Architecture, the craft of making buildings, has been reduced to an alliance of taste and capital, of art and profit, of style and power. Contemporary architectural practice is, we contend, an alienated practice: form torn constantly from content; the aesthetic negated, reduced to looks, dressed up as Art. This, the taken for granted orthodoxy of architectural thought must be opposed, resisted. Such resistance is rooted in the concept and practice of craftsmanship, in the fusion of pleasure and work - an overcoming of alienated labour.

"... aesthetic, with its specialised references to art, to visual appearance, and to a category of what is 'fine' or 'beautiful' ... is an element in the divided modern consciousness of art and society: a reference beyond social use and social valuation .... there is something irresistibly displaced and marginal about the now common and limiting phrase 'aesthetic considerations', especially when contrasted with practical or utilitarian considerations, which are elements of the same basic division."
Raymond Williams (1976:28)

Boom time. We're on the move, back on course. We're lean, efficient - competitive. De-regulated, privatised, rationalised - we're all entrepreneurs now. Managers are managing, governments governing - the centre holds. Each of us a little merchant prince (princess?). The democracy of property. And, it seems, we ain't seen nothing yet. There's more, lots more. Up here in the superstructure it's all systems go - we have lift off. We've done with modernist solemnity, piety, social commitment; we're into clowning, we're Post-Modern. In architecture we're into sit-com: 'ironic' columns (Silvetti, 1980:26-7), Chippendale skyscrapers (Banham, 1984), Palladian country seats (British Architecture, 1982:201) ... all this and the unending search for origins, for imperishable models - the Primitive Hut (Delevoy, 1978), the Tabernacle in the Wilderness (Terry, 1982/3), the Orders of
Classicism (Chitham, 1985). ..... It's Renaissance time again:

"... it is time to resurrect the principles by which classical Greece operated ... proportion is not a matter of individual taste but depends on mathematical laws of harmony which can only be broken at the expense of beauty. We have been led, I suggest, for long enough by those who totally ignore the laws of harmony and the well tabulated relationship of the parts to the whole. Rhythm, balance and equilibrium have been missing too long ... a new Renaissance in architecture."

Charles Windsor, Prince of Wales (Pawley, 1986:21)

"In both art and architecture the tradition of Post Modernism is beginning to mature and we can see limited progress and development akin to that of the Renaissance."

Charles Jencks, Commoner (Jencks, 1986:48)

The impressarios of beauty are at it again: the pedlars of harmony, balance, proportion - those worn-out precepts - are dusting off the classics. The manipulators of taste are freeing architecture from efforts to change the world. Aesthetic form is being emptied of social content. Post-Modern maturity is upon us.

When exactly were the beacons of Post-Modernism fired? When did we find ourselves in the light, released from the grey of modernity? These are no easy questions. When precisely does culture emerge from primordial slime? Here - uniquely perhaps - there is witness,

"Happily, we can date the death of modern architecture to a precise moment in time ... Modern Architecture died in St Louis, Missouri on July 15, 1972 at 3.32 pm (or thereabouts) when the infamous Pruitt-Igoe scheme, or rather several of its slab blocks, were given the final coup de grâce by dynamite."

Charles Jencks (1981:9)

Jencks, of course, is not alone in his fixation: the Pruitt-Igoe housing project has become the icon of anti-modernism, the ready-to-hand symbol of what all, apparently, recognise as the failed Modern Movement (note 1). For adherents of this, the new orthodoxy, the project has been drained of social content, its particularity ignored, its occupancy by-passed, its history overlooked, its reality denied - its image celebrated. Form is all, paramount. Happily, we can go beyond this, we can refer to the issues that preoccupied the US Public Housing Administration, the Department of Health, Education and Welfare, the National Institute of Mental Health, the Social Science Institute of Washington University (Rainwater, 1973). Happily, we can turn to the unique history of Pruitt-Igoe; to, for instance, the Supreme Court's rejection (as unconstitutional) of the city of St Louis' plan to build "two
segregated projects, Pruitt for Negroes and Igoe, across the street, for whites." The scheme, occupied eventually by blacks alone, was soon notorious for its poor design (e.g. the lifts stopped only at every third floor) and for the publicity given to crimes and accidents on the site. And there is more. Happily, we can look to, say, Rainwater's informed account of life behind the formal image:

"... Pruitt-Igoe ... is not ... typical of the lower-class world; no other public housing project in the country approaches it in terms of vacancies, tenant concerns and anxieties, or physical deterioration. Rather, Pruitt-Igoe condenses into one 57-acre tract all of the problems and difficulties that arise from race and poverty and all of the impotence, indifference and hostility with which our society has so far dealt with these problems. Processes that are sometimes beneath the surface in less virulent lower-class slums are readily apparent in Pruitt-Igoe."
(Rainwater, 1973:1-3)

All this is missed in the Post-Modern critique:

"Pruitt-Igoe ... consisted of elegant slab blocks fourteen storeys high with rational 'streets in the air' (which were safe from cars, but as it turned out, not safe from crime); 'sun, space and greenery', which Le Corbusier called the 'three essential joys of urbanism' (instead of conventional streets, gardens and semi-private space, which he banished) ... its Purist style, its clean, salubrious hospital metaphor, was meant to instil, by good example, corresponding virtues in the inhabitants." (Jencks, 1981:9)

Formalism, the currency of architectural thought, pervades modern as well as post-modern discourse; indeed, it saturates comment on the modernist 'heroes' and their work. Take, for example, an icon of the modern movement, the twin towers of the Lake Shore Drive apartments (Chicago 1948-51) designed by Mies van der Rohe. Here, attention focusses disarmingly on the appearance of the buildings, on their visual impact; on, that is, 'aesthetic considerations',

"... masterpieces of precise engineering, devoid of any ornament, or of qualities (such as those arising from the effects of the weather or from the varying textures of natural materials) that cannot be exactly controlled. They rely for their aesthetic effect on subtlety of proportion and mechanical precision of finish." (Richards, 1962:110)

"The initial wall/column articulations ... were here elaborated into a modulated facade which was subtly
related to the Suprematist, pinwheeling juxtaposition of the two blocks ... more than in any other work by Mies, the wall is rendered here — after Semper's prescription — as a woven fabric; a subtle integration of structure with fenestration that displays the same capacity as load-bearing masonry for limiting any extension of the space." (Frampton, 1980:234)

"The Lake Shore Apartments are more austere than Lever House [a 'Miesian' office building designed by Skidmore, Owings & Merrill] ... Lever's aquatic greens and blues threaded with silver are likely to be more appealing than the dull black and matte silver of 860 Lake Shore ... In the uncompromising severity of Mies' rectangular towers, however, we instinctively feel ourselves at the fountainhead. If Miesian-like formulae are legion, Mies', own greatest buildings reveal the singularity of genius." (Jordy, 1986:237)

All this misses the point. What is salient about the Lake Shore apartments is that the architect furnished an effective aesthetic for corporate capital, world-wide. He provided an architectural type, an image of the profitable fusion of visual elegance with new production techniques,

"This rapid assemblage from prefabricated parts made the Lake Shore apartment towers economical buildings, costing from five to ten per cent less than comparable apartment buildings." (Jordy, 1986:249)

"You know he's a genius, and not only that, I can build him $2 less per square foot than any other architect." (Herbert S Greenwald in Prak, 1984:20)

This, of course, is not proper to architectural discourse. As everyone, especially an aesthetics expert, knows,

"It is the exterior that counts, the opposed towers made of the magnificent bluntness of their enclosing grids." (Jordy, 1986:251)

We are at the core of architectural orthodoxy — repression of social content. We are at the heart of architectural theory, criticism, practice — preoccupation with form. We are at the source of architectural fashion — the parade of 'styles', of 'movements', of 'isms' (Frampton, 1982). Shallowness is all the rage. No sooner read than forgotten, E.M. Farrelly's The New Spirit warrants special mention (Farrelly, 1986:7-16, et passim). Here, in a farcical rerun (that skips readily over the tragic) the very essence of Constructivist practice, its emancipatory thrust, is mislaid; lost to disjointed montage, written and pictorial. Fortunately the grasp of others is more sure,
"Soviet architecture and town planning of the 1920s was suddenly brought out of oblivion to become fashionable .... Soviet Constructivism ... was a product of the specific technical, economic, financial and, above all, social and political circumstances of its time and place ... what is most interesting ... is the attempt that was made to create an environment for living corresponding to the society that the 1917 October Revolution wanted to build – the correlation between architectural policy and social policy." (Kopp, 1985:6-7)

ARCHITECTURAL STYLE – THE AESTHETIC AS ALIENATION

Efforts to separate form from content in architecture are but particular instances of the more general divorce of culture from society, of art from everyday life. This split between art and daily life is rooted in alienated labour; in, that is, the divorce of pleasure from work. This, the taken for granted orthodoxy of architectural thought must be opposed, resisted. Such resistance is embodied especially in the work of William Morris, who forged a theory that was at once a critique of and an alternative to his, and our, times.

For Morris, architecture is the quintessential art, an expression of pleasure in work, an art "made by the people for the people as a joy for the maker and user" (Morris in Cole, 1944:545). This he asserted in the teeth of all he saw about him; in opposition, that is, to soulless work, to the degrading experience of alienated labour:

"... the greatest of all evils, the heaviest of all slaveries; that evil of the greater part of the population being engaged for by far the most part of their lives in work, which at the best cannot interest them, or develop their best faculties, and at the worst (and that is the commonest, too) is mere unmitigated slavish toil, only to be wrung out of them by the sternest compulsion, a toil which they shirk all they can – small blame to them. And this toil degrades them into less than men: and they will some day come to know it, and cry out to be made men again, and art only can do it, and redeem them from this slavery; and I say once more that this is her highest and most glorious end and aim ..." (Morris in Cole, 1944:552)

Morris rejected especially the prevailing reality of his – and our – times, the separation of labour from pleasure, of work from art. Beauty for him arises from, stems from joy in labour,

"Yet I repeat that the chief source of art is man's pleasure in his daily necessary work, which expresses itself and is embodied in that work itself; nothing else
can make the common surroundings of life beautiful, and whenever they are beautiful it is a sign that men's work has pleasure in it ... it is the lack of this pleasure in daily work which has made our towns and habitations sordid and hideous, insults to the beauty of the earth which they disfigure ... (Morris in Briggs, 1962:140-1)

A romance, the innocence of a Victorian socialist? Hardly. Now as then architecture as a joy for maker and user remains beyond reach, remains a repressed hope - for building workers on the lump, for factory 'hands' on the line, for typists in the pool .... for architects at the drawing-board, "pandering to degrading follies for the sake of profit, wasting their intelligence and energy in contriving snares for cash in the shape of trumpery which they themselves heartily despise." (Morris in Cole, 1944:649). Few find creative pleasure in their work or in its use. Architecture continues to rest on alienated work, "those externals of a true palace of industry can only be realised naturally and without affection by the work which is to be done in them being in all ways reasonable and fit for human beings" (Morris in Cole, 1944:649). Hardly an apt description of our local car assembly plants - those that remain. Here, as elsewhere, workers refuse the products of their labour and counsel others to do likewise. Continually Ford workers tell us "never buy a Ford ... we know what goes wrong with them because we know we don't care how we do the jobs ... it's a funny feeling riding along in something you really hated when it was a shell on the line" (Beynon, 1973:109-112).

Motorcars or buildings, it's all the same - it's the look that counts. The burnished, thrusting bodies of cars, the beguiling looks masking the pain and loss of production, the joyless labour of the assembly line; the neat facades of corporate architecture, its enticing look concealing the alienated social relationships of daily life, "the crispness of the external face is everything it is cracked up to be, but the view of this skin from the inside is somewhat ordinary - and perhaps even a little crude ... [This] disjoint between the interior and the exterior [reflects] ... the management's opinion that those looking out have less sensitive eyes than those looking in" (Campbell & Kay, 1977:401). This, certainly, was not Morris' vision,

"... our factory which is externally beautiful, will not be inside like a clean jail or workhouse; the architecture will come inside in the form of such ornament has may be suitable to the special circumstances. Nor can I see why the highest and most intellectual art, pictures, sculpture, and the like should not adorn a true palace of industry. People living a manly and reasonable life would have no difficulty in refraining from over-doing both these and other adornments ..." (Morris in Cole, 1944:654)

Culture and society, art and everyday life: Morris refused these
distinctions and the banal division between works of art and mere artefacts which they support. He refused to accept as desirable, or necessary, a world in which culture is privilege, art is luxury; in which the makeshift is commonplace,

"I must ask you to extend the word art beyond those matters which are consciously works of art, to take in not only painting and sculpture, and architecture, but the shapes and colours of all household goods, nay, even the arrange- ment of the fields for tillage and pasture, the management of towns and of our highways of all kinds; in a word, to extend it to the aspect of all the externals of our life."

"... those things that are without art are so aggressively; they wound it by their existence." (Morris in Meier, 1978: 395-6)

The wounds remain. Indeed, the "commercialism" of Morris' time has matured, swollen into luxury and into the obsolescence of consumerism — producing goods, architecture, intended either to fall out of fashion or to fall apart.

Architectural practice is, then, an alienated practice: form torn constantly from content; the aesthetic negated, reduced to looks, dressed up as Art. All this has come to the boil again, notably in the commotion surrounding 'type', 'typology', 'archetypology'. These arcane notions, disinterred from the Enlightenment, are on offer as a new, a post-modern way forward. They set the "conditions for a contemporary architectural practice" (Delevoy, 1978: 16); they are "at the forefront of the cultural debate ... impossible for architectural commentators to ignore ..." (Bandini, 1984: 73); "the concept of typology pervades, consciously or uncon- sciously, almost all architectural thought ..." (Silvetti, 1980: 23).

There are, we learn, two typologies; one a product of European rationalist thinking, the other of Anglo-American pragmatism. The former turns on the work of an eighteenth century Encyclopaedist, on Quatremere de Quincy's neo-Platonic distinction between type and model,

"... the word Type presents less the image of some- thing to copy or imitate completely, than the idea of an element which itself has to serve as rule for the Model. The Model, in the sense of the practical execution of art, is an object which has to be re- peated as it stands. The Type is, on the contrary, an object on the basis of which everyone can conceive works which would not resemble each other." (de Quincy in Delevoy, 1978:16)

This idealist abstraction was resurrected for contemporary archi-
architectural consumption by Argan in 1962 (Argan, 1963: 564-5). Since when the ambiguity of 'Type, acknowledged by each of these theorists, has been taken up, celebrated - used, indeed, as a foil for the 'scientific precision' of Typologists (Bandini, 1984: 74); note 2). Here, patently, is a doctrine ripe for exploitation: available, simultaneously, as a license for hedging intellectual bets and as a 'scientific methodological tool' for instructing designers, for indeed ordering 'an artist's creative process'. More. Typology, Type is trans-historical as well as trans-cultural, 'a meta-historical constant', 'something constant, it is what remains beyond the particular and the concrete' - architecture treated as static artefact, beyond historical process or lived experience. And more. Type, we are informed, transcends use, function; it is 'independent of the functions ... which ... buildings must fulfil'. Yet more. Architecture has been gutted, reduced to 'a heritage of images with ... ideological overtones'. Form is all, paramount.

Characteristically, the conceptual niceties of Type and Model do not weigh on English speaking pragmatists. Untroubled by the rigours of Grand Theory, they go right to the heart; for them Typology is,

"... only a convenient repository of authoritative imagery waiting to be transformed by personal creativity ... a collection of easily appropriated icons." (Bandini, 1984: 81)

And Type is, pragmatically, a "concrete, idiosyncratic, and temporal icon ... a purely iconographic interpretation and use of the idea ..." (Silvetti, 1980: 24).

Archetypologists - European-rationalist or Anglo-American pragmatist - seek to rationalise the alienation of architectural practice, to legitimate the existence of architecture as High Art. On social, political engagement they have nothing to say save disdain for past aspirations, for emancipatory hope.

CRAFTSMANSHIP, A RESISTANCE

The concept and practice of craftsmanship carries us beyond this taken for granted alienation, this wrenching of form from content. Craftsmanship is central, a symbol of the fusion of pleasure and work, an overcoming of alienated labour. Here, as before, we follow William Morris.

Morris was affronted by much of the 'civilisation' about him; not least by the division, the rupture of art from work, of artist from worker, of designer from builder. He believed that we all have it in us to be creative. Creativity, he held, is not the preserve of artists alone; "that talk of inspiration is sheer nonsense, I may tell you that flat ... there is no such thing, it is
a mere matter of craftsmanship" (Morris in Meier, 1978:398; note 3). For him, craftsmanship entails fellowship; expressly the collaborative making of Gothic architecture,

"In the times when art was abundant and healthy, all men were more or less artists; that is to say, the instinct for beauty which is inborn in every complete man had such force that the whole body of craftsmen habitually and without conscious effort made beautiful things, and the audience for ... art was nothing short of the whole people" (Morris in Cole, 1944:61-2)

"... from the first, the tendency was towards ... freedom of hand and mind subordinated to the co-operative harmony which made the freedom possible. This is the spirit of Gothic Architecture." (Morris in Cole, 1944:484)

Little of this spirit remained in Morris' world. Craftsmanship, the bedrock of creative work in fellowship, was being undermined, subverted - was splitting. The majority, their craft skills denied them, were now operatives employed at "useless toil", at "the making of wares which are necessary to them and their brethren because they are an inferior class ... wretched houses ... miserable make-shifts ..." A minority, denied socially useful labour, were engaged in "the puffery of wares," employed in "making all those articles of folly and luxury, the demand for which is the outcome of the existence of the rich non-producing classes" (Morris in Morton, 1975:91-2) - an effete art for a ruling class in decline. Craftsmanship, the fusion of beauty and use, was being destroyed: the majority were being deskilled, a minority had become trapped in folly and luxury - a denial of social need.

Wretched houses, the puffery of wares, by-words of ugliness and inconvenience - familiar affronts of our times. We live now, all too evidently, with the drab uniformity of much public housing; with the soulless, sleek office blocks of our city centres; with the shoddy nastiness of most factories. We live with homelessness, overcrowding and with unemployment among construction workers; we live with dilapidated, run-down local amenities and with the strained opulence of newly-developed commercial centres; we live with condemned houses, boarded-up homes - reminders of expedient, get-it-up-quick housing quotas. Our lives are weighed down, daily, by denial of social need; creativity has been yet further suppressed, deskilling has intensified:

"The medieval craftsman was free on his work, therefore he made it as amusing to himself as he could, and it was his pleasure and not his pain that made all things beautiful ... and lavished treasures of human hope and thought on everything that man made, from a cathedral to a porridge-pot. Come, let us put it in the way least respectful to the medieval craftsman, most polite to the
modern 'hand'; the poor devil of the fourteenth century, his work was of so little value that he was allowed to waste it by the hour in pleasing himself - and others; but our highly-strung mechanic, his minutes are too rich with the burden of perpetual profit for him to be allowed to waste one of them on art; the present system will not allow him - cannot allow him - to produce works of art." (Morris in Cole, 1944:596)

Maudlin regret? Romantic discontent? Medieval nostalgia? We refuse these banal depictions, these parodies of the ideals and practice of craftsmanship. For us such ideals embody a way of life as well as a style of work: a life in which the now commonplace separation of labour from leisure, of work from culture is transformed; a life in which people work freely - they control how they work and what they work on; they see the whole process, they can imagine the completed products - details do not become detached; work is not drudgery but imaginative exploration, a creative activity pervading the lives of users and producers,

"As ideal, craftsmanship stands for the creative nature of work, and for the central place of such work in human development as a whole. As practice, craftsmanship stands for the classic role of the independent artisan who does his work in close interplay with the public, which in turn participates in it." (C. Wright Mills in Horowitz, 1974:383)

This, apparently, has little to do with architecture, nothing to do with Architecture. So, at least, we learn from Demetri Porphyrios, a messenger with whom periodically, news arrives from the summit of Grand Theory (Porphyrios, 1984:7-9 & 30-31). The word is, building and architecture are quite distinct. And Aristotle (in his Poetics), Horace (in Ars Poetica) with, of course, the familiar Quatremere de Quincy, agree - we know this because Demetri tells us. 'Building' is the craft of construction, it "comprises the knowledge and experience that man accumulates in dealing with the contingencies of providing shelter". 'Architecture' stretches beyond the everyday, the mundane; it "refers to the art of building (l'art de bâtir) ... the product of an artistic intention, not, like building, of necessity". The lesson is clear: craftsmanship and art are divorced, eternally,

"Over the years and centuries, a few chosen building solutions acquired a natural authority as truths. Such is the power of habit and consensus that soon this select number of building solutions became universal laws ... [such] building solutions - like that of the gable - are responsible, in the first instance, for the invention of form. Man, in contemplating these forms, recognises in them the cumulative knowledge, experience and genius of his species and
thereby wishes to commoramate them. At that very moment, those select building solutions drop their use value and assume an aesthetic, symbolic value... building becomes architecture." (Porphyrios, 1982:30)

In short, the art of craftsmanship and the practice of art, architecture, are repressed (note 4).

Form is all, paramount. Architectural aesthetics have been reduced to the manipulation of formal effects: architects—the stars, those that count—are revered either as technological virtuosos or as the legatees of gentlemanly scholasticism. So, "the most expensive building in the world" (Hong Kong and Shanghai Bank, designer Norman Foster) is, we are told, "essentially a crafted building", a product of "purpose-made, 'High-Tech'... Craftsmanship" (Architectural Review, 1986:35 & 60—emphasis in original). Here, architectural vision, control, is total:

"... every important element... was designed and developed from scratch... with factory-based specialists... Each... was the subject of a research and development programme just as if it were a car or an aeroplane. Mock-ups and prototypes were built, tested, altered and tested again until their performance and quality met with the architects' approval." (Arch. Rev., 1986:82).

All is subordinate to architectural intention, to artistic direction—the very antithesis of craftsmanship, of creative work in fellowship. But, of course, it looks good,

"As the ferry approaches the island terminal, another unexpected aspect of the Bank reveals itself: the lightness and grace of the building. Certainly, the macho aspects... exist, but the Bank also has a powerful, detailed, subtle delicacy, like a beautiful female athlete. This blend of masculine and feminine is one of the many apparent contradictions that make the Bank a truly great building....." (Arch. Rev., 1986:36)

Architectural grandees, the historicists, also worry at form. Their vision, however, takes a different turn. Like their champion, James Stirling, they display their learning, they parade their erudition, they advertise their culture. So at the Neue Staatsgalerie, Stuttgart (designer James Stirling) we find a "work full of parodies... references to past influences", "brilliant conceit", "very high-level architectural jokes", "ironic identification"; we stumble across "coquettish attention to... urban surroundings", "architecture... condensed to its essentials"; we come across "legitimising eclecticism", "vaguely Klenzian over-
tones", "suggestions of Rundbogenstil", "a Gothic provenance", "literal evocation of Giulio Romano", "the recurring archetype of the Pantheon", "the legitimate cravings of the German soul" (Arch. Rev., 1984:21,30,33 & 35). We are in the midst of architectural scholasticism made marketable, crafted.

Meanwhile the rest of the profession is troubled ...

FADING AWAY, STYLISHLY

Crisis - the contemporary condition of architecture. Crisis: we can't run our practices, we're bungling the contracts, clients are disgruntled - bring on the organisation theorist, the management expert; people don't understand our buildings, we're not communicating - enter the environmental psychologist, the social scientist; suddenly energy's expensive, we don't know how to conserve it - here comes the building technologist, the environmental scientist; we're overwhelmed by data, we can't handle the information - welcome to the computer programmer, the systems analyst; the market's hot, the competition blistering, profits are down - roll up roll up to the School of Business Studies. It's been blow upon blow. And it's getting worse: services engineers, structural engineers, quantity surveyors, interior designers, town planners, package dealers - the Barratts, the Wimpeys ... they're moving in on us. We're going under.

What, then, are architects to do? Some, a handful, resist - they refuse an architecture of embellished technicalities,

"Immediately you start thinking in terms of form, you dissipate the idea of there being people involved, and it becomes impossible for it to be architecture ... start without a building and try to look at what the problem is first. The people you are working with have a common problem and the solution it the building ... The building's shape as such is not important, but the fact that it so aptly complements its function, is. This ... is what architecture is about."

John Scott, Architect (Dalzell, 1977:23, note 5)

Function? Resistance?

Functionalism as formal device is, of course, passé; with its instrumental, its mechanical bias, it constituted the cornerstone of International Style dogma. As current, everyday practice however, it flourishes. Its adherents treat of people as manikins, puppets: they treat of architectural space - a scarce resource - as a technical issue, a matter for traffic-flow, for circulation analysis; they reduce issues of social power to questions of spatial planning - 'problems' to be designed away (note 6).
Functionalist doctrine is profoundly reductionist, a denial of the open, generous modernism that marked, say, Soviet Constructivism, the early work of Frank Lloyd Wright, Le Corbusier in his better moments ... For them, as for John Scott and others who resist, functional design is recognition of social need -- functional architecture is social architecture. Consider, as a case in point, Constructivist proposals for housing. Now as then these demand a departure from, a transcending of taken for granted, bourgeois 'commonsense'. Now as then they require, as a first premiss, a shift from private to communal property ("freed from the shackles of private land ownership") (Wagner in Lissitzky, 1970:204). Now as then they call for a questioning, a transformation of gender relationships ("a waste ... out of tune with modern life to see the function of woman in terms of lifelong cooking and dusting, when she should be contributing both physically and intellectually to the common good, using her free time to cultivate both body and mind") (May in Lissitzky, 1970:194). Now as then they rest on the reallocation of resources ("the equitable distribution of all communal functions, for everybody's equal enjoyment ... nurseries, kindergartens, schools, stores, laundries, ambulances, hospitals, clubs, cinemas, and other facilities should be apportioned in such a manner as to be within a comfortable and functionally optimum distance from the dwellings") (May in Lissitzky, 1970:198). Such proposals, in short, constitute a resistance -- an opposition to the persistent alienation of form from content. Now as then ... some resist.

Others -- the majority, the star-struck -- have been overwhelmed; mesmerised by the pageant of fashion, in the thrall of architecture as ART.

"Architecture is not an integument for the primitive instincts of the masses. Architecture is an embodiment of the power and longings of a few men. It is a brutal affair. ... It is a weapon. Architecture ruthlessly employs the strongest means at its disposal at any given moment ..." (Pichler in Conrads 1970:181)

"Architecture is not the satisfaction of the needs of the mediocre, it is not an environment for the petty happiness of the masses. Architecture is made by those who stand at the highest level of culture and civilisation, at the peak of their epoch's development. Architecture is an affair of the elite ... The shape of a building does not evolve out of the material conditions of a purpose ... Architecture is purposeless. What we build will find its utilization." (Hollein in Conrads, 1970:182)

Art, opiate of the architectural masses, soul of soulless conditions, heart of a heartless world -- the sigh from the drawing-board. Grubbing about for commissions -- on the golf course, at
the club; sweating it out in the office for speculators, hucksters
and others on the make; begging for the fee, pleading for your due,
sueing for the dough ... dreaming all the while of Art.

Architecture, the craft of making buildings, has been reduced to
an alliance of taste and capital, of art and profit, of style and
power,

"Who built Thebes of the seven gates?
In the books you will find the names of kings,
Did the kings haul up the lumps of rock?
And Babylon, many times demolished
Who raised it up so many times? In what houses
Of gold-glittering Lima did the builders live?
Where, the evening that the Wall of China was finished
Did the masons go? Great Rome
Is full of triumphal arches. Who erected them? Over whom
Did the Caesars triumph? Had Byzantium, much praised in song
Only palaces for its inhabitants? Even in fabled Atlantis
The night the ocean engulfed it
The drowning still bawled for their slaves."

Bertolt Brecht (in Willet, Mannheim and Fried, 1976:252)

Notes

1. "... this ruin has become a great architectural symbol"
   (Jencks, 1981:9); see also Colin St John Wilson in Dostoglu
   (1984:13). For a critical view of this facile depiction of
   Pruitt-Igoe, see Mary McLeod in Ockman (1985:8-9).

2. The remaining citations in this paragraph are culled from
   Bandini (1984), Argan (1963) and Moneo (1976).

3. We have not been able to find a suitable, non-sexist sub-
   ject for the word craftsmanship - Morris, we imagine,
   would not have looked.

4. For a similar rupturing of architecture from building see

5. See also Hannay (1984) and Blundell-Jones (1986).

6. For an extended analysis of instrumental functionalism see
   Harris & Lipman (1980/81).

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EXPERT SYSTEMS IN ENVIRONMENTAL PSYCHOLOGY

The knowledge gathered through research in environmental psychology is not optimally used by designers and other people working in applied settings such as politicians and civil servants. In this paper a number of causes and possible improvements of this situation will be discussed. Two aspects are highlighted in particular: the structure and the presentation of information. A recent development to present knowledge from environmental psychology is the use of computerized information systems or expert systems. Limitations and possibilities of expert systems in general and for environmental psychology in particular will be discussed. The issue is illustrated with parts of an expert system on the design of children's play environments using the pattern language as a structure to present information efficiently and attractively to designers.

INTRODUCTION

The issue of the relationship between environmental psychologists and environmental designers is an old one. As in many other disciplines there is the constant tension between "pure", scientific research and applied research, in the case of environment-behaviour studies, by planners and architects of our physical surroundings. During the seventies the application of research findings in practice was one of the reasons for positioning environment-behaviour studies as a distinct multidisciplinary field (e.g. Bell a.o., 1978). At the moment, perhaps because of disappointment about the results of working for or together with designers, environmental psychologists tend to go back to their "mother" discipline, psychology. For instance, in the recently published "Handbook of Environmental Psychology" there is no chapter explicitly devoted to relationships of the designers of environments with researchers studying these environments (Stokols & Altman, 1987).

But of course, there are many contacts between researchers and designers, either directly in the form of personal consultation or participation, or indirectly through publication and communication of research results. At the moment the relationship between the two groups can best be described as "Living Apart Together". Although this is an old issue, and not specific to environmental psychology, continuing attention for the transfer of knowledge is still necessary. Environmental psychologists then can improve the quality of their "services" to the designers. Therefore in the first part of this paper a number of causes and possible improvements for this situation will be discussed. In the second part, attention will be paid to advantages and limitations of expert systems for the transfer of knowledge from environmental psychology to architects and other designers.
DESIGNERS AND ENVIRONMENTAL PSYCHOLOGISTS

Environmental psychologists can contribute in a meaningful way in different stages of the design process (Zeisel, 1981; Gifford, 1987) and in a number of different roles as a consultant to different persons such as: architects, policy makers who function as principal, and facility managers (Canter, 1982). But in all these contacts it is always important to translate the environmental—psychological knowledge for non-colleagues, for these parties each have different backgrounds and different views on reality. This communication gap is for instance clear in contacts with architects and town planners. Generalizing, one could say that architects are of the opinion that researchers study the wrong questions in the wrong way; that the results are at best irrelevant and mostly inaccurate and misleading; and that the conclusions of research are always already known beforehand. Of course reality is different. "The architect" and "the researcher" do not exist and various studies gave evidence just contrary to "the obvious". On the other hand there are a number of differences between architects and researchers in methods and approach of problems, that make the above-mentioned communication problems better understandable.

The following aspects of the differences are often mentioned in the literature (e.g.: Altman, 1973; Churchman & Ginsberg, 1984; Gifford, 1987; Mikellides, 1980): Point of view (behaviour vs. environments); method (analytical vs synthetical); presentation (words vs. images); pattern of values (theoretical vs. ideological); role conception (advisor vs. integrator). Anyhow, all these differences between designers and researchers each can give a partial explanation of the "communication gap". The analysis of these differences can also help us to search for possibilities to bridge this gap in order to transfer knowledge from our field in a better and more efficient way. Improvement is possible in a number of ways:

For instance, real cooperation between designer and researcher is especially useful in the programming stage by incorporating the needs and wishes of the occupants in the assignment or brief and involving them in the design process; during the design by implementing design guidelines focussing on the behaviour and experiences of the users; and when the building or environment is finished, by conducting a postoccupancy evaluation (POE), examining the effectiveness for human users of the environment. By interacting closely researcher and designer will be able to get to know each other's possibilities and ways of thinking and speaking. Researchers will learn the ins and outs of the design process, while designers will be more involved in the research process. Both sides of this interaction are equally important, but in this paper most attention is given to the transfer of information from environment—behaviour research to designers.

Researchers should also pay more attention to the integration, structuring, relating, and presentation of the existing body of knowledge based on research on a certain subject. This could, among other things, be realized by not only publishing in scientific journals, aimed at colleague—
researchers, but also in applied and design-oriented journals. In these kind of articles and other presentations aimed at designers, it is very important to adapt content, style, and form to this different public, for instance, by using much more visual media such as slides, illustrations, and graphics.

Furthermore it is very important to be aware of the different kinds of information and knowledge that are needed by designers, in different stages of the design process. This is especially true when considering the possibilities of using new developments, such as computerized information systems and even expert systems, to enable a better transfer of knowledge from environment-behaviour studies to designers. So before we take a more detailed look at some of these possibilities, it is necessary to focus on the design process itself and pay attention to the different kinds of knowledge and information that are involved in this process.

**KNOWLEDGE AND THE DESIGN PROCESS**

The design process follows a series of stages, about the nature of which most authors tend to agree in general terms (c.f. Lawson, 1980; Wade, 1977; Zeisel, 1981). Commonly used descriptors are: Programming or analysis; Design or synthesis; Construction or realization; Use or reality testing; Evaluation or review. (see also figure 1).

![Diagram](image)

**Figure 1. General model of design process.**

Zeisel (1981) stresses the cyclical nature of the design process, where knowledge gained from one project has to be used in the next project. Systematic storage of this knowledge, especially from environment-
behaviour studies does not take place at the moment. Gifford (1987) suggests the possibility of a "clearinghouse accumulation of useful design information on successful and unsuccessful social design solutions. These could be stored and retrieved through a computer network, supplemented by drawings available on microfilm". (op.cit. p.356).

Another line of interesting studies comes from cognitive psychology, based on a more general theory of information processing (cf. Newell & Simon, 1972). In this view design is seen as a specific form of problem solving, where individual decisions are made, and cognitive activities lead towards fulfillment of objectives. Like other problems design problems have an initial state, usually described as the "design brief" or "program"; design problems go through states that are represented by internal and external symbols, such as notes, diagrams, and sketches; each state is transformed into other states using operations that are sometimes explicitly represented in the form of knowledge; many search strategies, mainly heuristic ones, are used by designers to minimize the large numbers of possible transformations necessary for reaching solutions; at the end, a set of working drawings are produced that describe a solution to the problem specified in the brief.

Specific aspects of the design process are: the initial design problem is in most cases not fully specified, many aspects are ill-defined, c.q. it is a "fuzzy problem"; new and original solutions, creative derivations from conventional rules are highly valued by designers; the goal states of design problems are usually inadequately specified at the onset, which makes evaluation difficult; most design problems are very complex with many variables and complex relationships between these variables.

This, rather cognitive and empirical, view of the design process might be useful to clarify some important aspects of the use and communication of knowledge and information by architects and planners. Akin (1986) goes much further in his study by constructing a detailed model of the design process, which is suitable for implementation on a computer in order to simulate the design process. This takes us close to recent developments like artificial intelligence and expert systems.

EXPERT SYSTEMS

Expert systems can be seen as a practical application of the discipline of Artificial Intelligence, which studies and simulates the thinking and reasoning processes of human beings. Knowledge engineering is a subfield of artificial intelligence. It is concerned with the acquisition, representation and manipulation of human knowledge in symbolic form. The knowledge engineer applies the principles and tools of artificial intelligence research to problems requiring expert's knowledge for their solution. The technical issues of acquiring this knowledge, representing it, and using it appropriately to construct and explain lines of reasoning are important in the design of knowledge-based systems. The fundamental structure used to represent reasoning and knowledge is symbolic inference. Inference is based on well-established logical principles and has been extended to operate on symbols. This has the advantage that
inference can be used to manipulate concepts (Barr & Feigenbaum, 1981). In knowledge engineering, it is convenient to distinguish between facts and knowledge. Facts are statements about an object, event or process, which are accepted to be true. Knowledge is the relationship between facts that is able to generate new facts when applied to a particular "domain" of facts. Both knowledge and facts can be represented, among others, in a logic-based way, which makes it suitable for storage in databases and for logic inference using symbolic programming languages such as Prolog. The user of such a system can evaluate the knowledge for correctness, but more likely, he or she can use the system to infer new facts and can evaluate these facts in order to apply them to the actual problem the system was used for (c.f. Hayes-Roth a.o., 1983).

Expert systems, which are part of knowledge engineering, have been defined as interactive computer programs which use symbolic inferential reasoning to deal with problems that are difficult enough to require significant human expertise for their solution. Thus, expert systems aim to capture the ability of rational human experts to ask pertinent questions, to explain why they are asking these questions and to defend their conclusions and recommendations. These characteristics are unrelated to a specific domain of knowledge and apply to all expert systems. All expert systems share a common fundamental structure, which has the following components (Gero, 1986) (See also figure 2):

![EXPERT SYSTEM Diagram](image)

**Figure 2: Main components of an expert system.**

- An **inference engine**, the mechanism which carries out the reasoning tasks.
- A **knowledge base**, which contains the knowledge specific to the domain of expertise.
- An **explanation facility**, which interacts with the knowledge base and the inference engine to explain the reasoning mechanism.
A state description, which contains the facts which have been inferred to be true and those which have been found to be false.  
(Possibly) a natural language interface, which should make it possible to communicate with the expert system in natural language.  
(Possibly) a knowledge acquisition facility, which should make it possible to acquire the necessary knowledge from human experts.

Waterman (1986) clearly states advantages and disadvantages of expert systems. One advantage of expert systems is its permanence: once the knowledge is acquired it can be stored permanently. A human expert must constantly practice to maintain proficiency in some problem area, and any significant period of disuse can seriously affect the expert's performance. Another advantage of artificial expertise is the ease with which it can be transferred or reproduced. Furthermore it can be more easily documented, actualized, and changed; and the search for certain information can be much better structured and supported by the computer program.

But there are limitations to the use and application of expert systems. For instance, expert systems are specifically useful for problem areas where the tasks do not require common sense, where the tasks require only cognitive skills, where the task is not too difficult and is clearly defined. Another important requirement is that genuine experts exists. These are people generally acknowledged to have an extremely high level of expertise in the problem area. Experts should also generally agree about the choice and accuracy of solutions in the problem area. The experts should also be able to articulate and explain the methods that they use to solve domain problems. And, there are even important areas in which human expertise is clearly superior to the artificial kind of knowledge, like creativity and learning. Human experts can make direct use of complex sensory input, but expert systems can only manipulate symbols that represent ideas and concepts. Finally, human experts and nonexperts alike have what we might call commonsense knowledge. This is a very broad spectrum of general knowledge about the world and how it works, knowledge that virtually everyone has and uses. Because of the enormous quantity of commonsense knowledge, there is no easy way to build it into an intelligent program, particularly not in an expert system.

So for these reasons, expert systems are often used in an advisory capacity, as a consultant or aid to either an expert or a novice user in some problem area. A human user is always necessary to make final judgements about the usefulness of certain information and to integrate the knowledge from an expert system with information from other sources. This is certainly important in design processes which, as we have seen before, are rather complex. Different opinions about the practical relevance of expert systems in architectural design can be signalled. Some authors are optimistic like Gero (1986):

"A number of expert-system shells oriented towards computer-aided design have been written in Prolog for rule-based knowledge systems. Expert system shells can be constructed and then used in a variety of ways, such as building regulations, design guidelines for kitchens, or for retaining walls .... But it is also possible to design planning systems, which
examine the structure of a formulation and generate plans of design processes which, when executed, produce designs". (op. cit., p.114 e.v.).

Others are more critical, e.g. Mawer (1986):

"But existing expert systems available to architects do not yet deal with the open-ended, generative, multivariate processes which characterize the complex activity of design, but rather with the convergent subsystems associated with problem diagnosis, fault-finding, compliance checking, or option choice from a limited range of predetermined alternatives .......... So, there is an enormous scope for the parametric use of computer-based simulation models to generate a reliable knowledge base for design decision-making. At the same time there is a need for intelligent interfaces with such models to increase their acceptability in practice." (op. cit., p.105).

It can be concluded that in relation to the developments in computer-aided drawing systems, there is some attention for application of expert systems in the design process. But, at the moment, realistic examples of such systems can only be found in very restricted and mostly technical "domains" such as insulation of buildings or the construction of windows. The "real" design activities such as synthesis and planning seem to be inherently so complex and mainly based on intuitive knowledge that at the moment the development of a good expert system is not realistic.

EXPERT SYSTEMS IN ENVIRONMENTAL PSYCHOLOGY?

So what about expert systems in environmental psychology? Some of the advantages mentioned earlier for expert systems in general are also true in this particular case: it gives an opportunity to bundle existing knowledge; once developed it is easily updated; the search for information can be made easier. Disadvantages may be: it is a "high-tech" development which heavily depends on the use of the computer, and this does not appeal to everybody; and perhaps there are more fundamental limitations such as: can we really build "reasoning" into our systems, or: is our knowledge not too "fuzzy" to be put into an expert system?

The last two points can be translated in expert system terms. In order to enable a kind of dialog between user and system, the inference engine of an environmental psychological expert system should be hierarchically oriented. This means that although a user may ask the system a very specific and detailed question, the expert system should also point out more general, equally important information. The expert system should be able to ask for more information, especially in order to know more about relevant conditions.

In respect to the knowledge base of the expert system, the following questions could be asked: is there enough explicit and relevant knowledge available from research in environment and behaviour? If so, is it possible to describe this knowledge in the form of facts and relations, which seems at the moment a necessary condition to fit into the available expert system programs? It is clear that not all available material from
our field easily meets these requirements. On the other hand certain knowledge is available on a number of environments and concepts, and perhaps some new research should be designed especially to fill certain gaps in our information. Attention should also be given to the kind of questions designers are likely to ask and the kind of information they need.

In conclusion: it seems worthwhile to start modestly with some experiments, but it seems also wise at first to speak about an information system instead of an expert system to avoid too high expectations; careful attention should be payed to both the structuring and to the presentation of the information, and to the user friendliness of the system for designers. First a small prototype should be developed for a limited subject area from environmental psychology.

At the moment such a prototype is being developed at Eindhoven University of Technology using pattern language for knowledge on the design of children's play environments. The two above-mentioned aspects, structure and presentation of the information, are especially emphasized in this project:

1. Some **structure** should be given to the existing knowledge on the subject at hand. One possibility is to use a (semantic) network of subjects or keywords, that can be related to each other on different levels. This makes it possible to refer to other subjects in many ways. The structure can be hierarchical or not, in most cases some sort of tree-structure will be used. From a certain point in the network, connections are possible to "higher", more general subjects; to equivalent, related subjects; and to "lower", more detailed subjects.

![Semantic network of subjects](image)

**Figure 3. A semantic network of subjects.**
See for instance, figure 3, in which the subject "space for movement play" is at the same level connected to subjects about spaces for other kinds of play; at a higher level with more general subjects such as "traffic routes"; and at a lower level with more detailed subjects such as "material for play equipment".

2. The presentation of the existing knowledge about each subject in the network is also very important in this case. For instance it is highly recommended to combine text and illustrations. A kind of fixed format appears to be attractive for users, so they know where to find certain kinds of information about a subject. The pattern language, developed in the design profession (by Alexander a.o., 1977) is a good example of such a structure. Although the pattern language as developed by Alexander c.s. has been criticized because of the insufficient validity of its content (see for instance Grabow, 1983; and Sime, 1986), the structure of a pattern could serve very well as a basis for information about a certain subject. In that sense the pattern language has been fruitfully used, for instance to summarize and present knowledge about environments for blind children (Schneekloth, 1980) and about play environments (Cohen a.o., 1979).

A pattern has the following parts or headings:

- a title
- a justification
- the pattern itself
- design guidelines or recommendations
- illustration(s)
- references to other patterns

See e.g., figure 4, where the subject "space for movement play" is presented in the form of a pattern.

**Figure 4. Example of a pattern**
Once such a prototype of an information system works, it should be carefully tested with, at first, designers sympathetic to this kind of "system". Thorough and careful research is necessary on the actual use of such a system. Especially the positive and negative effects on both the design process and the design product should be studied. Based on the results of this studies, the system could be adapted, refined and elaborated, by filling the developed "shell" with knowledge on other subjects and/or other environments.

LITERATURE

In the framework that has been known as Sociology of Science, we have studied the evolution of Environmental Psychology in Europe, how has been influenced by several factors: cultural and linguistic background marking developmental styles, different theoretical approaches, power relationships that have developed in the scientific community bath in social and intellectual aspects, and how these constitute two "Invisible Colleges". Two nuclei centers in Surrey and in Central Europe, are defined as power structures within the organization that shape the scientific community and that express themselves through the IAPS conferences, with two theoretical differentiated perspectives. Finally, we ask the question does a European Environmental Psychology exist? We find that the different characteristics give to it a certain entity, but the intellectual influence of USA drawn this possible identity.

This paper presents some results of a broader publication that has already been completed. A Preliminary study of this type was presented in Berlin in 1984.

1.- OBJECTIVES

In the framework of what has been known as the Sociology of Science, through three sources of basic information, interviews with main authors, visits to outstanding institutional centres and the analysis of documents and bibliometric analysis of proceedings of IAPS (IAPC & ICEP) conferences, we have studied the evolution of Environmental Psychology, (E.P.) in Europe. We have also studied the development of this young, scientific "dominium" and how it has been influenced by power relationships that have developed in the scientific community, and how these express themselves through "Invisible Colleges".

We have also been interested in how the cultural background, especially those from different linguistic boundaries, have marked developmental styles, differentiating theoretical approaches, and how some of them become dominant above the rest. Finally, we discuss if we can speak about a European Environmental Psychology, and which development that can be foreseen.
2. PROCESS AND DEVELOPMENT

In graph 1 there is an outline of different types of analysis that have been carried out as well as their articulation and sources. Even through the apparent structure of the graph gives an impression of centrality to the concept of "Invisible Colleges", (that it has on its own, since it requires the analyses of the whole) our interest does not exhaust itself in this because we also emphasize a partial analyses, that we consider will contribute interesting data to the scientific community that works in this area.

In the first place (following the order of appearance throughout the fourteen chapters of this work and also its order of realization) we have the development of E.P. in different European cultural areas. It is a study carried out from the collected data obtained from direct interviews with recognized professionals and visits to institutions. Apart from this, in those cultural areas that are most inaccessible to us, we have had the opportunity of being able to count on some published and unpublished reports. Besides studying the socio-historical context of the appearance of the disciplinary fields of interest, and the most productive authors, we have been able to examine the dominant nuclei recognized by eminent professionals, that permitted us to establish, together with other indicators that derive from scientific collaboration, the principal nuclei of power. At the same time, we have been able to detect some of the first groups of authors that meet the conditions of the "Historical Classics" and "Functional Classics" parting from the explicit recognition of the eminent professionals.

The four levels of the remaining analysis, the productivity, the thematic and the geographical analysis, and the one dealing with quotations derive as a whole from the same source.

To approach these analyses we have offered, in the first place, an itemised study of each conference, considering the social and institutional circumstances of each meeting. Then, we have centred ourselves on the analyses of the productivity constituted by the source of data of the items that have been exposed. From there, what has appeared are the most productive authors and scientific collaboration.

The impact of the works presented in the mentioned conferences is analysed through the references made to them in subsequent conferences, whereas their impact on the international community is measured by their presence in the Social Science Citation Index.

In the analysis of geographical structure we have considered scientific collaboration according to the origin of authors, the thematic interest concerning cultural area, and the authors' origins and quotations. All of this is also centred on the departing point of bibliometric analysis.

In the analysis of quotations we can detect which are the most "visible" authors. This permits us to identify the authors that constitute the historical source of the discipline, that is to
say, a second approach to those who fulfill the role of historical and functional classics. Finally, with the analysis of the common citations and mutual references between the most outstanding authors, we complete the diagram and are now able to analyse the common influences received. Parting from the second level of analysis, known as collaborations, social recognitions and mutual influences, and a functions of geographical variables, we have been able to draw the principal "Invisible Colleges" in Europe. Up to this point what we have attempted to do is to outline the process followed to reach our objectives. We will now attempt to synthesize the results.

Sources: Interviews and Bibliometric Analysis

Graph 1
SCHEMATIC SYNOPSIS OF THIS STUDY

315
3.- CONTEXT IN WHICH ENVIRONMENTAL PSYCHOLOGY APPEARED IN EUROPE

3.1.- The First Birth
In our work we expound and emphasize repeatedly how we must understand the actual situation parting from the seeds that were sown in the beginning of the century and that were interrupted and disseminated by the effect of the World Wars. Hellpach published in 1911 the "Geopsycbe" and in 1924 "Psychologie der umwelt". Besides this author, one must consider the names of the Muchow brothers, with studies on Vital Space of Urban Children (1935), developing the idea of vital space, which with different tones had an ample diffusion in its epoch. One must also take into account the works by Maria Jahoda, Sombart, Thurnwald, Simmel, and Gestalt itself and the impregnations of psychological and social contents of the Bauhaus. It's difficult to understand Lewin or Brunswik outside this context in their training.
Other areas such as French anthropology and ethnology, Le Corbusier's approach, the thoughts of Ortega y Gasset and Eugenio D'Ors, the architectonic vanguard groups, etc. will also receive the influence of this German period, though they will not return openly rooted in psychology. World War II will cause practically the total disappearance of this field of interest, due to the origin of some of these authors, and the ideological attachment of others. A field that in the rest of Europe has influenced the other social sciences more than psychology.

3.2.- The Second Birth
It will not be until the changing period that we have referred to before (at the end of the fifties and the sixties) that the needed and sufficient intellectual and social factors will converge so that there is a new emergence of this field of interest.
The optimism shown towards progress, economic growth, profound changes in the structure of production, and the urban concentration in cities in full reconstruction, will pose great problems to architects, technicians and city planners, which will cause them to find answers in the social sciences.
At this time, psychology will live a period of crisis in its paradigms that will permit to retake the internal process of knowledge, the revalorization of genetic epistemology and the slow but increasing recovery of the phenomenology within psychology.
In this context, the first studies of Man-Environment (M-E) begin in different geographical areas, parallel, though in an independent manner. In 1954 we find the first studies of Terence Lee, from social psychology in U.K., without a conscious thought of doing E.P.; the first works of the swedish architect Nesselgren; the socio-anthropological works of P.H. Chombart de Lauwe and the urban sociology of Lefebvre in France; or some isolated studies by Siguan in Spain. Already in the sixties the studies about specific environments were guided towards improving the functional level of the urban habitat and the work environment, for a better and greater productivity with a technocratic background.
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US=USA; UK=Gran Bretanya; F=A.Francófona; S=Suècia i Escandinàvia; A=A.A.Germànica; E=Àrea hispànica; G=Grècia.

### Taula 2
Autors més visibles en el conjunt de les conferències segons l'IVM de Platt.

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### Taula 3
Autors citats més visibles a Europa segons l'IVM.

### Taula 4
Autors més visibles a les conferències ponderant el país (Inclou USA) segons l'IVM.

#### Modified Visibility Index (IVM)
We define visibility by the degree of familiarity of some authors or works in the scientific community. This is measured by the amount of times that they are quoted which is used as an impact indicator (Garfield 1979). Platt (1969) suggested an index value of visibility the logarithm of the number of quotes received given that the visibility rises more slowly than the number of quotes. The modification that we have introduced as IVM eliminates self-quotes, controls the total number of authors that emit the quotes, and the number of publications from the quotes are issued (also without self-quotes). The final equivalence is:

$$\text{IVM} = \log_{10}\left(\frac{\text{logn.quotes} \times n.quoters \times n.works \text{ which produce quotes}}{3}\right)$$
In this context the first encounters and symposiums appeared, such as the British (1963, 1967) or the Swedish (1968). In them one sees the fruits of that first German Environmental Psychology labour, and we can even find the participation of some of the survivors of the diaspora, such as Marie Jahoda (Lee 1984). Even though it has not been recognized in a conscious manner, even today. The convergence of interest between different disciplines goes on shaping a common space, with hinges between them, that will attain their own specificity, acquiring a progressive level of social, institutional and academic recognition, though it is a difficult discipline to classify.

4.- INVISIBLE COLLEGES AS A NUCLEI OF POWER

In our work we found three key indicators to design the final relationship of the two Invisible Colleges (I.C.). They appeared to be: Institutional Collaboration, Quotation and co-quotation (eminents) and collaboration in the signing of the works. In graph 4, the relationship between the authors is presented and it is shown the way in which it shapes the I.C. of the E.P. that manifest themselves through the IAPS conferences. Only the authors who have participated actively in the conferences appear. The quotations that are made favouring the secondary authors only appear when referring to authors from the thirty outstanding ones, to simplify the complexity of the graph. The results of these analysis is the emergence of two I.C.:

- The College of Surrey, with David Canter at its head, appears to be strong and consolidated. It retains abundant power influences, has well founded training programmes, possesses means of communication like books and magazines, and has been present (generally in the organization) of more than half of IAPS conferences. It has an important structural influence in all of Europe.

- The Centre European College (Strasbourg, Lausanne, Heidelberg) is younger. Emerging from phenomenological tradition it disposes of a few influences up to now, even though from 1984 it held the presidency of IAPS through G. Barbey. It has many training programmes that were less powerful institutionally than Surrey.

In conclusion, these two nucleuses are defined as power structures within the organization that shapes the scientific community and that expresses itself through the IAPS conferences, with two theoretically distinctive perspectives.

5.- DOES A EUROPEAN ENVIRONMENTAL PSYCHOLOGY EXIST?

In the light of our data derived from the different sources analyzed, we must conclude with an announced response: No. But a no with its particular nuances.
The E.P. that has developed in Europa has: a) An infrastructure of its own scientific organization; b) some formal and informal communication channels; c) its own history. In the sense of social organization of science we can say that E.P. in Europe has its own identity, with its own Invisible Colleges. Therefore the intellectual dependency of American pioneers and their constructs, explained by a strength that is alien to the same dynamic of the ideas, together with the context of the relationship between social forces and power structures, especially in what concerns the channels of communication, have the power to dilute its potencial identity. It also integrates it in a distinctive manner in the western community, with a "hauling machine" located or centred in the United States. On the other hand, the numerous perspectives, sources and denominations that shape this field constitute the richness of its approach but at the same time has the power of drowing its possible identity.

Complect study published in:

Barcelona, Editorial Anthropos

Main Sources


Residential environments
RESIDENT PARTICIPATION IN NEIGHBORHOOD PROGRAMS: SOME ISSUES TO BE RESOLVED

ABSTRACT

Resident participation has been a central aspect of neighborhood rehabilitation programs around the world in the last three decades. A number of general issues regarding the principle of participation and its functioning within this context, can be identified. Two such issues are addressed in this paper: (1) Representative vs. direct participation. Can anyone represent anyone else? Does one need to participate oneself in order to benefit? (2) Which is more important - the process of participation or its product/outcome? Results of a four year comprehensive evaluation study of Israel's Project Renewal are the main context for discussion of these issues.

INTRODUCTION

Resident participation has been one of the most controversial aspects of neighborhood rehabilitation programs since the 1960's. It has also been one of the most misunderstood. There are many reasons for this: in part it is due to the fact that the complexity of the concept is not sufficiently acknowledged (Rosener, 1978); in part to the fact that the idea of participation is bedeviled by implicit, unrealistic and conflicting expectations (Kweit & Kweit, 1981); and, in part, to the fact that participation has implications for the relative distribution of resources and power - an extremely sensitive subject.

A further complicating factor is that participation is of interest in many different fields: political science, public administration, planning, architecture, environment-behavior studies, community work and industrial relations. As a result there is no common definition for the term and no common conceptual framework.

The definition of participation that will be used here is a modification of Wandersman's (1984) definition: Participation exists when individuals, who are not elected or appointed officials of agencies or of governments, take part in decision making in the institutions, programs and/or environments that affect them. We distinguish between involvement, used to denote the initiatives and actions of the authorities, and participation, to denote the activities of the residents.
Susskind and Elliott (1983) summarize the trends present in many countries that led to the prominence of participation as an issue, in their statement: "For advocates of participation, citizen involvement in government decision making is synonymous with 1) democratization of choices involving resource allocation, 2) decentralization of service systems management, 3) depersonalization of bureaucratic judgments that affect the lives of residents, and 4) demystification of design and investment decisions". (p. 3)

A comparative analysis of Israel's Project Renewal and documented experiences of government-mandated, neighborhood programs around the world was undertaken (Churchman, 1987). This showed, that despite great differences in the context and specific details of the programs and the resident involvement process, there are similarities in the general trends, as well as in the broad issues that arise. Variability exists within and between countries, but the phenomenon of resident participation in neighborhood rehabilitation seems to have a basic structure that is expressed in different elaborations and emphases, while still retaining its essential core.

The purpose of this paper is to discuss some of the broad issues arising from the experience with resident participation. It is our contention that Project Renewal, as any other program, both is and is not a special case, and, thus, can be used as a context for discussing these issues.

THE PROJECT RENEWAL STUDY

A four year comprehensive evaluation study of Project Renewal, Israel's large-scale, comprehensive, neighborhood rehabilitation program was conducted in ten neighborhoods varying in geographic location, size and length of time in the program (1). Each neighborhood was assigned a field investigator, who gathered data over the course of two years (1982-1984). Methods used for gathering data on resident participation were: participant observation in meetings and events, structured and semi-structured interviews, informal contacts with local informants, and directed data collection. Individual, structured interviews were conducted with 71 representatives of governmental authorities active in the neighborhoods. Information on resident attitudes was gathered in a household survey conducted in nine of the neighborhoods by an independent survey organization. A random sample of 150 residents and a smaller sample of active residents were interviewed in each neighborhood. The discussion in this paper is based upon information obtained from all of these different sources.

Both the research and the comparative literature survey were guided by a theoretical framework developed by Alterman, Churchman and Law-Yone (1981). The framework identifies six dimensions for describing, planning and evaluating resident involvement. The data
gathered in the study related to those six dimensions, namely: (1) the situational context and the subject domain within which participation takes place; (2) The goals of involvement and participation; (3) The definition of the "public" participating; (4) The power relationship between decision makers and residents; (5) The stages in the decision making process where participation occurs; (6) The types and amounts of resources invested in involvement and participation.

How residents participated in Project Renewal
According to Project Renewal regulations, resident representatives were to participate in all of the neighborhood institutional frameworks set up by the Project: The Steering Committee, the subcommittees, the Project administration, and the local Jewish Agency corporation. Initially there were no guidelines as to the nature or number of this representation. After 1981, guidelines determined that the residents were to comprise 50% of the 22 member steering committee, and were to serve as chairs of the subcommittees. On the whole, these guidelines were observed in the research neighborhoods. However, since no uniform system for choosing the representatives was set up, different methods were used in different places.

The pattern of involvement set up by the regulations was a minimal demand that neither necessitated nor prevented a wider involvement of residents. In practice, this became the maximum pattern in most cases, and other residents had almost no opportunity to take part in the decision making process on the public level. However, other residents did participate in more localized area, street, and building committees, or in special issue committees, or in one-time special seminars or planning days. The total number of such participants in a given neighborhood ranged from about 40 to 400.

To varying extents, the active residents were able to exert influence: by defining the problems and goals of the neighborhood plans, by initiating programs, by supporting, modifying or rejecting plans initiated by others, by influencing the speed and timing of implementation; by pressuring for changes in the Project's administrative procedures, and by influencing the choice of staff.

An important achievement of Project Renewal was the creation of a process unique in the State of Israel: public decision making in which rank and file residents were involved by virtue of right, and in a proportion that afforded them some influence. Although the residents did not succeed in realizing all of this potential, the very existence of such a possibility represents a revolutionary change and considerable achievement.
ISSUES IN RESIDENT PARTICIPATION

Among the general issues in resident participation that can be identified are the following four:

1. Representative vs direct participation - Can anyone represent anyone else? Does one need to participate oneself in order to benefit?
2. Which is more important - the process of participation or its product/outcome?
3. Does mandated, government-inspired participation necessarily lead to cooptation and prevent radical change? Can residents obtain power in such a situation?
4. Are all aspects and levels of planning/decision making appropriate for resident participation?

Due to space limitations, this paper will deal only with the first two issues, and will examine what light our research on Project Renewal can shed on them.

The issue of representation
The first issue relates to the dimension of the definition of the public participating in the process. It asks can anyone represent anyone else. If we take Pitkin's (1967) analysis of the aspects of representation, the answer is that in some or all of the ways, some individuals can represent others: (1) whether formally because they have been elected or appointed; or (2) because they are like their constituency in demographic, attitudinal and/or behavioral characteristics; or (3) symbolically because the representative is an object of identification by the others; or (4) substantively when the representatives act in the interests of their constituency.

In Project Renewal, and in most other cases, there were problems of legitimacy of representation in terms of all four of these aspects. For example, elections held to choose the residents' representatives were not always successful, as levels of participation were low. In the Community Action Program, percentages ranged from 1%-16% (Rapserson & Breitbart, 1974). The range in the Model Cities Program—from 10%-25% (coincidentally the same in Project Renewal), was more encouraging (Frieden & Kaplan, 1975).

Descriptive representation in Project Renewal was mixed. The active residents were similar to the non-active residents in ethnic origin, type of housing, housing tenure and length of residence; but significantly different in sex, age, and socio-economic status. On the other hand, no differences were found between them in attitudes toward the neighborhood. Most writers
argue that the representatives in the U.S. programs were, on the whole, on a relatively higher socio-economic level (Cole, 1974; Kasper & Breibtart, 1974). In Holland, there were many instances of underrepresentation of minority groups (Godschalk & Zeisel, 1983).

The symbolic and substantive aspects of representation are much more difficult to examine, and most research (including ours) has not done so directly. The indirect indications which can be gleaned suggest that in most programs these have been problematic. There are only a few instances where the representatives were able to present themselves as accurately representing the views of the residents as a whole (May, 1973; Draisin, 1983; Harris, 1984).

However, above and beyond the procedural question as to whether or not representation has been attained, there is another interesting question: Can the various goals of involvement and participation be achieved by representation, or does one need to participate oneself in order to benefit?

The six higher order goals identified in our framework are:
1. To further democratic values
2. To achieve planning attuned to the preferences of different groups
3. To educate the public
4. To bring about social and/or personal change
5. To build support and legitimacy for planning
6. To bring about political change

It appears that in principle, at least, all of these goals can be achieved for those individuals who actively participate themselves. In practice, in Project Renewal, many of the lower-order goals associated with these broad goals were indeed accomplished for the relatively small number of active residents. Thus, we are able to report that those residents who were able to be part of the decision making process: had some degree of authority, were able to express their needs and preferences, learned about planning and how to use the system, became more active in the community, attained leadership positions and recognition, improved their self confidence and self image, supported the Project and achieved a certain amount of non-radical, political change.

However, aside from the aspect of increased democracy through representation, little was accomplished for residents who were not active in the participation process. There was some direct benefit through the increase in community activity, and through the help given to others by the active residents. Indirect benefits may have resulted, or may result in the future, from the education and personal change among the leadership, if they continue being active and working to improve the neighborhood. In theory, at least, if the representation is substantively good, then Goal 2 of bringing about a greater level of congruence between needs and plans, could
also be achieved for the residents as a whole. And, indeed, those residents in our study who felt represented were more positive than those who did not, in their evaluation of the improvements accomplished by the Project's activities ($\gamma=.42$). The goal of building support for the Project was achieved to a greater extent among the active residents than among the non-active residents.

Thus, on the whole, it seems clear that one benefits most, and in some ways only, through direct participation. This conclusion clearly has implications for the structure of the involvement process to be initiated, and for the participatory techniques to be used. Our results indicate that it is possible to expand the circle of active residents at least on a short term basis, and thus to increase the number of people benefiting from participation. Much more could have been done in this direction in Project Renewal, as well as in all of the programs reviewed.

This does not mean that a process based only upon representation is inadvisable or worthless. It does mean that it is limited in the goals that it can achieve. Nevertheless, it can be the beginning of an extended, evolutionary process; wherein individual residents and involving officials and professionals change their attitudes. This, in turn, may in the long run have an effect upon the other residents. In Israel's case, despite the problems with resident representation, decisions about local matters will probably never totally revert back to the remote mode of decision making that was common previously.

The issue of process vs product
This issue relates to the goals of involvement and participation, and asks whether process or product goals of participation are the more important to focus on. Goal 2 (planning attuned to the preferences of different groups) is clearly a product-oriented goal, and Goal 5 (building support and legitimacy for planning) is somewhat so. Their main concern is with the content of the decisions taken within the context of the program. The other goals are process-oriented, concerning themselves with how these decisions are arrived at. Professionals from various disciplines tend to deem one or the other type of goal as more central. Planners and architects tend to focus on Goal 2 and public administrators on Goal 5 - both product goals. Political scientists focus on the furthering of democratic values (Goal 1) and on education (Goal 3), and community workers and psychologists on social and individual change (Goal 4) - all process goals.

In all likelihood, the product is the most important focus from the point of view of the residents. Cole's (1974) results suggest this, as do some of the Project Renewal results. For example, when asked to rate the three most important things that Project Renewal should do in their neighborhood, the choice of "more power to the residents so they can make decisions about the neighborhood" was ranked sixth by the active residents and tenth (or last) by the non-active residents, relative to choices like improving housing or education.
Thus, one way of dealing with the issue raised in this section would be to say that the one you emphasize depends upon who you are, and there is no one answer. However, the experience in Project Renewal suggests that it may be possible to posit the primacy of the process in more general terms.

There is no doubt that the decision-making process within the Project was affected by the involvement of the residents, and was different than it would have been without their participation. The residents also had an effect on various spheres of the Project's activities, and were able at times to promote issues that were important to them. However, there were limits placed on the type of decisions open to them, and in many instances they tended to go along with professional opinions. As a consequence, the basic approach to the neighborhoods' problems was essentially determined by the authorities. The residents' influence expressed itself mainly in the specific details and emphasis given within the context of the basic approach (2). Nevertheless, most of the active residents (between 60-78%) felt that they had had an opportunity to influence the Project's decisions; and those who felt this way were more likely than other residents to have a favorable opinion of the Project. This, then, argues for the relative importance of the process.

On the other hand, in view of our conclusion with regard to the representation issue, which indicated that most of the goals are achieved only for those who actually participate, one could argue that since the process affects only the small group of active residents, the more important factor is the product that has the potential for affecting more people.

However, we do not have well-defined, objective criteria for evaluating whether the environment or situation that results from a participatory process is better or worse than one that results from a non-participatory process. We do not have controlled comparisons; nor are we likely to ever have them. Vonk (1983) argues that in larger urban terms, the product of a participatory neighborhood process may not be better than a wholly professional process. Godschalk and Zeisel (1983) might counter that this determination would depend on whether you use the criteria of the people affected by the program, or of outside critics.

We are, thus, forced to rely upon subjective criteria and to base our evaluation of the product on the residents' evaluation of it. In doing so, we find that these evaluations are not independent of the process by which the product was achieved. Wandersman's (1979) experimental results indicated that satisfaction with the environment was higher in the groups where there was at least some form of participation (self-planning or choice between alternatives). This suggests that satisfaction is not a direct function of the quality of the environment, but is also related to feelings of competence and control. Not only did the active residents in our study see Project Renewal as contributing more to the
neighborhood; but, so too did those non-active residents who perceived themselves as having had some opportunity to affect decisions at some level.

The process of participation thus appears to be critical also for the achievement of a product-oriented goal. The conclusion seems inescapable that the more important focus is the participation process. This is not to say that the product is unimportant. Clearly, Draizen's (1983) point that for a program to be considered effective it must attain concrete results, is well taken. However, the point being made here is that with regard to the success of the participation aspect of the program, the residents may not necessarily have to make a major impact upon the nature of those results. In neighborhood rehabilitation programs that usually set broad goals for long-term change in people's attitudes and behaviors, the process may be the critical factor.

CONCLUSION

The preceding discussion has illustrated some of the complexities of resident participation. The evaluation of its functioning is thus, by necessity, complex and multidimensional and unable to yield unequivocal conclusions. Because resident participation is such a value-laden concept, the answers to many of the issues that arise are often based upon values and ideological positions. It is therefore, extremely important that attempts be made to learn more about the factors that affect the manner in which participation functions. This will enable a more reasoned and systematic evaluation of the principle.

FOOTNOTES


(2) Similar results appear to characterize programs in other countries. (See Rakodi, 1983; Armistead, Fainshtein & Fainstein, 1980; Wooley, 1985).

REFERENCES


Considerable theoretical and empirical research has been conducted on the experience of bonds between people and the tangible surroundings of home place. These bonds have been described as attachment to or rootedness in place as well as home place as an integral aspect of the development and expression of personal and group identity. Yet many of these same scholars have expressed concern over the growing rupture between people and places in American society. This research reports on interviews with residents of the Denver metropolitan area that suggest that mobile Americans may not necessarily consider themselves as rootless; rather, the experience of people-place bonds may generalize to the experience of psychological bonds with a type of settlement.

INTRODUCTION

The importance of home place - the dwelling and neighborhood environs beyond - is grounded in the fundamental requirements of survival. Whether remaining in one place throughout a lifetime or through nomadic patterns of spatial movements, people establish a home base(s) to provide food, shelter and security. Yet, throughout recorded history, the significance of the home place has been observed to exceed the necessities of functional and material support (Csikszentmihalyi & Rochberg-Halton, 1981; Tuan, 1977). People become bound to home places in ways that cannot be explained solely by the environment's utility to meet biological needs for survival.

Theories and empirical observations of people's bonds with home places are found in several independent lines of inquiry including the sociological and psychological analysis of community attachment (Gans, 1962; Fried, 1963; Keller, 1968); the phenomenological perspective on rootedness in place (Buttimer, 1980; Relph, 1976; Seamon, 1979; Tuan, 1977; 1980); and the multi-disciplinary investigations of home place as an integral aspect of the development and expression of self- and group-identity (Cooper, 1974; Duncan, 1981; Proshansky, Fabian & Kaminoff, 1983; Schorr 1970). Despite the use of different conceptual and theoretical underpinnings and varying terminology and definitions of home place, similar and interrelated propositions about the function and development of people-place bonds are threaded through this literature. For virtually all these researchers(1), the formation of
psychological bonds with a geographic location(s) is explained by long-term, focused involvement in a residential setting. It is through purposeful 'concentration' of the multiple routines of daily life in one location that home place is distinguished from its surrounds and endowed with significance and meaning. Home place becomes an enduring, tangible symbol of the individual and social self, of the continuity of one's experiences, and of that which is valued by the inhabitants.

Yet, many of these same scholars as well as other investigators of community life have expressed considerable concern over the growing rupture between people and places in contemporary American society (e.g. Buttimer, 1980; Relph, 1976; Seamon, 1979; Tuan, 1980; literature reviewed in Fischer et al., 1977; Keller, 1968). North Americans are likened to a "new race of nomads" (Toffler, 1970), a highly mobile population passing through a no-man's land, unconnected with their neighbors, local activities, and physical settings. The scale and rapidity of environmental change, the professional and bureaucratic institutions that govern housing design, development and management, and the commoditization of the house also have been cited as contributing inhibiting factors (Dovey, 1985).

This research reports on interviews with residents of the Denver metropolitan area that suggest that mobile Americans do not necessarily consider themselves rootless. Rather, this study cites evidence that mobile Americans may develop psychological bonds with a type of settlement; that is, a deeply felt relatedness with the tangible surrounds of home place may generalize to psychological bonds with an abstract conception of type of place.

First, a brief review of the empirical evidence of the experience of people's bonds with actual home places will be presented, followed by a description of the interview findings.

THE EXPERIENCE OF PEOPLE-HOME PLACE BONDS

People-home place bonds have been conceptualized as a taken-for-granted, unselfconscious experience of relatedness to the tangible surrounds of home place. Empirical evidence of people-home place bonds, however, have been observed in awareness in the interview context as well as when home place is threatened with unwanted loss or change. In addition to behavioral indications (e.g. long term residence), several themes may be gleaned from this evidence (Csikszentmihalyi & Rochberg-Halton, 1981; Fried, 1963; Gans, 1962; Saarinen, 1966; Seamon, 1979; investigations reviewed in Altman & Chemers, 1980; Buttimer, 1980; Keller, 1968; Relph, 1976; Schorr, 1970; Tuan, 1977); they include:

- intentions to remain in one's home place;
- a sense of embeddedness, of belonging in, being part of, and feeling at home in the residential environs;
- a sense of community, of being involved with and tied to a geographically based social group;
- at-ease in place, a sense of being unconstrained and comfortable in a familiar place;
- centeredness in home place, a focal point of one's experiential space, a point of departure and return;
- unselconscious bodily orientation and routines in the familiar spatio-temporal order of home place;
- a belief in the uniqueness of one's home locale, a place which is unequalled and irreplaceable;
- appropriation of place, perceived or actual possession and/or control over place;
- care and concern, a sense of responsibility and commitment to continue to attend to and tend for a home place;
- unity of identities of person and place, a joining of the identity of self and referent group(s) to the physical setting of past, present, and future residential environs.

Unwanted loss of place has been observed to trigger strong negative affective reactions as well as the experience of a fragmentation of one's personal and group identities (Fried, 1963; investigations reviewed in Relph, 1976; Schorr, 1970).

THE EXPERIENCE OF PSYCHOLOGICAL BONDS WITH TYPES OF SETTLEMENTS

Thirty-seven people working in downtown Denver(2) were interviewed as part of a larger study of the meaning of the city/suburb distinction from the viewpoint of the inhabitants.(3) The interviewees were asked to describe the "distinctions between types of places" in the Denver metropolitan area, their past and present residential experiences and their future locational aspirations. The interviewees' responses to the focused questions were content analyzed independently by two researchers. All findings reported below reflect 100% agreement. Twenty-five participants lived in the city of Denver (10 in or near downtown, 15 in outer city areas), 11 in the suburbs, and one in another city. The majority of interviewees were residually mobile: Seventy percent had moved at least once in the past five years, and approximately 50% expressed desires or plans to move in the near future. (See Table 1.)

The interviewees' descriptions of the distinguishing characteristics of types of places in the Denver metropolitan area were similar to findings from past empirical studies conducted in other major North American cities. Interviewees commented on the positive and negative attributes of types of settlements most typically noting distinctions between in and near downtown, city neighborhoods, and suburban communities. (See Saegert & Feldman, 1981 for a full report of the findings.) Yet, for the vast majority of interviewees (N=26; 70%), their comments could not be characterized solely as a listing of discriminating attributes of
Table 1. Frequencies of Indicators of Psychological Bonds with Types of Settlements

<table>
<thead>
<tr>
<th>Bonds with a Type of Settlement Specific</th>
<th>City (N=20)</th>
<th>Suburb (N=6)</th>
<th>Locale (N=2)</th>
<th>None (N=9)</th>
<th>Total (N=37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Background</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only City</td>
<td>9</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Only Suburbs</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Varied</td>
<td>11</td>
<td>3</td>
<td>-</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Past/Future Mobility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moved in Past Five Years</td>
<td>13</td>
<td>5</td>
<td>1</td>
<td>8</td>
<td>27</td>
</tr>
<tr>
<td>Plans/Desires to Move</td>
<td>11</td>
<td>4</td>
<td>-</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Indicators of Bonds with Settlement/Home Place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committed to Residence</td>
<td>20</td>
<td>6</td>
<td>2</td>
<td>-</td>
<td>28</td>
</tr>
<tr>
<td>Uniqueness</td>
<td>20</td>
<td>6</td>
<td>2</td>
<td>-</td>
<td>28</td>
</tr>
<tr>
<td>Opportunities for Community</td>
<td>4</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Care and Concern</td>
<td>9</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Familiarity</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Unity of Identities</td>
<td>19</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>Other Settlements Ego-Alien</td>
<td>12</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>17</td>
</tr>
<tr>
<td>Devel./Change of Identity</td>
<td>6</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>6</td>
</tr>
</tbody>
</table>

Types of settlements. Threaded through their comments were multiple indications of a deeply felt relatedness to either city or suburban residence. (See Table 1.) Irrespective of their desire or plans to move to another dwelling or community, all of these interviewees expressed a strong commitment to maintain their place of residence either in the city (N=20) or the suburbs (N=6) of Denver or another major metropolitan area. They all viewed city or suburban settlements as unique types of residential settings, readily distinguished from other types of settlements; an irreplaceable residential option. In fact, considerable concern was expressed, in particular by committed inner city residents, that the ongoing gentrification of downtown might force them to relocate beyond the center of the city.

Familiarity with residence in a city or suburban locale contributed to respondents' desires or plans to maintain their place of residence only in that type of settlement. All respondents committed to residence in a type of settlement either presently lived in that type of residence or were temporarily displaced; approximately 50% had only lived in that type of settlement. Over a third of these respondents (N=9; 35%) attribute the desire or plans to maintain their place of residence in only in a city or suburban community to familiarity.
Virtually all of the respondents (N=24; 92%) who were committed to residence in only one type of settlement also indicated a tie between city or suburban residence and their personal, household, and/or work identities, as well as their role in society. Several interviewees (N=7) made explicit statements indicating a unity of identities:

- "I am a city person."
- "We are a suburban type family."

Active engagement with the diversity and density of city settlements was viewed as requisite support for the committed city dwellers' self conceptions. They were "cosmopolites" or urban "pioneers" whose identities were tied to the challenge, enrichment and stimulation they believed was found only in the city. Several committed city neighborhood interviewees (N=8) also expressed the desire, in fact the obligation to confront city disorder for the "sake of city survival" and the very "survival of American society." This meant learning to cope with the socio-physical diversity and unpredictability of a city community; assuming the obligation to live in and improve a "down and out neighborhood"; and for others, their employment status facilitated knowledge of and involvement in fostering Denver city life. There also were a number of parents (N=6) who believed that city residence promoted their children's personal development by teaching them to "cope with life with all its diversity." There were several committed city dwellers (N=5) for whom a full realization of their bonds was hampered because of the inability of Denver to match up to their prototypic conceptions of "a real city." In fact, as a consequence they expressed the desire to move to another city that better matched their prototypic exemplar (e.g. New York City, San Francisco).

Committed suburban dwellers' (N=6) comments also revealed other indications of bonds with suburban residence. The peace, tranquillity and privacy afforded by suburban living, the homogeneous population in which residents "are like me," the distance from the unpredictable and "stressful" city, and the opportunity to "own one's own house and one's own property" were associated with their conceptions of self and family. The ability to regulate and limit social interaction with the community beyond their individual households was clearly ego-supportive. Furthermore, as observed in past research (Duncan, 1981), owning "one's own home" was valued not only for the social control it afforded but also because it served as an tangible sign of one's individuality.

Residence in a city or suburban community not only served to reflect interviewees' self conceptions, it also served as a means to change one's self identity. One woman's comments were particularly illustrative. Living much of her adult life as a suburban housewife and mother, this woman moved to downtown following a divorce and her children leaving home. She viewed her move from the suburbs to the inner city as a means to change and reaffirm
her new self conception:
-"I am a city person. Living downtown fits the new me."

Integral to interviewees' expressions of a unity of identity of self and a type of settlement were expressions of not identifying self with other types of residential settings. Most committed suburban (N=5; 83%) and city dwellers (N=12; 60%) stated that city and suburban residence respectively was ego-alien:
-"I can't imagine myself living in the suburbs. I'm not that kind of a person.
-"I'm not a city person. We are private people. We are a suburban-type family."
Several interviewees (N=5) expressed an alienation from their childhood home place, seeking adult residence in alternative types of settlements.

It is noteworthy that some previously observed indicators of people's bonds with the tangible surrounds of home place were not apparent in the interviews. Unlike a tangible home place, it is not possible to be embedded in, to experience bodily orientation, nor appropriate an abstraction; nor is it likely that people would experience an abstract conception as a focal point of experiential space. There also were no respondents who expressed a sense of community when describing a type of settlement. There were, however, several committed city dwellers (N=4) that did note the opportunity for developing a sense of community afforded by city neighborhoods.

Twenty-four percent of respondents (N=9) specifically stated that they were not bound to any type of locale. Not surprisingly, virtually all of these interviewees were residentially mobile in the past and anticipated future. In fact, these respondents were more likely to express plans to move in the future (N=7; 77%) than respondents expressing bonds with types of settlements (N=15; 58%). All of the uncommitted respondents had varied residential histories. Among these interviewees, most (N=7) made few distinctions between the city and suburbs. These individuals stressed the trade-offs between different attributes of locations when discussing the choice of their present place of residence and where they might move next. They were satisfied with their current place of residence but expressed a willingness to move if they could, for example, "find a better house for the money." The other two uncommitted interviewees stated that their "ideas about themselves," their future lifestyle, as well as housing were changeable; they were "open to all types" of residential experiences. An indifferent attitude toward a tangible home place has been observed by researchers in the problem area of people-place bonds (Fried, 1963; Relph, 1976; Tuan, 1977; 1980). They have found that although people may express favorable assessments of their actual home environs, they may not have a commitment to remaining in their place of residence. An indifferent experience of home place is "at best backgrounds to activities." (p. 51, Relph, 1976).

Lastly, there were two interviewees who were bound to their
specific home locales. They expressed multiple indications of ties to the tangible surrounds of their dwelling and/or community including the desire to remain in their present place of residence (see Table 1). One interviewee was bound to his childhood ethnic neighborhood, the other to the sector of the city in which she had "always lived."

CONCLUSIONS

Thus, despite residential mobility in the past as well as anticipated future, most interviewees in this investigation did not conceive of the Denver metropolitan area as a placeless realm. The vast majority of respondents did not consider themselves as unconnected nor unattached to the metropolitan landscape. To the contrary, these respondents indicated that they identified themselves with a type of settlement, either city suburban, and they intended to maintain their place of residence in this type of settlement.

Past theoretical and empirical research on people-place bonds has placed emphasis on connectedness with the tangible surrounds of a specific home place. This investigation has cited evidence of an experience of psychological bonds with place that transcend geographic space; that is, psychological bonds with tangible home places may generalize to bonds with types of settlements. This research suggests one means by which psychological bonds with home places may be maintained despite residentially mobility. Psychological bonds with a type of settlement allow for fluidity yet continuity of ties with residential environs when residentially mobile. It is possible that identifying oneself with a type of settlement may be more characteristic of the experience of psychological bonds with residential settings than rootedness in tangible home places in contemporary American society. Other research gives indirect evidence in support of this hypothesis. Fischer and Steuve (1976) have observed that although one out of every five U. S. households change residence each year, these changes of residence are most often adjustments in dwelling unit, with most moves quite short (i.e. within five miles). Only a small segment of the population (i.e. armed forces personnel, students, corporate executives) typically move longer distances. Birch and his colleagues (Birch, Brown, Coleman, Da Lomba, Parsons, Sharpe, & Weber, 1977) in their investigation of mobility behavior in the United States, found that among long distance movers, most attempted to find a new place of residence that was similar to their past home.

This study does not intend to be conclusive; rather it intends to be suggestive of a new direction of inquiry. The sample size was
small, and unrepresentative of the North American public. The findings, however, do provide ample evidence to warrant further investigation of the potential similarities as well as differences in the experience of psychological bonds with tangible surrounds compared with types of settlements.

NOTES

1. All researchers have agreed on the development of people-home place bonds with one exception: Clare Cooper (1974) who draws on Jungian theory to argue that people use the material form of the dwelling to make manifest the most basic archetype of the human unconscious, the self.

2. One person out of the thirty-seven lived but did not work in downtown. She was a housewife who lived in downtown and whose husband worked in downtown.

3. This report was drawn from a thesis in partial fulfillment of the requirements of a Ph.D., City University of New York, 1986. The data for this investigation was collected as part of a larger study designed to assess the feasibility of future downtown development in Denver, Co.

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THE BARCELONA DISTRICT'S LOOK

This communication collects the results from a survey on how a number of urban functional and symbolic interventions get integrated in the cognitive schemes, in districts in the city of Barcelona lacking these kinds of elements. We evaluate how these interventions also affect the identification and social life of their inhabitants. A survey has been carried out on a sample of three hundred and forty individuals by means of a questionnaire. The results show that the contributions have had an important incidence in the cognitive schemes of the citizens, although they do not reach an identification with the district by now the are, however, integrated in the individuals the way of the look the city is intended to show.

PRESENTATION AND GOAL

The city of Barcelona, as many others, appears as a small coastal population, surrounded by a defensive wall and fields that, militarily and up to the end of the 19th century, separated a center of a population with a high rate of industrial and demographic growth from a series of small villages that had to absorb part of that growth.

The demolition of the city walls (1856) and the confinement of the military elements into "Montjuic Castle" allowed the urbanization of this wide stripe of fields to form the "Eixample", that soon takes a symbolic, social and artistic role of functional centrality comparable to that of the city center.

At the same time, those surrounding villages formally join the city, some of them as "resting sites", others as subsidiary centers of population.

Industrialization in the 1950-1960's and the arrival of immigrants are the cause of an immoderate, speculative and unplanned growth that fills the space between old centres where buildings have no common sign of identity other than being contiguous.

There are few exceptions to this urbanistic chaos. We can mention
the housings of the Eucharistic Congress, the Montbau district and some others designed on purpose as high standing areas. The recent structuration done by the Ajuntament (City Council) of Barcelona has given administrative identity to these peripheral areas and, by means of a plan of urbanistic action tries to provide them with symbolic and social identity. In the study we present, our attention will be focused in these areas. Their main characteristic is the low economic, social and symbolic level. There are many variables that cause this situation. Besides the mentioned lack of urbanistic structure—which obviously entails a lack of identity with the physical space—there are also some socioeconomic variables such as the role of "dormitory city" that these areas play, the poor development of the tertiary sector and an almost complete lack of equipment for leisure, sport and similar resources.

Barcelona's administrative district distribution. The districts studied are the checked ones.
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leisure, sport and similar resources.

Barcelona's administrative district distribution, The districts
studied are the checked ones.
The low economic standard of the average family in these areas and the little effort from Administration to provide them with better services are also important factors. Cultural aspects are also worth mentioning. The fact that people living in these districts are mostly immigrants, non-catalan speaking and with a different culture made it difficult for new generations to receive a cultural stock that could integrate them into the city of Barcelona. So, these are new districts for new people, and in many cases, for people uninterested in getting integrated into their new social environment.

On the other hand, the social structure of Barcelona has often contributed to the marginalization of some areas or population centres.

The Ajuntament of Barcelona has been accomplishing from some time ago some urbanistic works in these districts (remodelation of urban spaces, creation of new spaces) in an attempt to provide them with the symbolic elements needed to create the personality of a neighbourhood as such and to increase their internal activity at all levels, and therefore raise their economic, social and cultural level, their integration into the rest of the urban estate and the desired image of the city.

It is mandatory however to test the response of citizens to this (spectacular but polemic) new plan of action and its incidence on the psycho-social level and the structure of physical and personal space.

The goal of the present study is to establish how the actions carried out by the Ajuntament of Barcelona are integrated into the cognitive schemes of the subject and what their effect on the social life of a neighbourhood can be.

**METHODOLOGY**

As for the methodology followed, we carried out a field work mainly consisting of filling of question forms where the interest subjects are recorded:

- Personal data
- Leisure and meeting places
- Walking or resting places
- Symbolic places
- Use of tertiary services
- Geographical traits

The population, extracted from the universe of de Barcelona inhabitants, was selected by a probabilistic sampling by conglomerates-districts, in this case-. The chosen districts were Coll-Vallcarca, Clot and Nou Barris. After selecting the population, the choosing of the sample was done by another sampling, also probabilistic but random stratified, where the homogenizing variable was age, in the interval between 16 and 30. The final sample consisted of 340 individuals in the specified range of ages. The sex variable was controlled by balancing it when giving the forms to fill (50% of men and 50% of women for each
The interviewers started their field work with the "in situ" inspection of the studied districts, in order to identify the elements that were likely to be symbolic or functional, at the psycho-social, for their inhabitants. After the previous visits, the question list was worked out to reflect the elements that the subjects consider most important or significative, in any of aspects of everyday life. After all the interview data were gathered, the elements that most people consider important were identified, and a comparison was made with our "a priori" estimation.

RESULTS AND DISCUSSION

The analysis of the data extracted from the question forms can be synthetised according to four main components:

I. Degree of social integration
II. Level of services and infrastructure
III. District demarcation
IV. Incidence of the urbanistic work of the Ajuntament

I. To analyse the degree of social integration, the percentage of laboral and educational activity and the level and type of interactions during leisure time inside the district were considered as indicators. The results show that 60% of the subjects study or work outside their districts. Also, 70% of them within the district to go on leisure mainly outside the district. 75% declared that they are not able to carry out in their neighbourhood the activities they carry out somewhere else.

This analysis shows that the level of social integration is low and that the main function of the district is that of a "dormitory".

In relation terms, the district contributes to the contract among the people, but the physical view it presents it isn't the most desire. This leads us to think about which is the substructure of services the district disposes.

II. The level of infrastructure can be measured by the use and quantity of available services.

As we have seen before, 3/4 of the sample declare that they their district lacks the equipment required by their usual leisure activities.

The ordinary, everyday tertiary services available in the district itself are used by 95% of the individuals, but 65% of them go outside the district to buy other kind of temporary goods (clothing, records, books).

So, the district covers most of the primary living requirements but very few of the secondary demands of the population. Probably, if more vertebral elements of the
social life in the district existed, then it would have positive repercussions on the tertiary services and on the substructure district.

III. A fact that confirms low level of integration in these districts is the difficulty in demarcating their limits and their toponymy. Along the time, these districts have been named in 27 different ways and their borders have been extremely fuzzy. These traits indicate in themselves a reduced consolidation of the district image and the lack of vertebrating elements of a common image.

The subjects that have been able to identify their district by its present name range from 20% to 60%. The latter figure is found in a historically consolidated district, while the former in a more disperse, traditionless district, a prototype of the suburb created in the 50-60's where most of the subjects identified their closest physical space rather than the district itself. This is also the area where Ajuntament has most often intervened, and where the greatest number of basic infrastructure projects are planned, as we shall see in the next paragraph.

IV. As for the impact of the recent interventions, we can mention the following aspects:

- in order to evaluate their influence, the subjects were asked to name the spaces that they considered to be most characteristic of their neighbourhood, and those that they show a newcomer.
- a great dispersion of results was detected between districts.
- The answers tend to name the recent innovations rather than pre-existant spaces, and, in some cases, instead of very traditional ones such as the City Hall, church or market. This tendency is greatly influnced by the time elapsed since the ending of the interventions, that is, the most recent elements are named most often.
- on the other hand, the lack of symbolic elements, or the little consolidation of the recent ones explain why many people tend to include in their own district some older, more consolidated elements with greater strength or proximity, such as Gaudi's Güell Park.
- this aspect is most noticeable in the areas where tertiary activity has increased.

To sum up, contributions that tend to improve urban landscape, providing it with a functional structure, but also with great potential symbolic load, impact the cognitive schemes of the citizens, although they do not create a district identification yet; however, they help to integrate them into the intended new
image of the city. The evolution of this tendency is still to be seen.

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The home and its meaning
M. Vittoria Giuliani and Giuseppina Rullo, Istituto di Psicologia del C.N.R., Viale Marx 15, 00156 Roma - Italy

TERRITORIAL ORGANIZATION OF DOMESTIC SPACE IN DIFFERENT TYPES OF HOUSEHOLDS

ABSTRACT

The study is focused on the relationships between household role on the one hand and territorial behaviour and attitude towards one's own home on the other. It is assumed that, in contemporary society, household roles may be different from the traditional family role and that human territoriality is primarily related to the need for privacy, social interaction, and self-expression. All members of thirty households, including traditional families and two different types of alternative households, were interviewed. The results indicate that household role affects territorial behaviour and attitudes, structuring the way people interact with their homes.

INTRODUCTION

The present study sought to investigate some fundamental aspects of people-home interrelationships in modern western societies. Generally speaking, it is concerned with an analysis of social changes in dwelling needs, attitudes and behaviours and of factors which might contribute to explain the variability in present home models (Giuliani, 1987). Specifically, it is focused mainly on the study of the relations between household role and conceptualization, attitude, and behaviour towards one's own home in order to investigate individual and family differences in home models as related to current social changes.

In the relevant literature, most studies have consisted of fieldwork carried out across social subgroups (Rainwater, 1966; Laumann and House, 1970; Rakoff, 1977; Bernard and Jambu, 1978; Pratt, 1981; Giuliani, Bonnes and Werner, 1987) while the role of family structure in affecting the way people organize their domestic spaces has been investigated by only a few studies and needs to be further studied in depth (Rosenblatt and Budd, 1975; Scott, 1976; Weisner and Weibel, 1981; Horwitz and Tognoli, 1982; Tognoli and Horwitz, 1982).

In most of this research, household is identified with the traditional family, i.e. the family composed of a couple of parents and one or more children. Too little attention has been paid to the variety of family structures present in our post-modern society. In this respect, household structures differing from the
dominant reference model of the traditional family can no longer be considered anomalies but rather alternative models. The study of these situations can be useful in order to gain insight into the new trends of dwelling needs and of domestic behaviour.

In investigating such an issue, the present exploratory study has been mainly designed with reference to Sebbas and Churchmann's research (1983) concerning territorial organization of the domestic space. According to these authors, home can be defined as a territorial model, i.e. a "socio-spatial system in which each area has a clear social classification and is characterized by a particular pattern of behaviors and attitudes" (p. 191). Here, we investigate territorial models as defined by the patterns of functional activity and the behavioural types of privatization/socialization occurring in each area (room) as well as by the dwellers' attribution of possession regarding each room.

The general hypothesis underlying the research is that the way in which domestic space is experienced and represented by individuals is influenced by the role played by people in the social microstructure of the household (Canter, 1977). The household role is thus related to the patterns of relationships existing between all members of a household and consequently to their transformations which can occur during the life cycle of an individual. In the main, it seems that nowadays the family life cycle of a person does not simply coincide with the linear process of marrying-raising children-aging but may consist in a sequence of different household structures, e.g. single-member family or friendly cohabitation, married couple, single-parent family, marital cohabitation, and so forth (Bonvalet, 1986). In other words, differences in household structure and corresponding differences in conceptualization of home as well as in dwelling behaviours can be seen as a possible result of a dynamic process related to the various phases of the life cycle of a person rather than as only based on single personal characteristics (e.g. sex) or relational characteristics (such as "wife" vs. "husband" or "parent" vs. "child").

Essentially, the purpose of the whole study can be specified in four main aims concerning the following: 1) analysing the functional organization of the domestic space in different types of households in order to point out the fundamental dimensions underlying the possible differences in home models; 2) providing a description of the dwelling as a territorial unit including individual, shared, public and jurisdictional areas (with reference to Sebbas and Churchmann's classification); 3) investigating the differences of household role in the three basic components of human territoriality, that is the need for privacy, the need for social interaction, and the need to express oneself through places (Altman, 1976; Proshansky, Fabian and Kaminoff, 1983); 4) analysing some aspects of dwelling habits and needs as related
to recent socio-cultural changes in Italian society. Here, given the space limitations, we will discuss only some of the topics explored.

METHOD

In the selection of the households to be examined, in accordance to our assumptions, we have considered not only the current family structure, but also some aspects of the previous dwelling experience of the adults.

Our analysis has been thus focused on three different types of household defined as the following:
- **group A** = "typical" families, with or without children, where the couple is married and both wife and husband have changed from their original family to the present one without any other intermediate experience;
- **group B** = unmarried couples, with or without children, where the male and/or female of the couple had previous 'dwelling' experience(s) after leaving their original family (in most of our households with children, they were children of the female of the current couple);
- **group C** = single-parent families (in our sample the parent was always the mother).

All the households belong to the same social world. Both male and female were comparatively well-educated middle class, mainly teachers and white collar workers. This choice was made in order to include people that presumably carry out at home activities as reading, writing and other intellectual pursuits. All the women, except for a mother of the group B and another of the group C, had a job outside the home. In Table I, the sample is further specified in terms of age and household composition.

The data were collected through an open-ended questionnaire centered around the following main topics:
- a. Previous history and household habits;
- b. Activities (habitual and occasional) and place where carried out;
- c. Need for space, and layout choices in case of hypothetical increase or decrease in the number of rooms;
- d. Classification of the dwelling areas in terms of the attribution of possession to the members of the household;
- e. Isolation and socialization behaviour;
- f. Aspects of personal expression in the domestic space.

All members aged more than 5 years of the 30 households were interviewed at home, to a total of 79 subjects (50 adults and 29 children).
### Table I
Demographic characteristics of the subjects and household composition

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<th>A</th>
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<td>- age mean of adults</td>
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<td>- under 30</td>
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<td>- 30-45</td>
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<td>9</td>
<td>10</td>
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<td>- mean</td>
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<td>39.3</td>
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<tr>
<td>Male adults (n=20)</td>
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<td>- age</td>
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<td>- under 30</td>
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<td>- over 45</td>
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<td>- mean</td>
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<td>Children (n=35)</td>
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<td>- 0.8-4⁰</td>
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<td>- 14-19</td>
<td>3</td>
<td>3++</td>
<td>8</td>
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<td>10.8</td>
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<td>- 1 child (n=15)</td>
<td>5</td>
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<td>6</td>
</tr>
<tr>
<td>- 2 children (n=10)</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

⁰ No interviewed
+ One child of 7 was no interviewed
++ One boy of 19 was no interviewed

With regard to data analysis, the interviews were subjected to content analysis in order to extract from the total number of responses any patterns regarding attitudes and behaviors which could be used to differentiate the three groups. Priority was thus given to an analysis which would show up the interrelationships between the various aspects rather than the quantitative distribution of the individual responses. In any case, in view of the small number of subjects involved and the considerable differences among the homes, this would be statistically insignificant.
RESULTS AND DISCUSSION

Analysis of the interviews led to the identification, as well as of a number of aspects shared by the entire group of subjects, also of several trends which differentiate, on the one hand, the three groups of families and, on the other, often quite independently of the type of family concerned, the individuals characterized by sex and position inside the family (especially parents vs. children).

Daytime and nighttime space
One feature shared by the whole sample was the separation between parents and children with regard to the space devoted to sleeping quarters. When, owing to lack of rooms, this need clashes with another, equally fundamental need, i.e. having a space in the home suitable for social interaction, the dominant strategy appears to be to squeeze the function of the parents' bedroom and sitting room into a single room which is apparently furnished as a sitting room (i.e. with a bed concealed in various ways). This is the solution actually adopted in our sample by three single parent families and envisaged by the majority of adults as a hypothetical adaptive strategy to cope with a reduction in available space.

Not enough evidence is available concerning the children because the majority of them refuse to admit of any important reduction in space. It is significant, however, that out of the small number of respondents, three children (all belonging to single parent families) envisaged the possibility of "putting their mother up in their room".

It seems possible to postulate that the children, provided that they can hold the possession to the room, do not consider so much important to have privacy at night. Indeed, the spatial organization of children life do not allow of any distinction between daytime and nighttime space, nor did they seem to consider it a need. They sleep, study, play and receive their friends in their room, which thus becomes a space open to extra-family socialization, while the other parts of the home are only used in interaction with adults. It is a curious feature that while some of the parents (practically all the mothers in group A) admit to passing a good deal of their time in the child(ren)'s room, none of the children mention their room as a place for family interaction, almost as though to ward off the danger of it being considered a room that was not their own.

As far as adults are concerned, the spatial organization tends to afford priority to day-night separation, with as far as possible the bedroom being reserved solely for its nighttime function. The distinction between daytime and nighttime space is much sharper for males, and for two parent rather than single parent families.
Among couples it tends to be the woman who uses the bedroom also during the day, for reading or, if there is no study, to carry on intellectual pursuits. In these cases the other partner tends to attribute increased ownership of the room to the woman, otherwise it is normally considered to be shared by the couple.

In single parent families, the mother bedroom loses some of the character of an exclusively nighttime place and it is often open to the children (in one case the child actually attributed the main ownership to himself), even though the respondents frequently admitted that they would like to have "more privacy". The fact that, owing to the absence of the other partner, single parent women have their own bedroom rather than share one, brings them in some ways closer to their children, both as far as the use of the room is concerned, and with regard to their wishes concerning the space. One of the respondents pointed out, however, that she "would need her own study" if the couple were to be reunited.

Sex x household differences
The comparison between the three groups, particularly between group A and group B is indicative of a more highly differentiated situation with reference to sexual differentiation in the dwelling behaviours and attitudes.

All the group A women pointed to the kitchen as the sole place, or as one of the places, in which they spent most of the time, and both males and females mentioned it as the place usually used for family interaction. Conversely, none of the group B respondents mentioned the kitchen as a place for spending one's time, nor as the place most used for family interaction. It should be noted, however, that like the group A families, also those in group B usually have their meals in the kitchen.

All the group A women mentioned housework as their sole or main household activity, together with looking after the children, while none of the males mentioned it without being prompted. The amount of time and energy the group A women claim they devote to housework with respect to intellectual pursuits is the reverse of that of males. Corresponding to the female spatial pattern centered around the kitchen is a male pattern centered around the study. Conversely, in group B housework is not mentioned as women's main job and more frequent mention is made of reading, keeping each other company, and talking together. The time dedicated to housework seems to be shorter in absolute terms and to be more fairly shared out between the two partners.

While in group A the stress is laid on the time devoted to satisfying primary needs, such as sleeping or eating, or to performing the domestic tasks linked to the conventional roles of the two sexes, the group B members seem to lay the accent on leisure and to be more interested in optional activities.
Social spaces and private spaces
The three groups do not seem to differ as regards the frequency of extra-family interaction (except for the greater tendency of single mothers to have outside social relationships) nor with regard to the type of relations (usually informal) nor the ways in which this takes place (in the evening and for supper). The families usually eat in the kitchen, but dinner is sometimes taken in the living room, related to the presence of the TV set.

However, they are different as regards the physical structuring of social space. While all the group A homes had a dual purpose sitting room (i.e. dining area plus conversation-TV area) this is not true for group B. In the latter we find a variety of situations ranging from the combination of kitchen and sitting room into a single room, to the complete absence of any distinction between kitchen and dining area, and to the absence of any true sitting room, due not to the lack of rooms but to the priority given to an individual rather than community space. As a consequence, there is a less clear distinction between extra-and intra-family interaction in group B. The group A women tend to prefer a large sitting room to a large kitchen, while the opposite is true for group B. Furthermore, the group A subjects frequently express the wish for a "room to spend their time in", i.e. a community room, distinct from the sitting room, while group B accord priority to individual spaces.

With reference to the demand for space a necessary distinction must be made between desire and need, in the sense that failure to satisfy the desire is not accompanied by a feeling of deprivation, while the non satisfaction of a need necessarily involves a situation of dissatisfaction and deprivation. The wish for a larger sitting room or for a family room frequently expressed by the group A women can be considered in this sense as a simple desire, on the contrary the wish for a space of one's own expressed by group B appears in general as a real need.

As pointed out by Sebba and Churchmann (1983), an area can be considered as a territory only when it is defined physically. This is particularly true as regards private space. In fact, with regard to public spaces, the simultaneous presence of several functions in the same room (e.g. taking meals, chatting, watching TV, etc.) is not only accepted but sometimes to be preferred to their functional separation. On the other hand, the private corner (e.g. a study area) included in a larger space is always viewed as a compromise solution, to be replaced as soon as possible.

The need for a space of one's own is particularly evident in the case of group B, and, especially for males, is expressed in the form of a demand for a "study". However, it should be noted
that the choice of this term seems more of a lexical restriction, due to the fact that a more suitable lexical term does not exist, than a functional designation. The factor characterizing the need for a space of one's own seems to be ownership, rather than the type of use to which the space is to be put, which varies according to the individual. This seems to indicate that the need is not to be related back solely to the particular type of sample studied, in which intellectual pursuits play a major role.

The demand for a space of one's own does not, however, seem to correspond directly to any desire to exclude the others. In this connection, two aspects of this exclusion are examined here, namely the need to be alone, to isolate oneself, and the need not to be disturbed by others. Being on one's own implies the erection of a psychological barrier against the others, and in this sense can have a negative connotation, while not being disturbed seems to be simply the reactive response to the physical intrusion of others.

In the case of adults, the need to be alone is not always acknowledged, particularly by the group A members. It is often pointed out that it is more a need to concentrate one's mind than to get away from other people. Precisely for this reason it seems to be achieved by engaging in isolating activities, such as reading or listening to music, rather than by physical isolation: only the group C mothers made frequent mention of a definite space, namely their room, as a place in which they isolated themselves.

If we consider also the answers related to "not being disturbed", two different trends emerge which differentiate group A from group B. In the former, the denial of the need for isolation corresponds to the widespread trend to claim that "at home you can't help being disturbed" or that the only chance you have is to go to the bathroom. In group B, on the other hand, there is a greater acceptance of the need for isolation, accompanied by the statement that no problem of being disturbed actually exists in practice. However, in both groups, very little use seems to be made of closing doors, even that of the bathroom.

These responses, like those referring to housework, seem to show how group A, often jokingly, accepts a representation of family life based on certain stereotypes which emphasize its aspects of constraint, of having obligations owing to the fact of belonging to a family. In other words, it is part of the parents' role to always be at the beck and call of the others, and being disturbed must be accepted philosophically. On the other hand, in group B the satisfaction of individual needs does not appear to be viewed as clashing with family relations, and is easier to recognize.
CONCLUSIONS

Some of the aspects emerging from the discussion of the results merit special attention. Firstly, note should be taken of the widespread demand for more space that seems to be shared by the sample as a whole. This contradicts the facile equating of the ongoing reduction in family size with the need for smaller houses. It must in fact be borne in mind that the sample consists of subjects who are quite well off, that the housing density is rather low compared with the national average and that the demand for space comes mainly from group B (which represents a family type that is on the increase).

In the second place it seems that some indications can be surmised with regard to home interior design. The further we move away from the traditional family structure, the greater the difference that emerges in dwelling needs. This leads to the need for more attention to be paid to architectural "flexibility", as some authors have already pointed out (Zeisel, 1975; Lamure, 1976). The user-oriented structuring of the home interior cannot be restricted to the mere provision of physical spaces for certain functions. It must also take into account the different priorities assigned by different individuals to these functions and for the compatibility between these different functions. Furthermore, it must also take into account the fact that the home is not only a place "for doing things", but also a place "for being in" and that, as such, it will be different for different individuals and for the same individual at different stages of his or her life.

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TRANSFORMATIONS IN DOMESTICITY, HOUSEHOLD DEMOGRAPHY AND DWELLING DESIGNS

This paper identifies the interrelations between many factors that have contributed to transformations in household demography, house planning and home life during this century. These factors are discussed and illustrated in terms of a dual historical perspective. This approach shows that there is a growing discordance between housing policies and architectural practice, on the one hand, and socio-demographic and socio-psychological trends, on the other hand. In sum, it is appropriate to look back before looking to the future, if alternative strategies to correct the current situation can be formulated and applied successfully.

INTRODUCTION

Domesticity, household demography and the design and meaning of residential environments are complex subjects that are defined by a range of architectural, cultural, economic, socio-demographic, socio-psychological and political factors that change during the course of time. This paper discusses and illustrates the pertinence of a temporal and a contextual approach for the analysis of processes related to household formation, domesticity and the design and use of domestic space. It will show that a temporal perspective helps to clarify those dimensions of domestic environments which are constant and those which change, either during relatively short or long periods of time.

Owing to the enduring quality of architecture, buildings of all kinds are handed down from one generation to the next. Consequently, dwelling units not only have a history but a life-history related to their use and reuse. Moreover, the design, the meaning and use of residential environments are intimately related to a range of cultural, socio-demographic and psychological dimensions, which can only be understood with respect to a precise geographical context and in terms of a temporal perspective: The uses, values and meanings attributed to domestic space change. Therefore, the interrelations between domestic space and dwelling processes are dynamic or changeable and include factors that evolve over relatively long periods of time (Werner, 1987; Werner, Altman and Oxley, 1985). In short there are two
main sets of processes, one of a "macro"-historical kind and another of a "micro"-historical kind, which need to be examined in any analysis of household formation, domesticity and the design and use of residential environments (Lawrence, 1985). Bearing this principle in mind, this paper will present and illustrate four complementary themes: The interrelations between the evolution of dwelling designs and domestic practices; renovation and reuse of the housing stock; transitory phases in the life-cycle and housing policies; and housing tenure, household economics and dependence.

DEVELOPMENTS OF DWELLING DESIGNS AND DOMESTIC PRACTICES

There have been marginal increases in the size of dwelling units in many European countries, during this century. The additional floor space can largely be related to the provision of an equipped kitchen, bathroom and toilet for each household (Economic Commission for Europe, 1986). This had not been commonplace prior to the First World War. This trend has been coupled with a growing use and reliance on a range of domestic appliances and equipment (beginning with the kitchen and laundry fittings, then the radio, television and video). Both these developments have challenged the purpose and function of collective facilities and services (such as the communal laundry, theatres and meeting places). Consequently, domestic life has become more autonomous and private, leading to the erosion of face-to face contacts not only in residential neighbourhoods but also within specific tenement buildings, as some urban ethnographies including Andrews (1979), Coing (1966) and Harrington (1965) have shown.

Finally, developments in architecture and housing administration have led progressively to the design and construction of numerous stereotyped dwelling units, intended for a "classical" household with formalized domestic activities. Consequently, it has become increasingly common for each room or space to be assigned one prescribed function, whereas prior to this century it had been usual for rooms to have polyvalent uses. In essence, the potential and the effective adaptability of home interiors is no longer an inherent capacity of many modern house plans (Sherwood, 1978).

This overview suggests that although it has been common to assess the habitability of dwelling units in terms of their age, location, state of repair and the condition of their services, this kind of quantitative assessment is too restrictive. Recent studies indicate that qualitative dimensions, including architectural, socio-demographic and economic factors, should also be examined prior to the enactment of policies that encourage
either the demolition or renovation of extant dwellings in the future (van Vliet et al., 1985). Some of these dimensions will now be discussed.

RENOVATION AND REUSE OF THE HOUSING STOCK

In several European and North American countries, many residential quarters constructed during the 19th century have been demolished since the Second World War. Nonetheless, a large portion of the population in urban areas of Europe and North America still occupy dwelling units that were erected before 1945. In Austria, France, the Democratic Republic of Germany and the United Kingdom, at least one third of the housing stock was built prior to 1919; whereas other countries including Bulgaria, Finland and Sweden have a much newer housing stock, with more than two-thirds of all dwellings units being built since 1945 (Economic Commission for Europe, 1986).

During the last decade, there has been a noticeable shift from the post-war custom of demolition and urban renewal to renovation and infill planning. The newer approach involves the upgrading of some buildings, the selective demolition of others, and the construction of new dwelling units. This shift can be related to a wide range of factors (Economic Commission for Europe, 1983). For example, government housing policies that are intended to maximize the use of the existing housing stock by raising the quality of delapidated dwelling units to the level of contemporary ones. Moreover, in countries facing the prospect of relatively high levels of unemployment and/or balance of payment deficits, investment in housing rehabilitation can be considered as promoting building industry, because this kind of construction work is labour intensive and it relies on relatively low levels of imported materials and technology. Finally, this approach economizes the use of energy by the building industry, while usually enhancing the thermal insulation of older dwelling units. Such consequences became more important from 1973 with an increase in the price of petrol. Nonetheless, the growing concern and practice of the renovation and reuse of existing residential quarters cannot be solely attributed to economic and political reasons, as this paper will show.

Since the late 1950's, several studies in diverse countries have identified the costs and benefits of urban renewal in specific urban neighbourhoods (Andrews, 1979; Coing, 1966; Prak and Priemus, 1985; Ravetz, 1974). Clearly, the fragmentation of social networks which resulted from such renewal projects provoked significant social and psychological costs for the displaced residents, and these costs were not always compensated for by
domestic life in new housing estates. A more recent study in England by Dunleavy (1981) illustrates that as late as the 1970's local debates about housing policy were rare, and that the design of council housing in three local government constituencies followed national trends and policies. Apparently, in each locality, there was no systematic analysis of housing demand, or of the condition and use of the existing housing stock. Such research could have identified the preferences of the local residents, examined how they used domestic space, and identified what kinds of constraints impinged upon their daily lives. Moreover, this kind of study could have indicated that irrespective of a state of disrepair, older residential buildings apparently have a greater capacity to adapt to the changing requirements of households than many contemporary dwelling units.

The social and spatial capacity of residential buildings for adaptation and reuse by successive generations of inhabitants is an important characteristic of many older dwelling units as Vernez-Moudon (1986) discusses. One indicator of this capacity is the spatial organization of dwelling interiors. This capacity is largely defined by the size, shape and number of rooms, their fenestration, and how all the rooms are interrelated. These spatial characteristics provide cues for the personalization of home interiors (Barbey, 1980; Kent, 1984; Lawrence, 1982.)

TRANSITORY PHASES IN THE LIFE-CYCLE AND HOUSING POLICIES

The growth rate of the population of many European countries has stabilized or declined during the last decade. Furthermore, the proportion of persons over 60 years of age has and continues to increase (Economic Commission for Europe, 1986). Both these trends coincide with a sharp decline in the size of households, and changes to common household structures. In general, an increase in the number of one or two person households can largely be related to:

(i) An increase in the number of adolescents who decide to leave their parental home prior to marriage in order to live independently or with a friend.
(ii) An increase in the divorce rate and in cohabitation.
(iii) An increase in the number of aged persons who choose to live alone rather than in institutional housing.

Each of these socio-demographic trends suggests that the values attributed to marriage and the family may be changing in many societies. Therefore, normative housing policies which lead to the construction of standardized dwelling units for "typical" nuclear families need to be reexamined. The above trends also
indicate that, in general, there is a growing need for smaller dwelling units that cater for the housing requirements of one or two person households during various phases of the life-cycle from adolescence to old age. These various kinds of households have divergent requirements during the life-cycle, particularly concerning access to community, health and recreational services, as Van Vliet et al., (1985) have discussed.

Furthermore, each of these socio-demographic trends has also led to a significant increase in the number of transitory phases during the life-cycle. Whereas household formation and home ownership were strongly allied to marriage, the growing incidence of cohabitation, divorce and remarriage has increased the potential number of households. Both the socio-demographic trends and the transitory phases during the life-cycle presented here imply that the requirements for specific types of residential accommodation have increased during recent decades, and that this principle can be sharply constrained to the application of normative housing construction programmes in many countries. The preceding discussion suggests that there are important implications for the formulation and enactment of housing policies; on the one hand, there is a need for a less homogeneously planned housing stock than has been advocated since the Second World War; on the other hand, there is a growing need for residential accommodation during relatively short periods of time that corresponds to the transitory stages of the life-cycle mentioned above.

In order to assist our understanding of the qualitative dimensions of housing accommodation during the transitory phases and the more conventional stages of the life-cycle, it is instructive to examine the interrelations between specific phases of an individual's life and his or her residential biography using the concept of subjective life stage formulated by Stokols (1982). Subjective life stages are defined by Stokols (1982, p. 191) as "spatially and temporally bounded phases of a person's life that are associated with particular goals and plans". Accordingly, each stage in the life-cycle "encompasses a unique constellation of physical settings and activity patterns that remain psychologically salient for a given period". This perspective indicates that there are both objective and subjective dimensions of house planning, household formation and dwelling practices.

Therefore, it is important to distinguish between these two main classes of dimensions and then explore the reciprocal relations between them. This approach has been illustrated by Lawrence (1987) with respect to the preparation and eating of food inside the dwelling unit. Here it is noteworthy that in many countries during recent decades, thousands of flats (with one, two, three or four bedrooms) have been designed and constructed with a
laboratory kitchen and a living-dining room (Sherwood, 1978). Hence, irrespective of the composition of households (including those with one or more young children), there is no choice for the residents to make about where meals will be eaten. In contrast to a predetermined "tight-fit" between domestic activities and space, this paper readvocates the application of the concepts of potential and effective adaptability presented by Lawrence (1987).

The application of these concepts for the designs of dwelling units would enable residents to use their home interiors in diverse ways during different phases of their lives, and also for different kinds of occasions. Finally, there are equally important implications outside the home, especially concerning access to and use of community, health and recreational services during different phases of the life-cycle.

HOUSING TENURE, HOUSEHOLD ECONOMICS AND DEPENDENCE

Another significant contemporary trend in many countries is the wide-spread goal for home ownership, to the detriment of publicly and privately owned rental accommodation. This goal has been successfully realized in several socialist and market-economy countries of Europe, including Belgium, Bulgaria, Canada, Finland, Spain and Yugoslavia in which not less than 60% of the housing stock was owner-occupied in 1980 (Economic commission for Europe, 1986). This long-term trend favouring home ownership is allied to the construction of semi-detached or detached dwelling units which have increased in relation to other types of housing, especially flats. Consequently, the growth of suburban development has led to the segmentation of the population in many cities. In general, the aged live near the city centre, whereas younger households live on the urban fringe, distant from community services and facilities. Access to these services and facilities is both time consuming and costly.

Although diminishing household size and a general increase in female employment outside the home do not automatically dissolve kinship networks, there are indications that residential mobility, relocation and suburbanization can make the maintenance of these networks more difficult (e.g. Allan, 1979; Michelson, 1977). Moreover, although contemporary domestic life appears to exalt individualism and independence, today citizens are more dependent on the welfare state for care and support during special circumstancess (e.g., post-operative nursing, child care, and illness during old age), whereas kith and kin frequently provided support previously (Berger and Berger, 1983). Hence, the economic and temporal hurdles just mentioned are important. These hurdles have been supported, indeed reinforced, by current government
housing policies which encourage home-ownership and, consequently, households become more economically (rather than socially) dependent. In many cases, this dependence is so acute that prolonged sickness, or unemployment, can lead to the loss of home.

Despite the above-mentioned trend, there are some indications that the symbolism of the city and the benefits of urban life have not been completely rejected. In some European cities, authorities are now formulating specific policies to enable citizens to be rehoused in urban quarters that have increasingly accommodated administrative and commercial premises at the expense of dwelling units. Such policies affirm those recent practices outlined earlier in this paper, which encourage the renovation and reuse of extant residential buildings.

SYNTHESIS AND CONCLUSION

Domesticity, household demography and dwelling designs evoke a range of images and concepts related to the material or physical nature of residential environments. Nonetheless, even the most basic requirements of shelter and security can be met in various ways, as studies of traditional or vernacular architecture in several countries have shown (e.g., Oliver, 1969; 1975). Furthermore, even in the same society daily household activities, such as the preparation and eating of food, occur in diverse ways, so that neither the design nor the use of domestic space can be prescribed without some prior understanding of the contextual conditions in which that housing exists. Consequently the preceding sections of this paper have discussed four interrelated subjects that illustrate how the design, the meaning, the use and the reuse of residential environments define and are defined by a range of architectural, cultural, economic, socio-demographic, psychological and political factors that change during the course of time.

This paper illustrates that it is important to identify and understand the relative importance of these contextual conditions for the planning, construction, use and reuse of residential quarters. It also illustrates that the meaning and use of residential environments are not intrinsic to a set of physical characteristics, nor the nomenclature applied to rooms and their facilities. This principle, and earlier discussion in this paper, have identified some important implications for the planning and use of residential environments in the future. This paper challenges a common point of view that absolute housing standards, or design patterns, can respond to the housing requirements of people. This point of view is unrealistic if these standards or patterns are not explicitly related to scenarios that consider a
range of possible trends in a precise context. This principle can be illustrated by demographic variables. Today it is difficult to predict whether the decline in the birthrate, or the general ageing of the population, in many European countries, will continue until the end of this century. Likewise the complete reversal of the "baby boom" immediately after the Second World War was not forecast. These demographic trends, particularly their impact on the construction and renovation of the housing stock in the future, have been inadequately studied by politicians and housing administrators in many countries.

In concluding this paper it is suggested that the construction of new housing units, like the renovation of the existing stock, can be considered in terms of the following four sets of variables:

(i) Planning and building regulations including the amount of land available for new housing construction; the provision of public amenities and services; and government incentives for construction programmes.

(ii) Economic factors related to international, national and regional governments and agencies; the cyclical nature of economic growth, building costs and interest rates; inflationary trends; financial subsidies for new housing construction and renovation works, and the roles of public and private investors.

(iii) Demographic factors, including the composition of the population by age, gender and ethnic groups, birth and death rates; marriage and divorce rates; composition of households; and the internal and external migration of the population.

(iv) Qualitative factors related to the construction, size, finishes and equipment of residential buildings; the rate of building decay, the rate of change in the notion of comforts, and the social values of different house types, including their location in the city (Lawrence, 1987).

This brief overview indicates that housing policies and construction programmes cannot be restricted to architectural, economic or material factors. Policies concerning the allocation, rental or purchase of dwelling units, and the effective choice of a range of house types in diverse locations, are as equally important. In this respect, the interrelations between architectural, socio-demographic, economic and political variables ought to be examined with respect to different scenarios. This paper concludes by requesting that the formulation and application of these scenarios becomes an important priority for housing research in the future.
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A STUDY OF RESIDENTIAL PREFERENCES AND CHOICES

A model assuming that a person's evaluation of a given housing attribute is determined by a weighted sum of his/her evaluations of its perceived consequences for activities and life values, and that the evaluation of a particular housing alternative is obtained by summing this value-fulfillment across all attributes, was applied to data obtained by interviewing the adult members of 43 Swedish households searching for a new dwelling. The model was quite successful in predicting preferences for housing alternatives. When predicting evaluations of the households' present dwellings and choices among housing alternatives, however, the model was considerably less successful. A number of possible explanations were offered for the latter finding.

INTRODUCTION

A recent review of literature on residential mobility (Clark, 1986) suggests that dissatisfaction with housing attributes is the major reason for moves within a city. Although such dissatisfaction may in many cases be motivated by life-cycle changes, the latter alone are often found to be insufficient for explaining specific moves (cf. Michelson, 1977). It also seems to be widely accepted that subjective evaluations of housing attributes are a major determinant of residential preferences and satisfaction (Hartman, 1963; Hempel & Tucker, 1979; Lindberg, Gärling, & Montgomery, 1986, 1987a; Lindberg, Gärling, Montgomery, & Waara, 1987b; Louviere, 1979; Weidemann, Anderson, Butterfield, & O'Donnell, 1982).

The research reported by Lindberg et al. (1986, 1987a, 1987b) investigated whether preferences for and choices between housing alternatives could be predicted from subjective beliefs about the consequences of different housing attributes and by the subject's evaluation of those consequences. The consequences of primary interest were different life values, defined as goals or desirable end-states which the individual strives to attain in his/her life (e.g., freedom, happiness, or security), which could be attained either directly or via the performance of various everyday activities. The attempts to predict residential preferences and choices were based on two assumptions. The first assumption, derived from Multi-Attribute Utility Theory (e.g., Keeney & Raiffa, 1976), was that the evaluation of a housing alternative is determined by the sum of the evaluations of its different attributes. The second assumption was that the evaluation of each housing attribute is determined by the subject's beliefs concerning its effects on his/her possibilities to attain various life values, and by his/her evaluations of those values. The
latter assumption is an instance of the expectancy-value model used in studies of motivation, attitudes, and actions (Ajzen & Fishbein, 1980; Atkinson & Birch, 1970, 1974; Feather, 1982).

The two assumptions were formalized by Lindberg et al. (1986) in the following model:

\[ E_{H_i} = b \sum_{jk} p_{jk} E_{V_j} / \sum_{jk} E_{V_j} + a \]  

(1)

\( E_{H_i} \) represents the evaluation of housing alternative \( i \); \( p_{jk} \) is the strength of the belief that the particular level of housing attribute \( j \) for that alternative will lead to the desirable consequence \( k \) (or counteract it, in which case \( p \) assumes a negative value); \( E_{V_k} \) is the evaluation of consequence \( k \); \( b \) and \( a \) are arbitrary scale constants.

Empirical support for Equation 1 was obtained by Lindberg et al. (1986, 1987a) in the case of preferences for housing alternatives. In addition, they also found strong support for the assumption that beliefs about how life values may be attained (directly or via the performance of various everyday activities) are important determinants of people's evaluations of housing attributes. The latter assumption is also supported by the results of Lindberg et al. (1987b). In the case of choices among housing alternatives, however, Lindberg et al. (1986, 1987a) found somewhat weaker support for Equation 1, especially for the assumption about additivity across attributes. The explanation offered for the latter finding was that a choice is a more complex task in terms of information processing demands than a preference rating, and that it therefore may be difficult to choose in such a way that value-fulfillment is maximized.

Although Equation 1 thus has received support from previous research, it should be recognized that this support comes from studies carried out under laboratory or laboratory-like conditions with the respondents sampled from an adult student population. The primary aim of the present study was to investigate whether the results obtained under those conditions may be generalized to a population of respondents who are actually searching for a new dwelling. It is for instance possible that the finding that choices appear to be more difficult to predict than preferences could be due to the respondents being poorly motivated to invest the effort necessary in order to make the best possible choices. This should not be the case, however, when the choice is a real one with important consequences for the respondent's household.

METHOD

Questionnaires and procedure
Three different questionnaires were administered to the respondents in their homes. In the first one, they were required to rate on 13-point scales ranging from -6 to +6, how good or bad they perceived each of twelve different housing attributes to be. The housing attributes, which are listed in Table I below, were
the same as those used by Lindberg et al. (1986) (cf also Clark, 1986; Hempel & Tucker, 1979). Each attribute was given a formulation corresponding to the desirable end of the underlying continuum (low cost, large space, short distance to work, etc). Thereafter the respondents rated, on the same type of scales, seven everyday activities and four life values (see Table I below). These items were selected among those used by Lindberg et al. (1986, 1987a, 1987b). The basis for the selection was that each item should be highly evaluated by a majority of the subjects in the previous studies and also that only activities and values which could be expected to be affected by one’s housing conditions should be included. In the remainder of the first questionnaire, the respondents rated on a similar type of 13-point scales how strongly they believed that each of the twelve housing attributes facilitated (or counteracted) the performance of the seven activities and the attainment of the four life values.

In the second questionnaire, the respondents rated the extent to which their present dwelling possessed the twelve housing attributes on 13-point scales ranging from 0 to 12, and were then asked to rate how good or bad they thought the present dwelling was with respect to the different attributes and to give a preference rating for the dwelling as a whole. Both adult members of each household filled out a copy each of the first two questionnaires. An interviewer was present whilst they did this in order to answer any questions which they might have.

The third questionnaire contained the same questions as the second one, but in this case they referred to a housing alternative which the respondents had come across in their search for a new dwelling. The respondents were also asked whether they had decided to accept or reject the alternative, what their reasons for that decision were, and how satisfied they were with the decision. If the respondents had already inspected one or more housing alternatives, each of them filled out a copy of the third questionnaire for each alternative whilst the interviewer was present. Only alternatives which had been seriously considered were to be reported. Before leaving, the interviewer left 10 copies of the third questionnaire (sufficient for five housing alternatives) and a number of addressed envelopes. The respondents were instructed to fill out a copy each for every alternative that they found worthy of serious consideration and to mail it after they had decided to accept or reject the alternative. During the period of study, which was between four and six months, the interviewer phoned each household about once a month in order to encourage continued participation in the study.

Respondents
Eighty-six respondents (43 men and 43 women, i.e. the adult members of 43 family households) who were actively searching for a new dwelling were paid the equivalent of $15 each for their participation in the study. Their ages varied between 22 and 56 years ($M = 33.28, SD = 6.49$). Thirty-three of the households had children under eighteen years.
RESULTS AND DISCUSSION

Beliefs about Effects of Housing Attributes on Activities and Life Values

The mean estimated strengths of the effects of each housing attribute on the possibility to perform the different activities and to attain the various life values are given in Table I. The housing attributes believed to have the strongest mean impact on performance of activities and value fulfillment were cost, transportation facilities, distance to friends, and distance to recreation. The housing attributes were believed to have the largest effects on comfort, well-being, relaxing and family. Cost was perceived to be very important for economy, whereas size, standard and distance to downtown were believed to have negative effects on the attainment of this value. Distance to downtown, distance to friends, and distance to recreation were seen as quite important for shopping, being with friends, and exercise, respectively.

Table I
Perceived Effects of Housing Attributes

<table>
<thead>
<tr>
<th>Housing attributes</th>
<th>Amusement</th>
<th>Culture</th>
<th>Exercise</th>
<th>Friends</th>
<th>Outings</th>
<th>Relaxing</th>
<th>Shopping</th>
<th>Comfort</th>
<th>Economy</th>
<th>Family</th>
<th>Well being</th>
<th>M</th>
</tr>
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<tbody>
<tr>
<td><strong>Intrinsic</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>3.21</td>
<td>2.69</td>
<td>0.29</td>
<td>0.73</td>
<td>2.00</td>
<td>1.63</td>
<td>2.81</td>
<td>2.69</td>
<td>4.86</td>
<td>2.50</td>
<td>2.86</td>
<td>2.39</td>
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<tr>
<td>Size</td>
<td>-0.01</td>
<td>0.45</td>
<td>0.45</td>
<td>2.69</td>
<td>0.00</td>
<td>2.97</td>
<td>0.06</td>
<td>3.99</td>
<td>-0.56</td>
<td>3.40</td>
<td>3.43</td>
<td>1.53</td>
</tr>
<tr>
<td>Standard</td>
<td>-0.14</td>
<td>0.09</td>
<td>0.21</td>
<td>0.93</td>
<td>-0.03</td>
<td>2.45</td>
<td>-0.14</td>
<td>3.79</td>
<td>-0.79</td>
<td>2.16</td>
<td>2.59</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Location</strong></td>
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</tr>
<tr>
<td>Downtown</td>
<td>3.90</td>
<td>3.69</td>
<td>-1.58</td>
<td>0.76</td>
<td>-0.64</td>
<td>-0.48</td>
<td>4.40</td>
<td>0.73</td>
<td>-0.83</td>
<td>-0.20</td>
<td>-0.01</td>
<td>0.86</td>
</tr>
<tr>
<td>Friends</td>
<td>1.49</td>
<td>1.08</td>
<td>0.86</td>
<td>4.42</td>
<td>1.31</td>
<td>2.03</td>
<td>0.45</td>
<td>2.05</td>
<td>0.45</td>
<td>2.31</td>
<td>2.38</td>
<td>1.71</td>
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<tr>
<td>Recreation</td>
<td>-0.59</td>
<td>0.10</td>
<td>4.13</td>
<td>0.26</td>
<td>3.55</td>
<td>3.20</td>
<td>-0.76</td>
<td>2.22</td>
<td>0.45</td>
<td>2.10</td>
<td>3.06</td>
<td>1.61</td>
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<tr>
<td>Schools</td>
<td>0.70</td>
<td>0.92</td>
<td>0.83</td>
<td>0.92</td>
<td>1.10</td>
<td>1.95</td>
<td>0.66</td>
<td>3.30</td>
<td>0.90</td>
<td>2.93</td>
<td>2.50</td>
<td>1.52</td>
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<tr>
<td>Work</td>
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<td>1.19</td>
<td>1.22</td>
<td>0.78</td>
<td>1.01</td>
<td>1.30</td>
<td>1.12</td>
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<td>1.37</td>
<td>1.70</td>
<td>1.60</td>
<td>1.37</td>
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<tr>
<td><strong>Neighborhood</strong></td>
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<tr>
<td>Facilities</td>
<td>1.01</td>
<td>1.13</td>
<td>0.47</td>
<td>0.42</td>
<td>0.48</td>
<td>1.92</td>
<td>3.34</td>
<td>3.58</td>
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<td>1.50</td>
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<td>0.64</td>
<td>0.57</td>
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<td>3.36</td>
<td>1.27</td>
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<tr>
<td>Reputation</td>
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<td>0.38</td>
<td>0.23</td>
<td>0.50</td>
<td>0.35</td>
<td>1.27</td>
<td>0.28</td>
<td>0.92</td>
<td>-0.07</td>
<td>1.27</td>
<td>2.26</td>
<td>0.70</td>
</tr>
<tr>
<td>Transport</td>
<td>3.06</td>
<td>2.84</td>
<td>1.31</td>
<td>2.77</td>
<td>2.31</td>
<td>1.74</td>
<td>2.67</td>
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<td>1.45</td>
<td>1.62</td>
<td>1.92</td>
<td>2.25</td>
</tr>
<tr>
<td>M</td>
<td>1.17</td>
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<td>0.75</td>
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<td>1.00</td>
<td>1.96</td>
<td>1.22</td>
<td>2.67</td>
<td>0.65</td>
<td>1.95</td>
<td>2.34</td>
<td>1.48</td>
</tr>
</tbody>
</table>

Evaluations of Housing Attributes, Activities and Life Values

The mean evaluations of the housing attributes, activities and life values are given in Table II. As shown in the table, cost, distance to schools and size were the most highly evaluated attributes, whereas distance to downtown and reputation were given the lowest evaluations. Among the consequences, family and well-being were given the highest evaluations, and shopping and amusement the lowest ones. It should also be noted that except for relaxing and being with friends and relatives, all activities
were given lower evaluations than any of the life values. The possibility to predict the evaluations of the different housing attributes from the respondents' beliefs about their consequences for activities and life values was investigated by computing, for each subject, predicted evaluations according to Equation 1 but without summing across the different attributes. The mean correlation between the predicted and observed evaluations of the attributes was .453, which was reliably larger than zero, p < .001. This correlation compares quite favorably to the result obtained by Lindberg et al. (1987b), despite the fact that considerably fewer activities and values were used in the present study.

Table II
Evaluations of Housing Attributes, Activities and Life Values

<table>
<thead>
<tr>
<th>Housing attributes</th>
<th>M</th>
<th>Activities and life values</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>5.03</td>
<td>Amusement</td>
<td>2.79</td>
</tr>
<tr>
<td>Size</td>
<td>4.77</td>
<td>Culture</td>
<td>3.63</td>
</tr>
<tr>
<td>Standard</td>
<td>3.52</td>
<td>Exercise</td>
<td>3.88</td>
</tr>
<tr>
<td>Downtown</td>
<td>1.78</td>
<td>Friends</td>
<td>4.73</td>
</tr>
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<td>Friends</td>
<td>3.48</td>
<td>Outings</td>
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<tr>
<td>Recreation</td>
<td>4.14</td>
<td>Relaxing</td>
<td>5.12</td>
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<td>Schools</td>
<td>4.98</td>
<td>Shopping</td>
<td>1.40</td>
</tr>
<tr>
<td>Work</td>
<td>3.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td>4.28</td>
<td>Comfort</td>
<td>4.29</td>
</tr>
<tr>
<td>Noise</td>
<td>4.56</td>
<td>Economy</td>
<td>4.86</td>
</tr>
<tr>
<td>Reputation</td>
<td>2.93</td>
<td>Family</td>
<td>5.92</td>
</tr>
<tr>
<td>Transport</td>
<td>4.58</td>
<td>Well-being</td>
<td>5.12</td>
</tr>
<tr>
<td>M</td>
<td>3.98</td>
<td></td>
<td>4.22</td>
</tr>
</tbody>
</table>

Evaluations of the Attributes of Present Dwellings and Housing Alternatives

The mean evaluations of the attributes of the respondents' present dwellings and those of the 80 housing alternatives encountered during the period of study are given in Table III. For the present dwellings, transportation and neighborhood facilities were given the highest evaluations, and size was given the lowest ones, whereas for the housing alternatives reputation and distance to schools and recreation were given the highest ratings and cost was given the lowest ones.

The possibility to predict the evaluations of the different attributes of the present dwellings and of the housing alternatives from the respondents' beliefs about their consequences for the activities and life values was investigated by computing, for each subject, predicted evaluations according to Equation 1 (without summing across attributes). The mean correlations between the predicted and observed evaluations of the attributes were .404 and .440, respectively, for the attributes of the present dwelling and those of the alternatives. In both cases was the correlation reliably larger than zero, p < .001. These correlations are somewhat lower than those obtained previously when predicting the evaluations of housing attributes without
reference to any particular housing alternative, especially in the case of the present dwellings. A possible explanation might be that the attributes of the present dwelling, being very well-known by the respondents, may bring to mind a number of additional activities and life values besides those included in the present study.

Table III
Evaluations of Attributes of Present Dwellings and Alternatives

<table>
<thead>
<tr>
<th>Housing attributes</th>
<th>Present dwelling</th>
<th>Housing alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>1.79</td>
<td>0.66</td>
</tr>
<tr>
<td>Size</td>
<td>-0.51</td>
<td>2.83</td>
</tr>
<tr>
<td>Standard</td>
<td>2.47</td>
<td>1.61</td>
</tr>
<tr>
<td>Downtown</td>
<td>2.83</td>
<td>1.34</td>
</tr>
<tr>
<td>Friends</td>
<td>1.71</td>
<td>1.49</td>
</tr>
<tr>
<td>Recreation</td>
<td>1.90</td>
<td>3.67</td>
</tr>
<tr>
<td>Schools</td>
<td>2.95</td>
<td>3.43</td>
</tr>
<tr>
<td>Work</td>
<td>2.13</td>
<td>-0.02</td>
</tr>
<tr>
<td>Facilities</td>
<td>3.71</td>
<td>2.35</td>
</tr>
<tr>
<td>Noise</td>
<td>1.15</td>
<td>2.20</td>
</tr>
<tr>
<td>Reputation</td>
<td>2.74</td>
<td>3.32</td>
</tr>
<tr>
<td>Transport</td>
<td>3.55</td>
<td>2.11</td>
</tr>
<tr>
<td>M</td>
<td>2.20</td>
<td>1.97</td>
</tr>
</tbody>
</table>

Preferences, Choices and Satisfaction
That familiarity may make predictions by means of Equation 1 more difficult was also suggested by the results for the preference ratings. In the case of the respondents' present dwellings, a correlation of only .195 was obtained between observed and predicted preference, whereas the corresponding correlation for the alternatives was .396.

The previous finding that choices are more difficult to predict by means of Equation 1 than are preferences for housing alternatives (Lindberg et al. 1986, 1987a) was replicated in the present study, the biserial correlation between the predicted evaluation of each alternative and whether it was chosen or not (coded as one and zero, respectively) being only .148. This finding suggests that the choice of a particular housing alternative is less dependent on one's beliefs about the value fulfillment which it may lead to than are the preferences for different alternatives. A possible reason for this, suggested by some of the respondents, may be that factors beyond one's control (e.g., financial constraints) prevent the selection of some very attractive alternatives.

For each respondent, alternatives given higher and lower preference ratings than the present dwelling were compared with respect to whether they were predicted (by means of Equation 1) to be better or worse than the latter. Rejected and accepted alternatives were also compared in the same way. As shown in Table IV, which also gives the respondents' mean satisfaction with their decisions to accept or reject alternatives, the relationship
between predicted and observed choices was much weaker than the corresponding relationship for the preferences. Due to the violation of the assumption about independent observations (many respondents inspected more than one alternative), the significance tests of the degree of association in the four-fold tables are given for purely descriptive reasons.

**Table IV**

*Preferences, Choices, and Satisfaction*

<table>
<thead>
<tr>
<th>Predicted evaluation of alternative as compared to present dwelling</th>
<th>Preference for alternative as compared to present dwelling</th>
<th>Decision to reject or accept alternative</th>
<th>Satisfaction with decision to reject or accept alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Higher</td>
<td>Reject</td>
</tr>
<tr>
<td>Worse</td>
<td>47</td>
<td>25</td>
<td>70</td>
</tr>
<tr>
<td>Better</td>
<td>17</td>
<td>48</td>
<td>54</td>
</tr>
<tr>
<td>(X^2_{(1)})</td>
<td></td>
<td></td>
<td>21.31</td>
</tr>
<tr>
<td>(p)</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

As could be expected, satisfaction with the decision to reject or accept an alternative was highest when alternatives which were predicted to lead to greater value fulfillment than the present dwelling were accepted and lowest when such alternatives were rejected. Satisfaction was however also very high when alternatives which were predicted to lead to less value fulfillment than the present dwelling were accepted. One possible reason for this finding could be that, since the acceptance of a housing alternative is a joint decision, the opinion of one's spouse may carry a certain weight for one's satisfaction with the choice. This is suggested by the fact that for the 12 decisions for which the predicted value fulfillment of the accepted alternative was lower than that of the present dwelling for both spouses, the average satisfaction was only 3.42 as compared to 4.00 for all 17 decisions in this category.

The finding that decisions involving the acceptance of an alternative were generally rated as very satisfactory, almost regardless of whether that alternative was predicted to lead to more or less value fulfillment than the present dwelling, is also consonant with the idea of dominance structuring (e.g. Montgomery, 1983). Thus, in order to be able to justify their decisions, the respondents may have re-evaluated some activities and/or life values and may also have reconsidered their beliefs about the effects of the housing attributes on the activities and values in such a way that the alternative chosen actually is believed to lead to more value fulfillment than the present dwelling.
CONCLUSION

The present results largely confirmed those obtained by Lindberg et al. (1986, 1987a) for evaluations of and choices among hypothetical housing alternatives. Thus, the assumptions underlying Equation 1 seem to be well founded in the case of evaluations of housing attributes and housing alternatives. Also in line with previous results, actual choices were found to be more difficult to predict by means of Equation 1 than were the preference ratings of the alternatives. Whether this is due to the present dwelling carrying a special significance to the resident which makes the evaluation of it more difficult to predict, to an inability on the part of the respondents' to carry out the information processing required in order to choose in a consistent manner, to external constraints preventing them from choosing in accordance with their preferences, or to changes in subjective beliefs and value structures taking place during the process of search are questions to be answered by future research.

ACKNOWLEDGEMENTS

The present study was financially supported by a grant from the Swedish Council for Building Research. The authors thank Jörgen Garvill for helpful comments and Ms. Ulla-Stina Johansson and Ms. Helena Willén for assistance in collecting the data.

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A methodological framework for studying families in dwelling environments

A framework for studying the transactions between people and their sociophysical environment is proposed which tries to avoid the determinism or reductionism of socio-psychological and architectural theories. The sociophysical system is described as a unity of place, activity and relations, and we cannot understand none of these without considering them in relation to the others. This 'triad' functions in the broader context of sociocultural norms. As relations are part of the system, analysis on the level of individual will not be sufficient - we have to ascend to the level of social unit as well. Place and relations seem to be relatively stable parts of this system, and activity - the dynamic one. Nevertheless, we can speak about 'behavioral lifestyles' of different social units. The necessity of longitudinal analysis of social units in order to understand their functioning is emphasized.

Introduction

Every method of studying the transactions between person and environment covertly or overtly relies on a particular model of man, on the understanding what a person is and how she or he functions. Thus, for example, the mass architecture of last decades relies on the image of man as an average or uniform user. This is expressed in an attempt to build uniform apartments with standard furniture and equipment. At the same time, the planners do not have a clear idea about the social consequences of such uniformity. And as can be seen from several projects of residential buildings, they also do not have a clear image about the person they are designing for with his needs and preferences.

We could declare that the architecture of mass construction proceeds at the present time from the functional characteristics of the activities of the family (preparing food, washing laundry, etc.), often forgetting some of these (f.e., storing things) (cf. Marcus & Hogue, 1977) and forgetting that the family members are not just individuals engaged in some functional processes in the apartment, but also real people tied together by particular social relationships.

In social psychology, person is treated predominantly as a personality in social environment. The relationships between people and group processes are studied, often forgetting that these processes take place in real physical settings.
Thus, various sciences and research areas reduce the essential parameters of person or environments and as a consequence concentrate on the causal relations between some measurable parameters of environment and particular cognitive or behavioral characteristics of the individual. From the viewpoint of systems and/or ecological theories of the last decades such approach seems rather naive and simplified. How should we then proceed? And how could we avoid the blind alley of reductionsim?

Let us start with an example. We will state that only the (real or potential) presence of man gives a place meaning. Thus, a built empty apartment is still only an apartment, the relatedness with a particular family or person makes it a home. With his or her presence man draws a boundary between what is "own" and what is "alien", i.e., the personalization of physical environment and turning it into "place" begins. As Heidmets (1981) has proposed, we could distinguish at least three types of such boundaries -- boundaries of separation, control, and identification (cf. also Niit, Heidmets & Kruusvall, 1987, pp.1316-1317).

Every place acquires a meaning for some person only through activity. This activity may have taken place or may just be imagined. If a person does not associate some activity with a particular place in real or ideal form, he will undergo no affective sensations toward environment and gain no place-experience. Entering into an empty new apartment, a person thinks about where he wants to do something. In relation to this (s)he also thinks where (s)he wants to locate something (usually it will be means for some activity - a desk, sofa bed, etc.). The primary constraints for activities at home are created by spatial conditions and the layout of the house or apartment, as the least flexible elements of person/place transactions (especially in the city apartments). The next class of constraints arises from (socio)cultural norms. During the course of socialization it is made clear to a person, where he may or may not do something, what he may not do at home at all and what should not be done in the presence of others or within sight of others. The third class of influences that modifies the behavior of a person is the activity of other persons, in the present case - of other family members. The background of the congruence or conflict of these activities is created by human relations, in our case - family relations.

Summing up these statements we could state, that though it is possible to study places, activities and human relations separately, it is necessary to treat each of them in connection with other two in order to understand each of them. This connection is presented in Figure 1. We should add that this "triad" functions in a particular cultural context.

As it was described above, various sciences delineate their object of study reducing the qualities of either person or environment. The proposed framework enables us to concentrate neither on
person nor environment, but on the transaction between them. This means that environment includes not only the physical objects and structures, but other people as well (but not the people only). Therefore it seems reasonable for us to deal with the environment not as physical or social, but as sociophysical.

![Diagram of Place, Activity, Relations]

Figure 1. The sociophysical system as a triad.

The consequences of transaction between subject and such environment are, of course, important from the viewpoint of this subject (f.e., a teenager feels that parents give him no peace at home), but to interpret them, we have to ascend to a higher level and deal with this person as a part of the sociophysical system, i.e., to analyse these transactions on the level of social unit (small group, family, etc.), including all the relationships that exist between the persons, as well as between persons and things. Such social unit, it turns, functions in a broader sociophysical context.

THE PROPOSED FRAMEWORK

We suppose that for analysing any sociophysical system (and a dwelling certainly is such a system) on the level of social unit, we have to distinguish for analytical purposes at least three interrelated realities or categories -- the above-mentioned place, activity, and relations (cf. Figure 2).

Sociocultural norms

As it was mentioned earlier, the sociocultural norms restrict the functioning of family or any other social unit. We must also remember, that such norms are generated during the functioning of a sociophysical system as well (but this will be a separate area of research, especially in cross-cultural studies). Such norms exist probably toward places (f.e., what a dwelling should look like), activities (f.e., what one can do in the living room or on the balcony), and relations (f.e., which family relations are considered "good ones") (cf. arrows $N_1$, $N_2$ and $N_3$ of Figure 2). In our
Figure 2. A framework for analysing transactions between people and environment
A - level of the social unit; 
B - level of the individual
The level of social unit

Let us have a closer look at the proposed scheme now. At the level of social unit we will be interested in the integral picture - the interrelationships between place, relations, and activities. In analysing the sociophysical system (or behavior setting in Roger Barker's terms (cf. Note 1)) we can distinguish the prevalent directions of influence (cf. arrows 1-6 on Figure 2), but we have to remember that the changes in one reality always lead to changes in the remaining ones.

Let us discuss shortly each of these "arrows".

1. The characteristics of place can hinder or facilitate some activity (f.e., for the lack of space in kitchen the family eats in the living room). The functional approach in architecture is based mainly on the analysis of such relationships.

2. During some activity we reorder the place or transform its physical structure (f.e., rearranging furniture in the room, or just closing a door).

3. The relations can create conditions for some activity or hinder it (f.e., father as a family member with high status either allows or prohibits the children to play in his study room).

4. During activities the relationships between the participants change (f.e., if the children still play in father's study, a conflict may arise). On the level of individual, the relation or attitude toward the activity itself may change (f.e., satisfaction with one's leisure).

5. To speak about the direct influence of place on relations we can only conventionally, although the physical parameters of place, to some extent, reflect or symbolize the sociocultural norms and restrict the spectrum of possible relationships (f.e., the relations between host and a stranger in the yard of the former).

6. The influence of relations on place is usually mediated through activities (f.e., the consequences of a family quarrel can be broken plates, locked door, or leaving of one party of the conflict).

Thus, place and relations are the relatively stable, and activity is the dynamic component of a sociophysical system. We could declare that the activity is a reality where the restricting influences of place and relations become evident (f.e., children do not play in the parlour due to lack of space, or because the parents prohibit them).
Activity
As the studies in the tradition of ecological psychology (Barker, 1968; Wicker, 1979) demonstrate, a particular behavior setting is characterized by a relatively stable pattern of activity (cf. also Michelson, 1976, Ch.3). On the level of a social unit we can speak of it as "behavioral lifestyle" (cf. Niit, 1983), which could be characterized both quantitatively (the frequency of different activities, the variety of activity, etc.) and qualitatively (joint or separate activities, passive or active activities, etc.).

Relations
Relations in this scheme can be status or role relations, on the level of individual -- emotional or attitudinal relationships (relations toward each other, value orientations, etc.) as well. We could hypothesize that the more meaningful and essential relationships exist in a setting, the less successful will be the "functional" architectural solution.

Place
Places can be characterized in spatial, functional and other terms. Proceeding from the logic of sociophysical approach, the participants of the situation as well as their socio-demographic characteristics (age, gender, etc.) should be included under the category of place (Note 2).

We could also hypothesize that the less transformable is the physical structure of place, the more probable is that changes will take place in the structure of relations or in behavioral lifestyle.

The level of individual
As it was mentioned above, in some cases the analysis on the level of individual will be needed, to include her/his relations and attitudes emerging during the functioning of a social unit into the integral picture. If on the level of social unit the individual is a componental part of the sociophysical system, the analysis on the level of individual will be possible only when confronting her/him with environment. At the same time, the individual unites in her/himself the characteristics of place (her/his physical body), relations and activities (cf. level B in Figure 2).

At the level of individual we will not deal with relations between somebody or interrelationships, but with relations toward somebody or something -- toward other people, their or one's own activities, or toward place. These attitudes may be favorable or negative, conflictual, dominant, etc. At this level the individual is restricted by parameters of place, the activities and relations (attitudes) of other people, and trying to balance these looks for a niche to "build her/himself into the environment" (cf. Heidmets, 1983). The sociocultural norms as a general back-
ground influence her/his functioning as well. These may become components of her/his attitudes or (s)he may confront her/himself with these norms.

**Different levels of analysis**
Thus, the processes and phenomena we are studying on the different levels are partly overlapping and partly different, but by no means can we restrict ourselves in our studies with the level of individual only. This excludes interpersonal relations which is an important facet of a sociophysical system. The more parameters or dimensions we can distinguish inside each of the three realities, the more adequate will be our picture or general understanding. It should be also evident that in different places (or situations) the same facets of relations or activities will not be equally relevant for the analysis. Therefore, in analysing various sociophysical systems we should try to distinguish preliminarily the essential parameters of places, relations, and activities by a phenomenological or some other kind of analysis.

It should be possible to construct a matrix for each of the place studied, where the essential parameters of relations and activities for the particular context are distinguished. Combining these with the essential parameters of place we will get the cube depicted below, which will be specific for a particular type of places, and in some sense, to each particular place (cf. Figure 3).

**Figure 3. A cube for analysing interrelationships in a particular place**
The dimension of time
It would be also desirable to study the sociophysical system at different moments of time (cf. T₁, T₂ and T₃ in Figure 4).

Figure 4. Longitudinal analysis of a sociophysical system.

Such longitudinal analysis would enable us to describe more precisely the socio-environmental processes (f.e., acquiring privacy, the development of attachment toward one's home, etc.), as the single measurement will give us a static picture only, although it enables us to delineate the most important connections and relationships. The repeated analysis also allows us to judge about the plasticity/stiffness of each of the three components in the functioning of the system. With a single measurement we can describe the state of a system at the particular moment (in a certain sense, the end state of some processes). Studying the systems where one parameter varies considerably, we can draw conclusions about its role in the functioning of the sociophysical system.

We could suppose that for longer or shorter time periods such a system tries to maintain relative balance or quasi-equilibrium, i.e., tries to preserve the structure of relations, activity, and the place itself. This balance is disturbed by the activity of participants (as well as their passivity, i.e., the lack of expected activity). The changes will occur in the most fragile facet of the system, and the system will stabilize for some period of time thereafter (Note 3). It is very difficult to conclude which state would be optimal for the system, although comparing large number of similar systems or proceeding from the sociocultural norms we could distinguish the qualities of effectively functioning systems (f.e., "good family relations", "decent home", etc.).

Cumulative influences on an individual
It would be naive to maintain that the behavior and relationships of an individual are determined by the qualities of the sociophysical system where (s)he is situated at the particular moment of time. If a person cannot carry out some activity in particular place, (s)he may "conserve" her/his activity (cf. Ittelson, Proshansky, Rivlin & Winkel, 1974) and carry it out in some other place. The everyday life of a person is localized in different places with which (s)he identifies her/himself more or less (home, work place, various places for leisure activities, etc.).
It will be important to consider the primacy/secondary of these places in terms of Stokols (1976) for an individual. Likewise, the person has usually some idea what her/his home, summer cottage, etc. should be and look like. This image (and the conflict between it and the reality) will modify the behavior and relations of the person as well.

CONCLUSION

The aim of the present framework is to provide the researcher with a kind of "mental map" for dealing with various situations and places. It allows to organize the existing studies of people-environment transaction, but empirical research can proceed from it as well (cf. Nii, in press). The main area of application of such framework will be in studies concerned with various primary environments (homes, offices, etc.), where relationships between people are an important facet and moderator of human action in the man-made world.

NOTES

1. Our "sociophysical system" is rather close to Barker's (1968) behavior setting. However, Barker is interested mainly in "extra-individual behavior", i.e. functioning of the whole system, whereas our framework emphasizes the need of analysis both at the level of social unit as well as at the level of individual.

2. Our conceptualization of place differs from Canter's (1977) approach. In Canter's understanding places have three constituents or facets: physical properties, activities, and evaluations (meanings). In our approach activity is a separate facet of the sociophysical system, and evaluative components of place are considered as relations on the level of individual.

3. In Altman & Rogoff's (1987) terms, our approach is transactional, although it probably contains some features of interactional and organismic world views.

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Vana Tentokali, Greece and Sandra C. Howell, USA

A CROSS-CULTURAL ANALYSIS OF THE DOMESTIC PRIVACY: FROM THE GENDER POINT

ABSTRACT

Studies of domestic space allocations across different societies strongly suggest that applications of the concept of privacy, as formulated for western industrializes populations, may be irrelevant, nonsalient or ambiguous to non-western household groups and to populations functioning according to pre-industrial rules of social organization. Of particular interest is the current determinant feminist literature on privacy constraints on the woman in household configurations. Depending upon whether privacy is defined as "the ability to control information about one's self" or "the ability to create physical boundaries that exclude others", the situation in many non-western extended family settings may be ambiguous. Control of information is not necessarily related to physical boundary delineation nor is the class of information to be controlled at all consistent cross culturally. Further, the absence of boundary labels for woman's individual space could be related to the more salient need for individuals to bond with gender, in order better to access and control information relevant to themselves and the multiage, cross-gender family with whom they reside and participate in collective economic activities. This paper is based on the case study of a muslim village in Greece.

HABITATION IN CROSS CULTURAL PERSPECTIVE

Particularly in the contemporary world, culture and stage of economic development interact uniquely to influence forms of habitation. In order to understand the transactions of co-residents in domestic space, it is necessary to be able to differentiate behaviors which reflect socioeconomic (or productive) status from those that appear as persistent rituals of habitation holding quite consistently across economic groups within a society. This is not an easy differentiation because in contemporary industrial societies the accessibility of consumer goods often penetrates the domestic environments across a broad range of socioeconomic classes.

It is on the habits of daily living within the household that attention must focus. Daily living consists of primary activities in which household members function transactionally. Daily living also, and importantly, contains the regularized interpersonal transactions in space that form a household's expectations. The presence of spaces within the home that appear to allow definition for these primary activities, from the researcher's perspective, may be defined in very different functional or intentional ways by households and their members. Household definitions may relate to a particular household dynamic or may reflect an underlying cultural imperative (Kantor and Lehr, 1975).
In the United States, people accustomed to viewing these differences is space use either as signs of life style variation across families within society or as a reflection of a particular household constellation in relation to the available space (e.g., the multiple uses for space necessitated by the transient presence of secondary kin such as grandparents or nephews). In other societies what may be being demonstrated is a persistant cultural pattern that is more a deeply rooted belief in how relationships and roles with a household should be conducted. Imbedded in the belief system are fast-held attitudes toward gender and age. These belief systems change with the developmental stages of the household and are also pressed by exogeneous forces.

At the agrarian stage of economic development of a Muslin village in Northern Greece, the gender and generational roles have been differently defined in terms of domestic space. Here the emphasis is placed on domestic space in its broadly productive and economic uses. Collective, rather than individual, activities dominate gender and generational roles. Household production becomes an integral part of the socialization process and dominates the uses of spaces in the dwelling.

Each society interprets household transactions within space in terms of a cultural heritage of expectancies. At times, this cultural heritage is confronted with new models of space and expected behaviors which may be tested and accepted or rejected.

THE HOUSEHOLD CONSTRUCT

The term "household" has been chosen rather than "family", because of our primary interest in the dwelling in transition, across cultures. As discussed by Netting, Wilk and Arnould (1984), the term "family" tends to preserve conceptual norms or ideal types within a given society in the face of changing values and increasingly heterogeneous behaviors across households. This structural "metaphor" seems more persistent in urban industrial societies and is heard in the wide debates in the United States about the "breakdown of the family", despite the evidently accepted and de facto variations in household composition and function. Furthermore, the particular language of family definition may vary across cultures and in relation to context. The "functional elements" that determine co-residence groups, and will provide the basis for our analysis, are borrowed from Wilk and Netting (1984): (1) A common residence, (2) Economic cooperation, (3) Socialization of children.

Some clarifications are needed in the use of these criteria. Common residence may include, at any given time; and by respondents definition of the situation, both of the other functional elements taking place on the same site but under separate roof. This qualification will allow the inclusion of the varied traditional and contemporary housing forms in a wide array of societies. Economic cooperation is not limited to productive activity (as in the Organiz, which is pre-industrial society) but may include more contemporary in-home business partnerships being pursued among a growing number of urban couples in industrial or post-industrial societies. Productive
activities also include household maintenance and rules about task roles. Household economic cooperation now more dominantly also refers to consumption decisions. Socialization of children, and particularly with regard to gender role, a main focus in these cases, restricted our choice of households to parenting ones. In the United States, for instance, this does not necessarily limit us to the ideal "nuclear family" but may include divorced, single, widowed or remarried parent households. In these cases we may see intermittent co-resident children or nonrelated adults, for whom spatial and task reorganizations take place. In Organi, the households are, most typically, patrilineal multiple families (all married sons, their wives and children, unmarried children of both sexes and grandparents).

VILLAGE HOUSEHOLDS IN ORGANI

Oda (room) is the primary designation for a multipurpose space in all of the household dwellings in organi, a Muslim community of Thrace, Northern Greece. The households have common characteristics, reflected in their composition, houseform, and use patterns. Governed by Islamic rules of household privacy, the Organi house is uniformly tucked behind a wall of nondescript and impenetrable building facade and a courtyard which is entered without visual access to the house entry.

The Organi house has two floors with four to six rooms per floor, depending on the number of married sons. The first floor (above ground) rooms are allotted one to each nuclear family. The ground floor rooms are rarely used as residential quarters for members of the household, principally being used for animals, storage, and certain food preparation activities. The nonfamily rooms are occupied for varied productive tasks (weaving, food preparation) but never sleeping. When the son of family S. married, an oda was added and the daughter-in-law and, later, their children considered that enclosed space as their sleeping domain and the place where their possessions were stored and displayed. Household members slept on the multi-rugged floor or the conjugal couple slept on a bed (a recent popular furniture item), each in their particular oda. When asked to explain the persistence of children, all ages, sleeping in the space of parents, the repeated response was, "This is how it is and should be." The bed, if present, is always placed tightly against the walls of a corner and, during daytime, can be sat upon by any members of the household for varied activities and social interaction, mainly of the women. In this sense, these spaces are not at all "private".

Also on the main floor is a smaller space called satzak (life). Never used for sleeping, the satzak is a transition space between inside and outside, closed and open, private and semipublic. This space, as well as the sleeping oda, contains many activities. During one visit to the S. home, the researcher was invited to join the household for dinner in the satzak. All members of the household (male-female, child-adult) participated, seated on floor rugs around a low table, sharing the single bowl, each with his/her own spoon.
Fig. 1 Organi Village House

Men are rarely on the main floor of the house during the daytime hours. The major social space for the village men is a local coffee house - general store, where women are not allowed. Children are sent to purchase needed items from the store. Men work in the fields, surrounding the houses (where women also participate) and in the courtyard or ground floor performing some of the maintenance and animal care tasks (although women dominate these). The courtyard is an outside accessible space where the women may come and go without veil.

There is no word for "privacy" in the vocabulary of the Organi household. In response to persistent probing by the researcher, the women were alternatively puzzled or amused by the alien idea of being alone, having time to oneself, having a place to be away from others, etc. Conversation among the women, and with the researcher, were dominantly about men, family and clothes (the wearing of Western clothes, only within the residential compound, is a joyful recreational activity among Organi women). Regular participation by male and female children in assigned gender-specific tasks is referred to as "play" by the women. Daughters learn the crafts of embroidery, rug and pillow making for the household and their own dowries.

The clear impression given to the architect-researcher was of the meaningfulness of collective use of space among the women. Isolation from the group seemed to imply rejection or distance from significant activities and information. Even the daughter-in-law, whose tasks were clearly subordinated to the will of the mother-in-law, who spoke little in that household, revealed, on a visit to her family of origin, her acceptance of the delegated role within the marital household.

The important fact emerging from this case is that in this multi-family enclave no consideration has been give to conversion or expansion of spaces in order to provide more separate quarters for individuals, including and particularly unmarried adolescents or adult children. The issue of spatial pri-
Privacy is quite clearly not salient in this culture and not relevant to the activity patterns that dominate daily life. Temporal factors also heavily dominated the activities and the uses of both inside and outside spaces.

THEORETICAL ISSUES IN DOMESTIC PRIVACY

Three theoretical issues need to be further explored in future cultural research on habitation: 1. The changing and varied expressions and meanings of privacy as "control" in relation to domestic space. 2. The interactions between gender and generation as an evolutionary process relative to perceptions and occupancy of domestic space. 3. The dynamics of "vernacular" dwelling; within-culture changes interacting with cross-cultural seepage.

The concept of "control" has referred, in Western psychological literature, to the domain of the individual. Thus, when control is used to connote an essence of privacy within the home, it is to the individual's perceptions and behaviors that attention is paid. That this individualistic rendering of the concept of control may be culturally biased toward Western socialization patterns is argued in recent discussions between Japanese and American psychologists (Weisz et al, 1984; Azuma, 1984).

Religion, law and architectural rules govern privacy regulation in most Islamic culture. Privacy is directed toward the insulation of the whole household from outside, non-kin exposure. According to Sal-em Al Hathoul (1980):

"The concern for privacy was reflected in the physical plans in several ways. Among these are the placement of doors with the street, avoidance or the architectural treatment of windows on the street, and the limit on building heights throughout the city."

The issue of individual control of space, with the Islamic agrarian household studies, appears to be nonsalient. But there is also an ambiguous linkage either to religious proscriptions on gender separation or perpetuation of socialization to gender roles, dominantly by senior females of the household. Janet Aby-Lughod (1980) suggests this ambiguity in her comments about the regulation over male-female conduct, and the architectural controls to "assure female modesty, "that are differently manifest in Muslim and Hindu societies. Traditional Hindu households segregate within the dwelling to secure the women from male kin.

"In Islam, maximum segregation between the sexes is required outside the kin group .... private (household) space is safe and secure".

A further ambiguity, which was not specifically explored in this study, is that of the temporal aspects of dwelling use, and particularly of time-defined domination of interior space and decisions about appointing that space by the women in the household.

Gender and generational theories on the meaning of domestic space have certainly begun to emerge in the North American literature. Gelfond (1982)
argues that for American suburban not otherwise employed women, the perception of privacy in the home is a defense, through isolation, against the unknown threats of the commercial world. Howell (1983b), and others close to the field of Aging, perceive attachment to dwelling and privacy definitions within the dwelling more as expressions of competence or mastery, of particular relevance in the face of social and physiological losses.

On a broader, cross-cultural scale, the seepage of Western design and modern construction technologies already challenge household behaviors in many newly urbanizing societies. It is important that we find new ways to monitor and analyze this simultaneous change in households and habitat.

REFERENCES


Environments for special groups
Falls are a major health problem among the elderly, resulting in death and injury as well as negatively affecting quality of life. Most research on falls specific to the elderly has been conducted from a medical and public health perspective, and emphasized health status and other personal factors. Studies which examine the role of environmental and behavioural contributions to falls among the elderly suggest these factors also are important. However, the environment and behaviour research community has shown little interest in falls, except for a small body of stair safety studies. Existing research is examined as a basis for pursuing more situationally-oriented studies of falls in the elderly.

INTRODUCTION

Falls are a major problem among the elderly, influencing quality of life as well as health. Hip fractures are the most frequently occurring type of major injury sustained by elderly fallers, and it is estimated that over 80% of all fall-related hip fractures occur among the elderly (Baker, et al., 1984). While fractures and other physical injuries have received the greatest attention, there is increasing realization that falls also have negative psychological and social consequences, independent of the occurrence of injury (Colling & Park, 1983; Hadley, et al., 1985).

Most falls research specific to the elderly has been conducted by medical and public health researchers, and has emphasized identification of personal factors associated with falling (e.g., health, age, sex, medications) (Cf Barbieri, 1983; Campbell, et al., 1981; Kalischlager, et al., 1978; Macdonald, 1985; Perry, 1982b; Waller, 1974).(1) Prior research also has attempted to relate fallers symptoms to specific disorders which could have triggered falls (e.g., syncope, postural hypotension), and to articulate the effects of such disorders on cardiovascular, neurological and sensory-motor control processes, thereby affecting postural stability (Cf Blumenthal & Davie, 1980; Gordon, et al., 1982; Leibowitz & Shupert, 1985; Lipsitz, 1985; Owen, 1985; Stelmach & Worringham, 1985; Tideiksaar & Kay, 1986). However, there is increasing recognition that this research orientation has explanatory and predictive limitations (Tinetti, 1987). Those at risk do not fall every time they are mobile, nor are falls restricted to those at risk. Furthermore, fallers are not always
found to have health disorders which, theoretically, could cause falls, nor does the presence of these disorders clearly distinguish those with and without a history of falling. Moreover, it seems likely that, in at least some cases, a number of the suspect disorders are manifest as transient rather than enduring dysfunctions whose onset might be tied to situational factors such as environmental conditions and faller behaviour. However, prior research on falls in the elderly has generally failed to consider situational factors, or dealt with them in an unnecessarily oversimplified way. Surprisingly, except for a small group of stair safety studies which are not specific to the elderly (Archea, et al., 1979; Carson, et al., 1978; Templer, et al., 1978), falls have received little attention in the environment and behaviour research community.

FALLS VERSUS FALLS INJURY

Studies of falls tend to be distinct from those of falls injury. Falling, the inability to maintain upright posture, is a result of the performance of sensory-motor, vestibular, cardiovascular and neurological systems in a given situation (Leibowitz & Shupert, 1985; Lipsitz, 1985; Owen, 1985). In contrast, the occurrence of serious falls injury (in the elderly the greatest concern is for fractures) is largely a function of the impact sustained by falling on a given surface and bone strength (Melton and Riggs, 1985). In other words, the factors involved in falling versus not falling are different from those which determine if an individual will sustain or avoid injury as a result of a fall. This independence shows up in the marginal overlap in research, and in the goals of intervention.

There is a growing emphasis on approaching the problem of falls in the elderly from the perspective of reducing the severity, if not occurrence, of falls injuries (Cf Mackie, et al., 1986; Templer, 1985). While reducing injury is a laudable goal, this emphasis carries with it the tacit assessment that falls which do not result in serious injury are relatively unimportant. However, there is some evidence that falling can negatively affect quality of life, whether or not an injury is sustained (Colling and Park, 1983; Hadley, et al., 1985). For example, a fall may be seen as a warning, and lead to self- or caregiver-imposed restrictions on independence. There also is the possibility that the use of "softer", impact-attenuating floor finishes to ameliorate falls injury will destabilize balance and falls rates will increase. Furthermore, the emphasis on injury prevention directs attention away from the need to better understand why falls occur, and to what extent, for whom, and under what circumstances they are preventable. And, what we do not understand very well is the role and relative importance of situational considerations, and their interaction with personal variables. This paper focuses on research on falls, in contrast to falls injury, among the
elderly. Emphasis is placed on situational contributions to falls and their interaction with personal factors.

ROLE OF SITUATIONAL FACTORS

Prior research on falls among the elderly reflects a view that situational factors, especially environmental factors, are of limited importance in accounting for falls. This view is rooted in a logic which conceptualizes the aetiology of a given falls incident as dominated by either intrinsic or extrinsic factors (Cf Perry, 1982a; Waller, 1974 & 1978). This view creates a framework for distinguishing among the likely causes of different types of falls, and linking different types of falls with different groups of elderly. In this framework, environmental hazards, not personal variables, are seen as most salient in accounting for falls among healthy, often community-living, elderly. Many of these falls are attributed to trips and slips. In contrast, personal factors, such as underlying health disorders and medication side effects, which likely compromise postural stability, are seen to account for most falls among the less healthy elderly. Falls resulting from loss of balance and "just going down" are frequently reported by this group (Brocklehurst, et al., 1978; Campbell, et al., 1981; Perry, 1982 a & b; Sheldon, 1960; Waller, 1974 & 1978).

The partitioning of aetiology into two independent branches is problematic in several ways. First, it leads to the conclusion that situational, especially environmental, factors are not important in understanding several types of falls (e.g., loss of balance, blackouts), and creates the impression that environmental factors are not involved in falls experienced by elderly with underlying health disorders. Most studies of situational factors have utilized samples of community-living elderly, and questions about the interaction between situational and personal factors are seldom pursued. For example, in the case of trips, questions are not asked as to why an extension cord or other environmental hazard was not seen and avoided, nor are other questions about the faller's enduring and situation-specific visual functioning and its relation to location-specific environmental conditions. In the case of falls presumed to be dominated by intrinsic causes, such as an underlying medical disorder, questions about a faller's behaviour and environmental conditions may be asked but are unlikely to be probed in any depth. In general, environment and behaviour researchers' propensity to explore the relationships between situational and personal factors has not been realized in prior research on falls in the elderly.

A second, and fundamentally more important, problem with treating situational and personal factors as independent causes of falls pertains to the evidence which supports this partitioning. Most research which has explored the causes and circumstances of falls
in the elderly has used a retrospective research design; that is a sample of fallers are identified and interviewed about prior falls, or institutional records are reviewed. Fallers' self-reported or recorded symptoms (e.g., dizziness, vertigo) and categorical descriptions of faller behaviour at the time of an incident, and, in some cases, environmental conditions at the site of a fall are apparently classified as instances of types of health disorders or situational hazards. An elderly faller's report of "just going down" while preparing dinner becomes an instance of syncope; dizziness preceding a fall which occurred while rising from a chair becomes postural hypotension. The situational factors, if any, which contributed to these falls are lost in the classification process. Falls in nursing homes are attributed to situational factors so seldom that it seems likely they are recognized only in incidences which involve blatant environmental hazards or dangerous behaviours.

Studies Specific to the Elderly
A small group of medical and epidemiological studies have focused on identifying situational factors involved in falls experienced by the elderly. In a classic study of falls among community-living elderly (Sheldon, 1960), one-third of a large sample of falls were categorized as accidents resulting from: missteps on stairs, trips and slips on level surfaces, and situations of inadequate lighting. A recent case-control community study of elderly fallers has assessed the potential hazard status of common residential design features, such as storage of different heights (Devito, 1987). Another recent study found that falls occur when: 1) there is a reduction in proprioception in conjunction with a dark environment; and/or 2) there is an enduring or transient reduction in visual input in conjunction with a trip hazard (Tinetti, 1987). Collectively, these studies suggest that the importance of environmental factors is not limited to obviously hazardous conditions. In some cases, difficulties in obtaining adequate and accurate sensory input about physical surroundings may play a role in the occurrence of falls, and such difficulties may result from the situation-specific interaction of personal factors, such as sensory functioning, and environmental conditions (Owens, 1985; Tobis, et al., 1981).

A careful reading of these studies suggests that situational factors also may contribute in less apparent ways to falls attributed to underlying health disorders. Those who experience falls attributed to "drop attacks" (2), syncope, vertigo and postural hypotension often reported that they "just went down", or became inexplicably dizzy or giddy. However, such falls seem to occur in conjunction with activities which involve reaching, head rotation/extension, or a change in body position (Barbieri, 1983; Brocklehurst, et al., 1978; Sheldon, 1960; Wild, et al., 1981). The identification of activities frequently associated with falls among the elderly (e.g., those involving reaching, standing up) is suggestive of how routine space use might trigger postural
control problems which are rooted in underlying health disorders. Body movements involved in routine activities appear to have transient effects on cardiovascular functioning which radically lowers blood pressure, reduces cerebral blood flow, etc. (Brandt, 1981; Lipsitz, 1985; Tideiksaar & Kay, 1986).

In general, there has been little theoretical or empirical attention to if or how environmental and behavioural variables interact with each other and with personal factors. For example, unless one recognizes that in reaching for items on a high shelf, one tends to extend the head backward, and that head extension can interfere with cerebral blood flow and disrupt equilibrium, it is far from clear how storage heights can theoretically relate to falls. Furthermore, existing research on falls among the elderly provides no framework for understanding why a given elderly person, engaged in a given activity on two different occasions, falls on one occasion and not the other.

**Stair Safety Studies**

A series of stair safety studies, while not specific to the elderly and limited to falls on stairs, constitute the most comprehensive examination of situational contributors to falls (Archea, et al., 1979; Carson, et al., 1978; Templer, et al., 1978). Successful stair use was found to involve looking at the first tread to estimate where the foot should be placed, and using kinesthetic feedback from stepping to adjust that estimate prior to the next step. This test/adjust process was observed while subjects negotiated the first three steps, as well as after a misstep. Stair incidents occurred when: (1) the initial test/adjust process was not utilized or was unsuccessful; (2) surrounding vistas or events distracted stair users' attention away from the test/adjust process prematurely; or (3) stair conditions changed abruptly from those initially encountered (Archea, et al., 1979; Carson, et al., 1978; Templer, et al., 1978).

The stair safety studies lead to the development of two situational concepts, visual deception and distraction (Archea, 1983, 1985, 1987). These concepts seem potentially useful in understanding the role of situational factors and their interaction with personal factors in falls among the elderly on level surfaces as well as on stairs.

Visual deception on stairs occurs when visual cues regarding tread depth or location of the tread nose are misleading. Such conditions are created by lighting conditions (e.g., shadow, glare), and by floor finishes (e.g., patterned carpet). Visual deceptions are not limited to stairs. For example, natural light striking the type of flooring typically found in nursing homes and other institutional settings can create glare, and conceal a trip or slip hazard on the floor. Furthermore, age- or disease-related losses in visual functioning (e.g., acuity, light-dark adaptation) can make deceptive conditions more problematic for
the elderly than for other age groups (Archea, 1985).

Visually-based, location-specific distractions are associated with situations in which attention to an on-going task is diverted by a compelling (i.e., information-rich) vista, abruptly revealed as one passes a horizontal or vertical architectural edge (Archea, 1983). These situations are commonly encountered in descending partially enclosed stairs. In the stair studies, those stairs with a higher number of incidences than expected by chance were also more likely to have compelling views. Furthermore, nearly one-fifth of the missteps in the stair studies were immediately preceded by a "shift (in the subjects') apparent object of attention", including in some cases an overt "change (in) the direction in which they were looking". The apparent and overt changes in visual attention were among the most frequent behaviour changes preceding falls incidences. The strength of the effect of compelling vistas on attention distraction is related to the amount of information suddenly revealed, the complexity of the information to be assimilated, and one's proximity to the architectural edge which reveals the vista (Archea, 1983).

Location-specific visual distractions are not unique to stairs. They also may be encountered when walking through or past doorways, and at the intersection of two corridors. Extrapolating from the stair studies, one might expect falls among elderly persons to occur frequently at those locations along a path of travel where there is the potential for their attention to maintaining postural control (e.g., foot placement) to be distracted. In addition, Archea has speculated that rapidly turning the head to view an emergent vista might trigger syncope in the elderly (Archea, 1987). In the stair studies, visually-based distractions are emphasized. Auditory distractions, such as an unexpected, loud crash coincident with rising from a chair, also seem potentially important in understanding falls among the elderly.

BUILDING ON THE PRECEDENTS

If environment and behaviour researchers were to initiate a serious program of research on falls in the elderly, how ought that research to be formulated? What major problems would have to be resolved?

First, there is a need for primary data on falls in the elderly, and this seems especially important if there is a desire to go beyond identification of obviously hazardous environmental and behavioural situations. Prior research specific to the elderly has been based on recall and secondary falls data. In contrast, the stair safety studies included extensive filming of stairs in use to obtain primary data on fall events.

The goal of obtaining primary falls data raises interesting, but
resolvable, technical problems, as well as more difficult ques-
tions about ethics and privacy protection. Recent advances in
video-recording technology (e.g., rapid start activation devices;
lenses operative at one lumen of illumination) make the technical
problems of unobtrusively obtaining primary data on unpredictable
events of short duration, such as falls, increasingly manageable.
However, there are serious questions about exposing elderly
persons to unnecessary falls and falls injury risk in the name of
research. The most satisfactory way out of the ethical dilemmas
is to focus on naturally-occurring falls --- falls which would
occur whether or not research was taking place. However, if
naturally-occurring falls are utilized, in contrast to inducing
falls in laboratory settings, it is likely that there will be
problems with violating the privacy of participants. For example,
most institutionalized elderly fall in bedrooms and bathrooms. To
record a reasonable number of incidents in a reasonable time-
frame, it seems likely that filming will need to be done in these
areas. Careful positioning of recording and system activation
equipment may help to resolve these concerns.

A second major issue relates to describing, if not measuring,
situational factors. Environment and behaviour researchers have
not been a great deal more successful than their medical colleagu-
es in articulating behaviorally-relevant, environmental condi-
tions in meaningful terms. The medically-oriented studies use
measures, if they can be called that, such as "poor illumina-
tion". In falls research, and in the field as a whole, there is a
need for behaviorally-relevant models of architectural settings
which permit greater precision in characterizing the attributes
of those settings which create the "conditions of possibility"
for the phenomena of interest.

To make sense out of primary falls data, we need to develop
methods to code and analyze falls which preserve their meaningful
complexity. Initial consideration of this problem suggests we
need ways to describe spatial, behavioural and social contribu-
tions to falls, as well as the sequence and interaction of the
components of what often begin as routine events. Merely count-
ing the frequency various codes appear will not get us far.
Furthermore, we need to expect to obtain small numbers of fall
(and near fall) incidences in comparison to nonfalls, and the
healthier the sample, the lower the percentage is likely to be.

The stair safety studies demonstrate the importance of developing
and/or adopting concepts such as visual deception and distraction
to interpret incident data, and to more fully explain the role of
situational variables and their interaction with personal vari-
able. Additionally, little attention has been given in prior
research to the role of the social context of falls among the
elderly and how building design prefigures those contexts. One
can envision fall situations in which a critical consideration is
who a faller could see or hear at the location of the fall, and
what they were doing or saying. For example, it would be informative to map a faller's route of travel and direction of gaze up to the moment of a fall, as well as the location and actions of others, onto drawings which show architecturally-determined potential to see from different locations along those routes.

Finally, environment and behaviour researchers should take care to avoid the disciplinary tunnel vision evident in medically-oriented falls research. Personal variables are important. We need to obtain baseline and post-fall data on visual, neurological, and cardiovascular functioning in elderly subjects.

In sum, there is great need for an environment and behaviour perspective in the study of falls among the elderly. In addition to the benefits which hopefully will accrue to the elderly, the study of falls among the elderly seems to create a context in which we may further elaborate situational views of environment and behaviour interactions.

NOTES

1. Space prohibits a complete listing of the relevant references. Those included are representative of prior research.

2. The diagnosis of "drop attack" seems to have been invented to describe falls in which individuals found themselves on the floor for no apparent reason. The term is not satisfactory from a clinical or analytical perspective. It is seldom seen in recent work.

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Clare Cooper Marcus  
Department of Architecture  
University of California  
Berkeley, California 94720*  

PINK PALACE TO ROSA PARKS TOWERS: HIGH RISE REHABILITATION USING ENVIRONMENT AND BEHAVIOR RESEARCH  

The objective of this paper is to present a case study of the rehabilitation of a high-rise family housing project in San Francisco to provide attractive housing for low-income elderly persons. The author's role was first, as a programming-consultant "translating" existing environment and behavior research on elderly housing for use by the design team. And second, conducting a simple, no-budget post-occupancy evaluation (POE) of the building, three years after the residents moved in. These two phases of work will be described, and some of the POE results briefly presented and analyzed.  

In 1962, the San Francisco Housing Authority commissioned an 11-story building officially named "Yerba Buena Plaza Annexe". It contained 211 apartment-units, designed for a mix of low-income families and elderly persons. Located in a low-income neighborhood with a high crime rate, the building was never a satisfactory living environment, especially for families with small children. It was plagued with vandalism and high-vacancy rates and its negative image was exacerbated by lack of upkeep and newspaper stories of gangs and crime. It was referred to sarcastically as "The Pink Palace". In 1980 the Mayor of San Francisco determined to make a major change. Since the building structure was basically sound, it was decided to relocate the residents and totally rehabilitate the building into apartments for the elderly.  

PRE-DESIGN PROGRAMMING  

In November 1981, Marquis Associates (Architecture Planning Interior Design) were hired by the Housing Authority to redesign the building and adjacent outdoor space. They, in turn, hired me as a programmer/social design critic; Young Associates, minority architects; Richard Shadt, landscape architect; and Sussman/Prejza, color and graphics consultants. Due to a very limited time span before we had to produce a design scheme (November 1981 to January 1982), my principal contributions were as follows:  

1. Visiting six comparable high-rise schemes for low-income elderly in San Francisco with the design team; interviewing building managers regarding resident-use of social rooms and outdoor spaces, and reactions to apartment design.
2. Reviewing books of design guidelines on elderly housing and post-occupancy evaluation studies of comparable projects. The most useful source was Sandra Howell's Design for Aging because it provided clearly worded and illustrated research-based guidelines.

3. Attending brainstorming sessions with the design team, and presenting relevant findings on elderly housing in a quickly-assimilable form. Butcher paper was attached to the wall. In one column were listed the major physiological, psychological, social and economic issues for an aging, low-income person; against each, we recorded all the ways in which environmental solutions might address that issue. For example, we proposed that the issue of "loneliness and withdrawal from the world," as far as that could be addressed environmentally, might be met by a range of social spaces inside and outside the building where residents could see and meet each other on a casual or an organized basis.

4. Critiquing various alternate plans, especially as they related to our "wish-list" of resident-needs. I took the role of a prospective resident or manager, and questioned the particular design, size, location, outlook, adjacencies, etc. of various spaces proposed by the designers. As work advanced, I found it more useful to study the plan alone, and to "walk my way" through various rooms and spaces, raising questions which I wrote directly onto the plan. With the preliminary landscape plans, for example, I raised issues about details of outdoor spaces for sitting, gardening, walking; the need for plant materials to reflect seasonal changes; the need for a rich sensory experience, and so on. The landscape plan was considerably modified as a result; its initial image of "a park" was modified to that of "a garden".

5. A final task was to prepare a programming report for our client, documenting the procedures we had followed, and describing how we had met each of the issues identified as significant to aging persons in their home environment.

The building was completed in 1984. It was renamed "Rosa Parks Towers" after a heroine of the Civil Rights movement. The residents selected by the San Francisco Housing Authority began to move in in 1985.

POST-OCCUPANCY EVALUATION

During the design phase, I urged our client to set aside money for a post-occupancy study, and for fine-tuning the environment in light of resident-needs that we might have overlooked. In principal, our client agreed, but in reality, political and financial problems within the Housing Authority eliminated this budget. I felt strongly that we needed to learn from our experiences. With student assistance I planned and conducted a
no-budget study. Architecture students in a seminar (Spring 1986) developed, with me, an interview-schedule. Management problems in the building delayed the study for a year. In Spring 1987, another group of students conducted the interviews. Since we had no time or money to draw and follow up a true random sample, we had to rely on the manager to invite those residents who wished to participate, to be in the Main Lounge on a particular morning when 15 of us came to conduct interviews. While we were aware that a certain bias might be built into such a sample, we felt that under the circumstances of little time and zero-budget, it was better than nothing.

Since the Housing Authority had wished this building to represent a cross-section of low-income elderly persons in San Francisco, the 200 apartment units are occupied by white and black English-speaking residents; Spanish-speaking residents (largely from Mexico and Central America); Chinese-speaking residents (largely from Hong Kong and Taiwan); and recently-arrived Russian-speaking immigrants. This created some problems in interviewing. Two Spanish-speaking students interviewed Spanish-speaking residents; a Russian-speaking visiting scholar was our Russian interviewer; and a Chinese-American social worker interviewed Chinese-speaking residents. The number of English-speaking interviewees (17), Spanish (8), Chinese (8) and Russian (4) were roughly in proportion to their presence in the resident population. The proportion of males to females in our sample (one-third/two-thirds) was also in proportion to the gender ratio in the building.

Results of post-occupancy evaluation

The design program of this building was based upon a number of assumptions or hypotheses regarding the probable needs and preferences of older persons moving into a building of this size, in this location. For the purposes of this brief paper, four key issues will be addressed.

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Design responses</th>
<th>Interview question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The negative memories of the</td>
<td>o Exterior corridors</td>
<td>o What do you feel about how Rosa</td>
</tr>
<tr>
<td>&quot;Pink Palace&quot; must be erased; a</td>
<td>o Building repainted</td>
<td>Parks looks from the outside?</td>
</tr>
<tr>
<td>positive exterior building image</td>
<td>o Semi-private entry</td>
<td></td>
</tr>
<tr>
<td>important.</td>
<td>o Building renamed</td>
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</table>

94% liked what Rosa Parks looks like: "typical comments were "Beautiful - impressive - outstanding - I like the "modern" look - looks like a beautiful big hotel - we are proud..." The few negative comments related to the fact that the name and address plaque is difficult to read, and that, despite the new colors, the structure still looks like a "box or hospital".

The designers had pressed me to predict how residents might respond to the largely "post-modern" palette selected by a distinguished
color-consultant. I refused since I knew of no research relating to the color preferences of elderly Californians, but I suspected many might find the colors "too modern". I was clearly wrong!

Just over half those interviewed used the roofed "front porch" sitting area which is adjacent to the street, yet clearly part of the territory of Rosa Parks Towers. They used it, as we had expected, "to wait for people - look at the people and cars coming and going - to talk and socialize". The physical presence of residents close to the public street, the fact that one passes through a gate to enter this "front porch", and that the outer doors of the building are controlled by a security guard or "doorman" - all of these helped to create a positive and secure image experienced by nearly all the residents. Clearly, the image of the original building has changed. Even the architectural critic of the San Francisco Chronicle (often caustic in his comments) wrote that the designers had turned the 11-story slab "into a fresh and vital environment...the first sign of a profound change in mood at the old Pink Palace is the inspired paint job by Deborah Sussman;...the mammoth concrete monolith has been scaled down...(though this may be) dismissed as cosmetic, the painting is part of a unified program to create well-being, even hope, where there had only been despair."

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<tr>
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<th>Design responses</th>
<th>Interview question</th>
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<tbody>
<tr>
<td>2. New residents will wish to meet and socialize with others and will want to do this in shared communal spaces of varied size, location and function</td>
<td>Many spaces designed and furnished for use o Large social room o Smaller sun-lounge o Entry and elevator lobby o Library o Family room o &quot;Men's&quot; social room o Garden courtyards</td>
<td>o Has it been easy for you to get to know people here? o Where are you most likely to run into people you know? o Do you ever use...?(social area named) o Do you participate in any planned activities in the building?</td>
</tr>
</tbody>
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In rehabilitating the building, the ground floor of the old Pink Palace was totally reorganized. A dozen vulnerable apartments were removed and replaced by a generous entrance lobby, manager's office, mail box area, kitchen, laundry, large lounge, sun room, library, health clinic and multi-purpose room. The assumption was that residents would wish at times to leave their apartments and use a variety of attractive social spaces.

The following table illustrates the proportions using each of the social spaces provided in the redesigned building.
Social space

<table>
<thead>
<tr>
<th>Social Space</th>
<th>Proportion Reporting that they used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main lounge</td>
<td>89%</td>
</tr>
<tr>
<td>Sun room</td>
<td>82%</td>
</tr>
<tr>
<td>Entry/elevator lobby seating</td>
<td>71%</td>
</tr>
<tr>
<td>Library</td>
<td>41%</td>
</tr>
<tr>
<td>Family room (11th floor)*</td>
<td>6%</td>
</tr>
<tr>
<td>Men's activity room (11th floor)*</td>
<td>0</td>
</tr>
</tbody>
</table>
*Currently kept locked by management

Undoubtedly, the entry and elevator lobbies on the ground floor are the most continually used social spaces. From early morning to evening, there are always a few—and sometimes many—people chatting, waiting, or just watching the world go by. These spaces are used almost exactly as expected—the key factors being comfortable seating; views out to street and approaching cars; proximity to offices of manager and security guard; view to "passing parade" of residents coming and going to elevators, mail boxes, front doors; and location of seating and plants so that passers-by are not overly troubled by "offensive surveillance".

The main lounge is used by almost everyone at some time (for Bingo, classes, tenants' meetings, etc.), but not nearly so continuously as the front lobby. Over 70% of the residents participate in planned activities, and it is for these that this space works particularly well. The furniture is light enough to push back to the walls or to rearrange; the carpet provides a good surface for exercise classes; the entry stairs to the lounge from the lobby double as a stage for a speaker or screen; the room is proportioned such that all can see and hear. The most popular planned events are Bingo games, exercise and English classes, parties, and Tenant Association meetings. Although residents described this space as "comfortable - light - cheerful - beautiful - well-built...", our feeling is that its large size (needed for meetings, etc.) and its all-of-a-kind furniture, makes it seem more "institutional" than we would have wished. It is used for planned events, but less that we supposed as a "living room".

A smaller sun-room is used very much as predicted: for casual meetings, sitting in the sun, looking out at the garden, playing cards. It is roughly the scale of a domestic living room, positioned to catch the afternoon sun, close to a laundry, and furnished in a relaxed fashion. More than 80% of our sample used it, and when asked what they liked, most responded, "Everything about it!"

A small reading room/library located at the end of a short corridor on the ground floor was used by less than half the residents. The primary reasons for non-use were only partially design-related... "too small - uncomfortable"; a significant reason for non-use was that there were no books in Russian, Spanish or Chinese, the mother-tongues of almost half the residents.
The 11th floor of the old Pink Palace had comprised vandalized laundry spaces. In redesigning the building, a decision was made to make use of the plumbing on that floor by providing a hydrotherapy room (Jacuzzi and showers); and two social spaces that needed more privacy—a family room, to use for private parties or family gatherings too big for an apartment; and the Men's Social Room. The latter was provided since men are often a minority group in elderly housing. None of these spaces worked as expected. Management has never had enough money to pay for a trained hydrotherapist, so the space remains locked and unused. The Family Room can be booked for use by residents, but management doesn't publicize its availability; few use it, and those that do complained of its small size and isolation. The Men's Room, like the Family Room, is kept locked by management and its availability is not publicized. A partial reason for its non-use is undoubtedly the language barrier between various groups—the few Russian or Chinese men, for example, prefer to stay with their own language group (men and women), and socialize in the sun-room, lobby or garden.

Howell's research indicates that used social spaces are located near to residents' natural "comings-and-goings". Nevertheless, we had hoped that the specialized-use of the 3 spaces on the top floor of Rosa Parks would attract people up there to use them. Lack of budget and management disinterest, combined with their more remote location, rendered these spaces relatively "wasted". If provided in a more visible location (i.e. ground floor) it is possible that residents would have lobbied for them to be unlocked, and/or used them for valid purposes other than those predicted.

76% felt it had been easy to get to know others in the building, either through casual encounter ("I know everyone on my floor"), or through classes, or planned events. Poor health, language barriers or personality traits ("I am a solitary person") were the chief reasons cited for not being able to make friends. Two-thirds preferred to live in a building where everyone is roughly the same age. 89% felt the number of people living at Rosa Parks (just over 200) was "Just Right"; comments included "We don't get in each other's hair, but there are enough to talk to", and "It's not overcrowded, there are enough people to meet..."

When asked where they were most likely to run into people and stop for a chat, residents cited (in order of importance) the corridor between their apartment and the elevator, the front lobby, the social room, and the garden courtyards.

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Design Response</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Older people living in small apartments will welcome the chance to walk and sit outdoors in</td>
<td>Former asphalt courtyards radically re-designed into spaces reminiscent of a garden, within the outdoor courtyards to go for a walk, sit, use the tables,</td>
<td>Do you ever use the outdoor courtyards to go for a walk, sit, use the tables,</td>
</tr>
</tbody>
</table>

417
Three-fourths of the residents used the courtyards; going outside for a walk and to sit were the two most popular activities. Half the residents used the outdoor tables and the swing-seat (provided because it was so popular at another elderly project). The horseshoe game area (retained from the Pink Palace days) was never used; it is usually a men's game, and the number of American-born males (who would know how to play it) was quite small.

All the raised garden beds (a total of 190 square feet) are in use for growing vegetables; management keeps a waiting list for those who would like to garden and for whom there is no space available. Clearly, the number who wanted to garden was under-estimated; in retrospect, the horseshoe area and some of the gardener-maintained areas of ground cover would have been better used for raised vegetable beds. One-fourth of those we interviewed never went outside, largely because of ill-health or disability.

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Design Response</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Moving to a large, potentially &quot;institutional&quot; building; residents will appreciate having, or helping to create, a home-like environment.</td>
<td>- Choice of studio, one-bedroom or two-bedroom apartments with kitchen, bathroom, bedroom, living &amp; dining room</td>
<td>What do you like/dislike about your apartment? What could the designer have done to make it feel more home-like? Of all the dwellings you have ever lived in, which most represents your feelings of home?</td>
</tr>
<tr>
<td></td>
<td>- Shelf and bench at apartment entry for personalization</td>
<td>The great majority were delighted with their apartments: the most frequently mentioned comments were about the view, ample light and air, well-designed kitchens, and large closets. Half those interviewed could think of nothing they disliked; of those that had mild complaints, most revolved around the size of the apartments. Some people felt constrained in the numbers of guests they could entertain, but the most poignant aspect of size was lack of room for the possessions of a lifetime. When asked &quot;Did you bring all your furniture and possessions from your home?&quot; almost half responded &quot;no&quot;, and reflected with comments such as: &quot;I felt bad, but I couldn't bring it all&quot;; &quot;I'd like a larger apartment with room for all my things&quot;; &quot;I felt terrible about it for a while, but I needed to move to a smaller place&quot;; &quot;I missed my things but I couldn't bring much&quot;. We were unsuccessful in an attempt to persuade our clients for the need for bulk storage; the Housing Authority</td>
</tr>
</tbody>
</table>

418
feared residents would bring too many things with them.

The formerly open, concrete, wind-swept access corridors were enclosed with long strip windows providing spectacular views; refloored with linoleum tile; and repainted in soft shades of coral, tan, and cream. Each resident was provided with a small plant shelf outside their kitchen window and a bench outside their front door. The research literature frequently referred to the tendency, with age, to "withdraw" and become lonely. It was hoped that the physical improvements and amenities might create the corridor into a social space. Half reported that they spent time in the corridor chatting. Virtually every window shelf was decorated with plants and flowers, thus enabling each to personalize their small part of the corridor and help create a more home-like setting.

Compared to all of their previous dwellings, half of those interviewed considered their apartment at Rosa Parks to most represent their feelings of "home". "Peace, quiet and security..."; "...it's home because of the beautiful view"; "This is the most secure place I've ever lived". For many low income residents, the fact that this building had a locked entry and a 24-hour security guard was of enormous importance in providing a sense of security and "home". Of those who felt a previous dwelling most represented home, most named either apartments in San Francisco where family or friends were nearby or large houses abroad (Central America, Cuba, Buenos Aires) where they had lived before immigration to the United States.

CONCLUSIONS

A number of conclusions relevant to environment and behavior research can be drawn from this experience.

1. There is accurate post-occupancy research available to help inform the design of congregate housing for older people. To be useful in the design process, such research should ideally conclude with illustrated design guidelines. The success of this building from a "people" perspective can partially be attributable to an existing, usable body of research in the field of environment and behavior.

2. In a short term, intensive design process (as many are), there is a definite role for a social programmer/critic who can act as a "translator" interpreting existing research/guidelines as they pertain to a particular site, budget and problem. Many designers prefer to have such a person present the "social thinking" behind their design (e.g. in reports, at meetings) than to do so themselves.

3. Given the situation where no budget is available for a large scale POE study, a simple no-budget study using student-interviewers can provide information which is certainly
indicative (though not conclusive) regarding design success and failure.

4. Some designed spaces will not be used as expected if management has neither the budget nor the incentive to staff and manage those spaces appropriately.

Clients, designers and management need to be informed of POE results, not only to communicate about a specific building but to create a more positive attitude towards programming and POE studies in the future.

REFERENCES


MOTHERS' COGNITIVE REPRESENTATIONS OF 1, 2, AND 3-YEARS OLD CHILDREN'S ACCIDENT RISKS IN THE HOME

Home interviews were conducted with mothers of 72 children, equally many of each sex in each of three equally large groups consisting of 1, 2, and 3-years olds. Questions were asked about perceived accident risks, need of supervision, and need of safety measures in different rooms. The results showed that kitchen and bathroom were perceived as more dangerous than other rooms. Protective actions also tended to be perceived as more important in these rooms. Furthermore, the younger children the mothers had, the less risk and need of protection they tended to perceive. The age differences were in some cases larger for girls than for boys.

INTRODUCTION

Parents presumably learn about dangers in their children's environments (Bacon & Ashmore, 1986; T. Gärling & A. Gärling, 1988). An important function of such acquired cognitive representations should be to inform about where one needs to act to safeguard the children's safety (Bell & Harper, 1977; Bell & Chapman, 1986; Valsiner, 1985), for instance, by supervising the children or by structuring the environment (T. Gärling & A. Gärling, 1988).

A primary aim of the present study was to assess mothers' cognitive representations of dangers for their 1, 2, and 3-years old children in the home. This was done by means of home interviews in which mothers were asked to rate the likelihood of accidents in the kitchen, bathroom, living room, and child's bedroom. One question asked was whether kitchen and bathroom are perceived as more dangerous than living room and child's bedroom. Two related questions were whether the representations change as the child grows older, and whether it differs for girls and boys.

A second aim was to illuminate how mothers assess accident risks to their children on the basis of the cognitive representations they have acquired. Like when accident-prone events are judged (T. Gärling, A. Gärling, & Valsiner, 1987; T. Gärling, Svensson-Gärling, & Valsiner, 1984), a representation of the environment may be used to mentally simulate events leading to accidents in different places. Risk assessments may then be based on the number of such mentally simulated events. A related question concerns whether these events are all accidents or near-accidents which mothers have had direct previous experience with, or if they consist of a mixture of direct experienced, recalled events and not directly experienced, constructed events,
based on information acquired from the mass media and similar sources. To illuminate these questions mothers were asked both to recall accidents and near-accidents which they had occurred recently, and to indicate what accidents they believed could occur.

A third aim was to investigate the relationship between, on the one hand, mothers' cognitive representations of accident risks in the home and, on the other, protective actions mothers perceive as important to undertake. Different such actions, like supervising the children and structuring the environment for them, have previously been assumed to be mediated by risk assessments (T. Gärling & A. Gärling, 1988). In the present interviews the mothers were asked to what extent they would permit the children to play alone in different rooms. These ratings were assumed to reflect the need mothers felt of supervising the child, and were expected to show a relationship with the ratings of the likelihood of accidents in the different rooms.

Another set of questions concerned safety measures. Implementing safety measures is a way of structuring the environment to make it safe for the children. However, many safety measures are implemented without parents playing an active role. Therefore, the interviews assessed how instrumental the mothers perceived a particular safety measure, whether or not it had been implemented, in safeguarding the children from accidental injuries. It was expected that safety measures implemented in rooms perceived as more dangerous would be perceived as more instrumental.

METHOD

Subjects
First-born children living in Umeå, Sweden, were randomly sampled. Seventy two (91.1%) of their mothers agreed to be interviewed. The children belonged to three equally large groups, children who at the time of the interview were 1, 2, and 3 years old (±2 months), respectively. Half in each group were boys, half girls. Of all children 64 (88.9%) lived in intact families. Seventeen 2 and 3-years olds had a younger sibling. In 45 (62.5%) families at least one parent had a university degree. The mothers were between 21 and 39 years old (Mean 28.9 years). Forty six (63.8%) mothers, 12, 17, and 17 of the 1, 2, and 3-years old children, respectively, worked weekly from 10 to 40 hours outside the home.

Interviews
The mothers first received by mail an one-page letter in which they were asked to participate in a study of children's housing needs. They were called a few days after and an appointment was made for the interview.

The interviews which took approximately 1 hour were conducted in the mothers' homes. All questions were read by the interviewer (E.M.-S.) from a written form. The subjects replied orally, and their replies were recorded. Before conducting the first interview a number of pilot interviews were run in the presence of another person (A.G.) who made independent recordings. These
pilot interviews were concluded when the interviewer and the other
person were found to be in complete agreement. In the first and
last following six interviews, as well as in six interviews in the
middle of the sequence, the interviewer was furthermore
accompanied by that other person. Agreement was found to be
almost perfect in all these interviews.

The questions in the interview concerned several different topics.
After some background questions about the home, the mother, and
the child, questions were asked about what the mothers perceived
as desirable behaviors by the child in the kitchen, the bathroom,
the living room, the parents’ bedroom (which sometimes was the
child’s bedroom), and the child’s bedroom if he or she had one of
his or her own. Of particular interest here was to what extent
mothers perceived as desirable that the child played alone.
Mothers indicated this on a rating scale with five verbally
defined steps ranging from absolutely not to very desirable. The
order between the rooms was randomized for each mother.

The topic of accidents was then introduced. For each of the rooms
in another random order the mothers were first asked to recall
recent events when the child either had been injured, or when this
easily could have occurred. Then the mothers were requested to
assess the risk that the child would accidentally be injured when
being alone. These assessments were made on a scale with five
verbally defined steps ranging from no risk to very high risk.
Finally the mothers were asked to explain why they rated the risk
as they did by indicating how they believed the child could be
injured.

Questions were in a final section asked about different safety
measures. These questions were similar for the different rooms.
The mothers were first asked whether the specified safety measure
was implemented, then they had to indicate to which extent it was
considered instrumental for preventing the child from being
injured. Responses were given on a scale with five verbally
defined steps ranging from certainly not to certainly
instrumental. The different safety measures were chosen to be
representative of each room. As Table I shows, there were four
measures which were the same for three of the rooms (kitchen,
living room, and child’s bedroom), another two which were the same
for the living room and the child’s bedroom, whereas all the
remaining were specific for one room. All questions about one
room were posed before the interviewer proceeded to questions
about another room. The order between the questions for each room
as well as the order between the rooms were randomly determined.

RESULTS

Accident Statistics
Some information about what kinds of injuries children at the ages
of 1, 2 and 3 years old (±2 months) suffer in the home was
obtained from records of emergencies treated at the major hospital
in Umeå. A total of 76 children, 16 1-year olds, 33 2-years olds,
and 27 3-years olds, were admitted during the preceding year.
Figure 1 shows that at all ages more boys than girls were injured.
Most injuries occurred in the living room, next most in the kitchen, second next most in the bedroom, and least in the bathroom. Falls from the same or from a higher level were in all rooms the most common type of accident causing injury (accounting for from 57% to 72%).

Table I. Safety measures about which mothers of 1, 2, and 3-years old children were questioned.

<table>
<thead>
<tr>
<th>Measures</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric outlets have poke-safety mechanisms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strings of Venetian blinds are secured out of reach of child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows are fastened</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharp corners are protected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooker has top-guard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oven door has safety opening mechanism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oven has extra safety glass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooker is secured to wall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen drawers have safety opening mechanisms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning agents are stored out of reach of child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine is stored out of reach of child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child's high chair is secured to table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nappy-changing place has safety sides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child uses potty with anti-tip guard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bath tub has anti-slip mat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm water tap in bath tub equipped with thermostat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelves are secured to walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Things child can reach have been removed from shelves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child's bed has safety sideboards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedside lamp is out of reach from child's bed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor beside child's bed is kept free from toys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed is kept free from toys when child is asleep</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions about these measures were asked for the kitchen, the living room, and the child's bedroom.

Questions asked for the kitchen.

Questions asked for the bathroom.

Questions asked for the living room and the child's bedroom.

Cognitive Representations of Accident Risks
Table II shows how many accidents or near-accidents mothers of 1, 2 and 3-years old children recalled had occurred in different rooms, how many accidents they believed could occur, and how likely they rated accidents. An analysis of variance (age by sex by room) on each dependent variable yielded effects involving age and sex which with some exception were only nearly significant (p<.10). The mothers were on average able to recall less than one accident but slightly more were recalled by mothers of the younger than by mothers of the older children, F(2,66) = 2.58, p<.10. This age trend was paralleled by a similar trend for the ratings, F(2,66) = 2.34, p<.10. Mothers furthermore believed more accidents could occur than they recalled had occurred. In contrast, all the effects of room were highly significant, F(3,162) = 8.62, 17.75, and 38.95, p<.001, on accidents recalled, accidents believed to occur, and the ratings, respectively. In Tukey post hoc tests several of the differences shown in Table II were significant for p<.05. The kitchen and the bathroom were rated as reliably more dangerous than the living room and the
child’s bedroom, reliably more accidents were also believed could occur in these rooms, and reliably more accidents were recalled to have occurred in the kitchen than in the other rooms. The three-way interactions involving room, age, and sex were furthermore significant or almost significant, F(6,198) = 1.56, p<.20, 3.18, p<.01, and 1.91, p<.10. All the measures suggested that, for the rooms which were more dangerous, the risk decreased across age for girls but not for boys.

![Figure 1. Number of injuries in different rooms to 1, 2, and 3-years old children of both sexes.](image)

The majority of accidents and near-accidents recalled by the mothers to have occurred in different rooms were falls which did not cause serious injury. The accidents they believed could occur included in most cases those which had occurred but consisted also of accidents with in general more serious consequences.

**Need of Supervising Child**

Table III shows the mean ratings of how desirable mothers considered that the child played alone in different rooms. An analysis of variance yielded highly significant age differences, F(2,66) = 12.09, p<.001, as well as highly significant differences between rooms, F(3,198) = 50.67, p<.001. Tukey post hoc tests showed for p<.05 that it was reliably less desirable that the 1-year old children played alone than the older children. Playing alone in the bathroom was furthermore reliably less desirable than in the other rooms.

**Need of Structuring Environment**

Table IV indicates that in most homes electric outlets had poke-safety mechanisms and windows were fastened. Almost all mothers furthermore said that they kept the floor beside the child’s bed free from toys in nighttime but fewer that they kept the bed free from toys. A number of safety measures were with few exceptions undertaken in the kitchen: the cocker was secured to
wall; the oven door had an extra safety glass and a safety opening mechanism; medicine was kept out of reach. However, cleaning agents and kitchen utensils were less frequently kept out of reach. The cocker in relatively few cases had a top guard. Whether or not some of the measures were undertaken depended on the age of the child. This was true of safety sideboards attached to the child's bed as well as keeping bedside lamp out of reach. Both measures were frequent for 1 and 2-year olds only. Securing strings of Venetian blinds out of reach and removing things on shelves out of reach were in contrast less frequent but, still, more frequent for 1 and 2-year olds. Finally, some measures were hardly ever undertaken: Sharp corners were almost never protected, high chairs were almost never secured to the table, and book shelves were almost never secured to wall.

Table II. Mean number of recalled accidents and near-accidents, mean number of accidents believed to occur, and mean ratings of accident risk in different rooms obtained from interviews with mothers of 1-year, 2-year, and 3-year olds children.

<table>
<thead>
<tr>
<th>Kitchen</th>
<th>Bathroom</th>
<th>Living room</th>
<th>Bedroom†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Age (years)</td>
<td>Age (years)</td>
<td>Age (years)</td>
</tr>
<tr>
<td>1 2 3</td>
<td>1 2 3</td>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>

Number of recalled accidents/near-accidents

| 0.8 0.8 0.6 | 0.5 0.5 0.3 | 0.6 0.5 0.3 | 0.5 0.2 0.2 |

Number of accidents believed to occur

| 1.8 2.5 2.3 | 1.9 2.1 2.1 | 1.8 1.9 1.3 | 1.1 1.4 1.2 |

Ratings of accident risk

| 3.2 3.2 3.3 | 3.7 3.6 3.4 | 2.9 2.3 2.2 | 2.6 2.0 2.0 |

†Fifteen 1-year olds, six 2-year olds, and three 3-year olds slept in parents' bedroom, the others had a bedroom of their own.

Table IV also suggests that whether a safety measure was implemented in the home is related to to what extent the measure was perceived by the mothers as instrumental for protecting the child. Analyses of variance on the ratings of the safety measures, regardless of in which room they were implemented, showed that there were reliable age differences, F(2,46) = 8.50, p<.001, reliable differences between the different measures, F(31,2046) = 42.07, p<.001, and a weak but highly significant interaction between age and measure, F(62,2046) = 2.35, p<.001. Overall mothers of the younger children rated the safety measures as more instrumental than what mothers of the older children did. This age trend was in varying degree present for most safety measures. Exceptions were some measures which were rated as equally instrumental independent of the child's age, namely that the oven has a safety glass, that the cocker is secured to wall, that cleaning agents and medicine are kept out of reach, and that
bath tub has anti-slip mat. Some measures were rated as not much instrumental at any age. That sharp corners are protected, that child’s high chair in kitchen is secured to table, that shelves are secured to wall in living room (but not in child’s bedroom), that things are removed from shelves in the child’s bedroom (but not in living room), and that the child’s bed and the floor beside are kept free from toys, belonged to this group.

Table III. Mean ratings of how desirable playing alone in different rooms was considered by mothers of 1-year, 2-years, and 3-years old children.

<table>
<thead>
<tr>
<th>Kitchen Age (years)</th>
<th>Bathroom Age (years)</th>
<th>Living room Age (years)</th>
<th>Bedroom Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>1 2 3</td>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
<tr>
<td>2.7 3.5 3.8</td>
<td>1.5 2.1 2.1</td>
<td>2.8 3.8 3.3</td>
<td>3.0 4.0 4.4</td>
</tr>
</tbody>
</table>

By averaging across all safety measures in each room, more safety measures were found to be implemented and to be rated as more instrumental in the kitchen and the bathroom than in the living room and the child’s bedroom. An analysis of variance on the ratings of instrumentality yielded a highly significant effect of room, F(3,198) = 16.82, p<.001. Tukey post hoc test showed that the differences between on the one hand the kitchen and the bathroom and, on the other, the living room and the child’s bedroom were reliable.

DISCUSSION

Parental beliefs (Sigel, 1985) were investigated in the present study. T. Gärling and A. Gärling (1988) have argued that such beliefs regulate parents’ protective actions. Caution nevertheless needs to be exerted in drawing conclusions from the present results about how mothers act. Empirical studies are presently lacking that link beliefs and actions in this area.

It was found that mothers believed kitchen and bathroom to be more dangerous than other rooms in the home. Accident statistics did not suggest that this is necessarily so. Interpretation of differences in injury frequencies between different rooms may however need to take into account how much time is spent in each room. A more valid comparison is between children of different age and sex. In this case clear differences in injury frequency between boys and girls corresponded to only slight differences in the mothers’ risk perceptions and perceptions of need of protection, whereas smaller or no differences related to age corresponded to larger differences in perceptions. It is thus suggested that mothers are not well calibrated. However, in order to somewhat moderate the picture, it should also be noted that falls were most frequently mentioned by the mothers as accidents which they believed could occur in the home. This appeared to be in agreement with actual injury figures.
Table IV. Percent homes in which safety measures were implemented, and mean ratings of how instrumental for the protection of the children each safety measure was perceived by mothers of 1, 2, and 3-years old children.

<table>
<thead>
<tr>
<th>Safety measures</th>
<th>Kitchen 1 year</th>
<th>Kitchen 2 years</th>
<th>Kitchen 3 years</th>
<th>Bathroom 1 year</th>
<th>Bathroom 2 years</th>
<th>Bathroom 3 years</th>
<th>Living room 1 year</th>
<th>Living room 2 years</th>
<th>Living room 3 years</th>
<th>Bedroom 1 year</th>
<th>Bedroom 2 years</th>
<th>Bedroom 3 years</th>
</tr>
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<tbody>
<tr>
<td>Electric outlets</td>
<td>91 4.9</td>
<td>88 5.0</td>
<td>83 4.5</td>
<td>92 4.8</td>
<td>96 4.9</td>
<td>92 4.5</td>
<td>92 4.8</td>
<td>92 5.0</td>
<td>96 4.5</td>
<td>67 3.8</td>
<td>67 3.3</td>
<td>67 2.5</td>
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<tr>
<td>Venetian blinds</td>
<td>67 3.8</td>
<td>22 3.3</td>
<td>8 2.5</td>
<td>59 3.8</td>
<td>49 3.2</td>
<td>51 2.5</td>
<td>95 4.2</td>
<td>67 3.3</td>
<td>20 2.5</td>
<td>80 4.0</td>
<td>94 3.8</td>
<td>80 3.3</td>
</tr>
<tr>
<td>Windows fastened</td>
<td>91 4.1</td>
<td>95 3.8</td>
<td>90 3.5</td>
<td>80 4.0</td>
<td>94 3.8</td>
<td>80 3.3</td>
<td>80 4.0</td>
<td>100 3.7</td>
<td>91 4.0</td>
<td>4 2.6</td>
<td>4 2.1</td>
<td>0 1.6</td>
</tr>
<tr>
<td>Sharp corners</td>
<td>25 2.9</td>
<td>0 2.1</td>
<td>4 1.8</td>
<td>4 2.6</td>
<td>4 2.1</td>
<td>0 1.6</td>
<td>19 2.9</td>
<td>0 2.3</td>
<td>2 0 2.0</td>
<td>88 4.8</td>
<td>86 4.8</td>
<td>96 4.9</td>
</tr>
<tr>
<td>Top-guard</td>
<td>45 4.4</td>
<td>75 4.3</td>
<td>50 3.6</td>
<td>45 4.4</td>
<td>75 4.3</td>
<td>50 3.6</td>
<td>45 4.4</td>
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<td>45 4.4</td>
<td>75 4.3</td>
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<tr>
<td>Oven door</td>
<td>92 5.0</td>
<td>92 4.8</td>
<td>88 4.3</td>
<td>89 4.2</td>
<td>82 4.0</td>
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<td>54 4.6</td>
<td>79 4.6</td>
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<td>46 4.1</td>
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<tr>
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<td>100 4.8</td>
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<td>0 1.6</td>
<td>0 1.9</td>
<td>4 1.5</td>
<td>0 1.6</td>
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<td>0 1.6</td>
<td>0 1.9</td>
<td>4 1.5</td>
<td>0 1.6</td>
</tr>
</tbody>
</table>

1 The percentages were based on the number of homes in which the particular safety measure was relevant. With one exception where no percentage was calculated because there were only 2 observations, this number varied between 12 and 24.
The numerical assessments of accident risk obtained from the mothers appeared to be related to the number of accidents which were perceived could occur, although the relationship was by no means perfect. It is interesting then that accidents perceived to occur consisted of both such, presumably salient, accidents (or near-accidents) which mothers could recall had occurred to their children and, often more serious, accidents which they presumably had learnt about from other sources such as mass media. That assessments of accident risk are based on both own experiences and knowledge acquired from indirect sources is consistent with previous notions about how parents assess accident risk (e.g., T. Gärling et al., 1984, 1987; cf. Kahneman & Tversky, 1982).

Even though little can be said presently about the relationship between mothers' beliefs about accident risks and their undertaking of protective actions, the results did show rather clearly that both the need for supervision (not leaving the child alone) and of different safety measures were felt to be stronger in rooms which were perceived as more dangerous. Similarly, the need of protection was felt as stronger by mothers of younger children who also perceived the accident risk as higher. These findings are anyway compatible with the assumption that risk assessments mediate protective actions (T. Gärling & A. Gärling, 1988).

A final point which could be made is that the relatively strongly felt need for supervision and the frequent implementation of, and positive attitudes towards, safety measures in the home highlight that mothers are tuned to act in advance (Holden, 1983), both by attempting to structure the environment and to control the children's actions. The present study has shown that a cognitive representation of dangers in the home is likely to be instrumental in such attempts. To what extent parents are unsuccessful because their representations are inaccurate, perhaps because they are too slowly updated as the children grow older (Valsiner, 1985), is a question for further research to answer more carefully than has been possible presently.

ACKNOWLEDGEMENTS

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Robinson, Julia Williams
Associate Professor, Architecture
University of Minnesota, USA
School of Architecture & Landscape Architecture
* 110 Architecture, 89 Church Street S.E.
Minneapolis, Minnesota 55455, U.S.A.

INSTITUTION AND HOME: LINKING PHYSICAL CHARACTERISTICS TO PERCEIVED QUALITIES OF HOUSING

A polarity between institution and home was hypothesized and 236 physical variables were proposed as descriptive measures for the two poles. It was predicted that housing would be evaluated as falling along a continuum between the two poles. In a study of 29 house settings, the applicability of the terms used to characterize the poles as well as their oppositional nature is explored, as is the assumed polarity of the terms. Also investigated is the validity of the proposed descriptive measure. Environment is the independent variable.

THEORY

Background
In American and many other societies, housing which represents territorial control of the private realm is epitomized in the building form of the house. The category of building which represents the public realm, where the values of the society, or group supersede those of the individual or family is the institution. Defined as non-private, most institutional buildings are primarily workplaces where services of society are carried out. But one of the services which Western society carries out in an institutionalized way, unlike many other cultures, is the care of the sick, the dependent and the criminal. Thus these groups of people whose lives are supported 24-hours a day, have been housed in public buildings, which are essentially designed to be workplaces.

Between the poles of the single family house, where the private realm has its most powerful representation, and the institution, where the private realm is nonexistent, lie numerous other forms of housing which represent many different forms of relation between private dwelling and public realm. The work discussed here is an investigation of the physical characteristics and the perceived character of 29 housing settings, selected to represent varying qualities of publicness and privateness. These were studied in relation to the two terms institution-like and home-like in an investigation into the nature of two contrasting realms, the home and the institution.
The deinstitutionalization or normalization movement has identified a link between the social organization of the large residential setting, its physical form, and the lack of "normal" behavior of institutional residents (Goffman, 1961; Nirje, 1969; Wolfensburger, 1972). This raises the question as to what physical characteristics of institutions and of ordinary dwellings tend to support which forms of behavior in housing settings. At present, however, although measures for behavior exist which allow description of normal and abnormal behavior, we do not yet have measures which characterize housing specifically enough so that relationships between particular design features and particular behaviors can be determined. Wolfensberger has developed several reliable assessment tools which describe settings as institutional or noninstitutional (not limited to housing) (e.g. Wolfensberger & Thomas, 1983). Using these as well as other general (e.g. Rotegaard, Hill & Bruininks, 1982) and more specific instruments as reference (e.g. MacEachron, 1983), the author and others developed the Robinson/Emmons/Graff Architectural Checklist (Robinson, Thompson, Emmons, Graff, and Franklin, 1984) which identifies 236 specific environmental features observed to characterize institutional (taken from hospital and dormitory features) and normal dwelling settings (taken from house and apartment features).

In recognition of the limitations of a checklist of architectural features, even one which is intended to be inclusive, the current work has combined this measurement tool with other descriptive methods in the endeavor to comprehensively describe housing.

Several overlapping factors account for the physical differences between housing types in any particular place. The categorical definition of housing type has implications for standards of construction and operation. The nature of the residents (economic level, taste, personality, physical abilities) affects the functional and symbolic character of the house in such things as size, material, type of furnishing. Additionally, the relationship between the residents (family members, unrelated but voluntarily sharing individuals, arbitrarily assigned sharing individuals) as well as between residents and any nonresident but space-sharing staff, affects the organization and properties of the spaces, for example, the nature of the living room, the way the kitchen will be laid out, the link or separation between kitchen and dining room. Lastly, the social, temporal and physical contexts have significant impact on what are perceived to be appropriate forms for housing.

The object of this study is not to determine in which contexts the institution or the home is the appropriate residential setting, but to explore which physical attributes of housing
settings are linked to various qualities associated with them.

Relation to Architectural Theory
This study of typology of architecture uses purpose of building as a starting point for the understanding of architectural form, and assumes a relation between formal content of architecture, use, and symbol. The perceptions of lay people are taken as a reference point for the cultural expectations for the buildings, which are in turn associated with continued use or cultural representations of use (through media, for example). The symbolic content of buildings, then is not simply one of function, but also includes attitudes and emotions.

As a symbol the building takes on a communicative role (Rapoport, 1982; Bonta, 1979). This study is, therefore, a semiological one insofar as it is concerned not only with the structure of the conveyance of or reception of meaning, but also with its content. This view does not assume that the intended meaning was conveyed. In fact the intentions of the designer, while an important subject in and of themselves, are not included here because the focus is on the received message. We are interested in discovering what are the architectural cues for the received message, and how the cues operate with respect to meaning for the receiver.

The interest of the researchers in developing a complete description of setting led to the use of a variety of direct descriptive techniques in the study. Direct description has been augmented with indirect description, namely evaluation of settings by student subjects. Previous work by the author had shown that when assessed on a five-point continuum between the qualities home-like and institution-like housing of various kinds tended to fall in a continuum (Robinson et al 1984). This continuum is tested using the same semantic differential test as in the previous study. The researchers also sought to discover whether the names that had been given to the two poles were valid, and to probe the meaning of these two terms. The results from the semantic differential test and from a free sort study are used to investigate the nature of these categories.

Relation to Behavior Theory
The term perception is here used in its commonly understood broad usage, to incorporate the two aspects of apprehending the environment: cognition (or categorization of data) as well as the receiving of the sensory data. While psychologists prefer to limit the definition of the term perception to incorporate only the sense data aspect of apprehension, this creates a problem for architects and geographers who then have no term to cover both aspects simultaneously. Because the common usage refers to both aspects simultaneously, in this report we will
use perception in its broad sense, that of understanding, and when referring to perception in its narrow sense we will use the term sensory perception.

This study of perception is based on an important premise, that the perception of a setting is embedded in its cultural context. That is to say that architectural artifacts are categorized according to the behaviors which are associated with them. Thus a setting is perceived as formal because of the history of formal behavior which is culturally tied to similar settings. The implication of this premise is that the perception of a setting is thus tied to a set of expected behaviors. An architectural setting, is not simply a formal entity but is also a behavior setting (Barker, 1968). The study of perceptions, then can be seen as a study of implied behavior.

Relation to Culture Theory
In any society, by mutual understanding, certain kinds of places are used for designated purposes. The physical characteristics of these places are cues to the purpose of the setting and are often so strong that there is no need for any other sign to elicit the requisite behavioral response. It is the culture (shared world view) within a given society which imbues the physical elements with the power to communicate. Environments of a type which have the same labels (hospital, dormitory, etc.) may be said to have culturally defined attributes which allow them to serve their defined purpose and to be differentiated from other types. The physical differences between the behavior settings, which in the case of house are largely architectural (materials, room size, mechanical systems, furnishings, etc.) are thus an important factor in establishing the behaviors which take place there. (Sommer: 1969; Barker: 1977; Wolfe: 1975).

METHODS
Pursuant to research which characterized a polarity between the institution and the ordinary home environment, this project was designed to test and explore the existence and character of the hypothesized polarity. The initial research characterized the two settings in the form of 52 pairs of annotated images contrasting general aspects of architectural environment (site, entry, etc.) and a checklist of 236 individual architectural features (Robinson/Emmons/Graff Architectural Checklist, see Illustration #1).
1. 3 Types of Descriptions of Setting from Towards An Architectural Definition of Normalization:
Images, Annotation, and Checklist

Twenty-nine residential environments representing a variety of building types (hospitals, nursing homes, dormitory, mid high-rise, group home, townhouse, rooming house, group home, walk-up, single family dwelling, and the overlapping category public housing) were randomly selected within the city limits of a mid-sized midwestern city. These settings were documented using a variety of methods (videotape, slides, measured drawings, the above mentioned checklist, subjective assessment by researchers, a specification-based inventory of approximately 1000 architectural features, and interviews of residents about a subset of the environments). Slides from the documentation were then evaluated by self-selected groups of undergraduate non-design students. Seventy-seven students rated 180 slides of 29 settings on a 5 point continuum from institution-like to homelike. Using 35 black and white photographs made from a subset of the 150 slides, 35 students participated in sorting and naming interviews which generated user categories (similar to Canter, Brown and Groat, 1985). Finally, 39 students evaluated a group of 190 slides (including the original 180) using categories provided by (a) the sort study; (b) by rotated factor matrix analysis of the first institution-like/home-like semantic differential evaluations; and (c) using the terms institution-like, not at all institution-like, and homelike/not at all homelike. This last investigation, remaining to be analyzed, is designed to test the idea of polarity between various terms applied to the slides.

FINDINGS AND IMPLICATIONS

Findings
The study was designed to test four hypotheses vis a vis individual housing examples and housing grouped by architectural type:
1. That housing falls along a continuum between the two terms homelike and institution-like in terms of physical features.

2. That housing as perceived falls along this same continuum.

3. That the words used to represent the continuum are generally understood, and applied to housing by nondesigners.

4. That physical architectural features hypothesized to be related to assessment of institutional and homelike settings are associated with perceived qualities of settings.

Because of the use of student subjects in a limited geographical area and the application of statistical techniques designed for larger sets of data, these findings cannot be taken as definitive but are nonetheless highly suggestive.

The first hypothesis, that there is a continuum of physical features was supported by data from the architectural checklist. Both for individual examples of housing and for housing type there is a continuum.

The second hypothesis, that there is a perceived continuum is supported by the data of perception for individual housing examples (see Illustration #2).

For the data on building types, however, the continuum is not as smooth (see Illustration #3), suggesting the possibility that these two categories are appropriate for housing types at the two ends of the spectrum, but that those types of housing in the middle may be more ambiguously assigned these qualities. This raises the question of whether the two terms are in opposition to one another, or whether they are simply different, with the middle categories simply not fitting. This hypothesis is being tested in further research by the use of same term oppositions (homelike, not at all homelike). The two categories homelike and institution-like are being tested separately and then compared to see if they are opposite.
3. Mean Ratings for Building Type

The third hypothesis is partially negated. Because the student raters were consistent with one another (for the 5 point semantic differential rating of the five buildings types into more than three examples of each, standard deviations ranged from .296 to .560; see Illustration #4), the terms institution-like and homelike can be declared understandable. However, in the multiple sort tests while the terms homey, home and homelike were commonly used, the term institutional was much less frequently used. In the selection of opposites, for example, the term homelike was validated in that home and not-home were the terms of opposition most commonly selected (34%). Home and institution were only selected in 2 cases, as were hospital and nonhospital, combining to represent 11%. Another terminology expressing similar but not identical meaning, private/public accounted for another 11% of the choices. This evidence calls into question again the notion that institution and home are opposites, and also the notion that the semantic differential test used here can be assumed to represent opposition.

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Coefficient</th>
<th>Cases</th>
<th>Significance</th>
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<tr>
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<td>.8610</td>
<td>15</td>
<td>P = .000</td>
</tr>
<tr>
<td>Bedroom</td>
<td>.8110</td>
<td>19</td>
<td>P = .000</td>
</tr>
<tr>
<td>Dining Room</td>
<td>.7213</td>
<td>12</td>
<td>P = .004</td>
</tr>
<tr>
<td>Exterior</td>
<td>.7907</td>
<td>25</td>
<td>P = .000</td>
</tr>
<tr>
<td>Hall</td>
<td>.6756</td>
<td>12</td>
<td>P = .088</td>
</tr>
<tr>
<td>Kitchen</td>
<td>.8638</td>
<td>18</td>
<td>P = .000</td>
</tr>
<tr>
<td>Living Room</td>
<td>.8305</td>
<td>18</td>
<td>P = .000</td>
</tr>
<tr>
<td>Stairs</td>
<td>.5217</td>
<td>3</td>
<td>P = .310</td>
</tr>
</tbody>
</table>

4. Pearson Correlation Coefficients between (a) Evaluations of Space Types by Student Raters and (b) Measurements of Space Types using the Robinson/Emmons/Graff Architectural Checklist

Tentative qualification of the terms homelike and institution-like is found in the rotated factor matrix analysis of the subsets of setting selected to be analyzed: exterior, corridor
and living room. Factors found for exteriors were named: private dwellings, collective dwelling, building-street relationship (or context), modern appearance and suburban character, together accounting for 56% of the variance. Factors for corridors were called definition of path, austerity, public character and bright (not dark) accounting for a combined variance of 52% of the variance. Factors identified for large rooms were: coziness or intimateness, privateness, empty (not full), and nondwelliness. These factors combined accounted for 39% of the living room variance. Discovering the subtle shadings between terms, such as in living rooms between privacy and coziness, may be helpful in understanding the way environments are perceived in the broader scale. With further analysis using the inventory of elements, the physical characteristics which are cues for these differences may be pinpointed, so that designers may better create the qualities desired in a setting.

The fourth hypothesis has only been tested at a general level. Of the 236 checklist items measured in settings, 21 were invalidated against the perceived character in a detailed way.

Presently we are looking in detail at the inventory description of living room environments and expect to uncover architectural variables not observed in the initial study. The addition of new elements and the development of relative importance of elements will lead to a refined instrument.

IMPLICATIONS

Limitations & Potentials for Institution-like and Home-like as categories
The ability of people to classify housing along a five-point continuum between the two poles, institution-like and home-like implies that these two categories are meaningful descriptors for housing, and that they characterize distinguishable differences between housing examples. This does not, however, imply that these two terms are opposites, nor that they are the most appropriate terms to describe housing.

The terms institution-like and home-like derived from work done previously (Robinson, 1980) where the terms institutional and homey were ascribed by lay people and from Rotegard et all (1982). In the multiple-sort study here, these terms were also ascribed, but institutional was used less frequently than the term public, which stands for a similar idea. Further research is being done to test the oppositional relationship between the two original terms and to test their relation to other terms (public, private, desirable, cozy, etc.) attributed by lay study participants.
Implications for Architectural Research
From practical experience, it is evident that all architectural cues do not have the same weight for categorization. The principle of redundancy (Norberg-Schulz, 1965 and Rapoport, 1982) of environmental features (where many cues repeat the same message, for instance the living room lamp, fireplace, rug, etc.) is balanced by the principle of dissonance (one powerful cue out of place, for example, an exit sign in the above-mentioned living room) creates ambiguity in the classification. In this study, the comparison of checklist ratings to slide ratings did not address the relative importance of features. Research needs to be directed toward this.

Implications for Developing Predictive Measures for Architectural Qualities
Existing measures for architectural setting have either been too general to allow for description of specific environmental variables (e.g. Wolfensberger & Thomas, 1983), or have used selected key variables (such as Moos and Lemke, 1979). Ideally, the descriptive tool would identify all possible environmental variables and then, by means of experimentation, pinpoint those variables which are important to the question being asked. In theory this approach may be ideal, but in practice it is difficult, for we are inclined to be able to identify only those variables which are already known to us. What must therefore be done is to find descriptive methods based on different frames of reference than those we ordinarily use or which answer questions different from, but complementary to the ones we are asking. In this study this approach was taken in that setting was measured in diverse ways which corresponded to views which derive from seeing a setting once created (video, slides, interview, subjective measures, in addition to semantic differential evaluation and free-sort study), as well as the views related to creation of the setting (plan, inventory of elements).

The specification required for creation of an environment focuses on a level of detail difficult to account for by means of observation. Nonetheless the unobserved features may subliminally affect our perceptions. The specification approach thus augments our ability to identify previously unobserved experimental features which contribute to the character of settings.

CITATIONS AND SELECTED REFERENCES


PARTICIPATORY PROGRAMMING OF A CAMPUS CHILD DEVELOPMENT FACILITY

ABSTRACT

The teaching of child care workers has prompted technical colleges to integrate their training with an on-campus child development facility. This project describes a collaborative process where the architect and user group exchange their different areas of expertise to the facility development process.

Beginning with a goal setting process, the staff members and the architect embarked on a series of iterative stages that included children's classroom flow patterns, activity relationships, and activity requirements. Specific gaming techniques were developed to permit a dialogue between all project participants throughout the facility development process.

INTRODUCTION

The increasing demands for trained child care workers have prompted Wake Technical College to formalize a training program to help fulfill a vital community need. A fundamental component of the Early Childhood program is providing relevant experience for students in a laboratory or practicum setting, where instruction received in the classroom is enhanced by actual experience in working with children.

The children's center is similar in concept to a teaching hospital, in which fulfillment of a major role (instruction) results in the additional benefit of needed community training/demonstration site. In addition to its primary instructional role, the child development center would provide services for students, faculty, and staff with young children.

THE PLANNING PROCESS

Planning for the campus child development center has been developed through formal needs assessment that has included a five-part approach:

1. Departmental planning
2. Consultation with child care experts
3. Survey of campus child care centers
4. Site visits to other child care facilities; and

5. Campus survey of student child care needs.

From the needs assessment it was ascertained that of the two hundred colleges and universities around the country who are members of the National Coalition of Campus Child Care, 85 percent offer or are affiliated with child care services either on or off campus. The largest population segment served by the centers was children of students, followed by children of faculty, staff, and the community. In 60 percent of the cases, child care was related to an academic department at the institution.

In 1985, a survey of 2000 Wake Technical College students indicated that 50 percent of the requirements showed an interest in a campus child care facility. Respondents reported more than 250 children under their responsibility presently receiving child care, with 32 percent of the students indicating a need for child care in the future. The highest percentage of respondents indicating a need for child care services were full-time students, followed by part-time students.

Early in the planning process, Wake Tech staff members embarked on a program of visitations to other child care operations. The visitation team "walked through" (Preiser, Rabinowitz, and White, 1988) each facility and reported on the basic features of each facility. The walk throughs consisted of a general briefing session, open-ended interviews with teachers, and observations of layout patterns of different facilities. The staff members were interested in being told about the positive and negative features of the facilities. The most observable problems were identified by the teachers as lack of storage space in classrooms and in administrative offices. However, the visits helped to familiarize staff members with the issues they would encounter during the process of facility development.

A planning team was formed by the College administration which included representation from the College administration, the staff of the early childhood program, and an architectural consultant. It was at this point where the goals that had been loosely stated needed further refinement and clarification. Through a series of brain-storming sessions the following statements were generated by the planning team:

To provide a "state-of-the-art" practicum location for students in the Early Childhood program as well as a service area for students in nursing, psychology or sociology, and allied health programs;

To respond to community needs for a training facility for the child care community, serving various levels of child
care personnel, and including a parent education component; As an adjunct to its instructional mission, to provide a conveniently located quality preschool program for children of students, faculty, and staff.

Implementation goals for the campus center would be to:

Establish a reputation for providing quality care that would concentrate on fulfilling the physical, social, and intellectual needs of children.

Build a facility that would meet state standards as well as the accreditation of the National Association for the Education of Young Children (NAEYC).

Offer a "visible" program that would intertwine with other departments across campus.

Provide a setting that would serve as an extension of the family through parent education that would include a toy lending library.

BASIC FACILITY CONSIDERATIONS

The most important planning decision for the campus development center is the number of children to be served in one facility. It has been found that the development quality of child-care services drops sharply with increases in the number of children served in one building (Kritchevsky et al., 1969). In centers which served over 60 children, major emphasis tended to be placed on rules and routine guidance. Conversely, teacher emphasis on these concerns were found to be significantly lower in smaller centers. Prescott (1975) found that large centers rarely offered children the experience of participating in wide age-range groups. Mixing of ages in smaller centers offered opportunities for older children to serve as models and enrich the overall play possibilities.

The age groups served by this center would be infants (6 weeks to 12 months), toddlers (12 months to 2 years), and preschoolers (2 to 5 years). In order to achieve the needed critical mass in each age group, a target number was agreed at a maximum of 75 children.

In addition to the total number of children in a child development center, an adequate amount of space available for children's activities is necessary to insure a quality developmentally-oriented program.

A majority of states require a minimum of 35 sq. ft. of usable play space per child, exclusive of eating, napping, circulation, closed storage, etc. Based on a review of six studies of density
and behavior in child-care settings, Prescott and David (1976) recommended to the Federal Government in a commission study a minimum of 40 - 42 sq. ft. of usable floor space per child for Federal Interagency Day Care Requirements. Moore (1978), in conducting interviews as part of his travel research, suggests that 40 - 42 sq. ft. per child provides a much more flexible program, options, active, and quiet pursuits happening simultaneously without disturbing each other. The most desirable social environment occurs at a density of 0 sq. ft. per child. To compliment this area requirement is the need for well defined areas limited to one activity with clear boundaries from circulation space and from other activity areas (Moore et. al., 1979). Well defined activity areas may be characterized by surrounding partitions, storage cabinets, changes in floor coverings, or other visual elements that suggest boundaries. Spatially well defined areas support social interaction, cooperative behavior, and exploratory behavior (Smith and Connolly, 1980).

**INTERACTIVE PLANNING PROCESS**

The planning process consisted of workshops with small groups that were involved in goal setting and locating relevant activities for different age groups (Sanoff, 1988). This process has been used in the design of other facilities where information exchange between the user and the architect was vital and where an open forum was the vehicle for achieving participation.

This process began by developing behavioral data related to the nature of children's activities. Each activity that infants, toddlers, and preschoolers would engage in was identified and

### Infant

**Manipulative**

**Indoor Active**

**Crawling**

#### Objectives

- Fine motor skills
- Cognitive awareness
- Visual-motor coordination
- Function play
- Cognitive stimulation for concept development
- Sensory stimulation/awareness
- Autonomy and positive self-esteem
- Exploration of environment
- Exercise and stress-management
- Gross motor development

#### Design Requirements

- Crawling should connect nodes of stimulation.

#### Notes

- 200 square feet
- Comfortable flooring: easy to travel
- Quiet
- Visual access to other areas

---

**Equipment**

- Abnormal toys and materials
  - Textured blocks large and small
  - Vertical hanging toys
  - Multi-level low elevation steps
  - Horizontal displays and pull-up bar
  - Floor display windows
  - Open configurative structures
  - Pillows, mass texture rugs squares
  - Mirrors-horizontal
  - Swings
  - Hanging attachments on ceiling
  - Elevated bridges and ramps (low)
  - Horizontal display
  - Base for small items

**Storage**

- Open
- Closed

---

**Figure 1. Typical Activity Data Sheet**
detailed in a similar manner by the Early Childhood teaching staff (Sanoff, 1981). The staff members currently teaching in the program identified the objectives for each activity, the space requirements, and the visual and acoustic requirements. This spatial inventory served as the basis for the design process to follow. The activity data sheets also contained descriptions of the particular activities that would occur within the larger activity area. The water sand play area, for example, would include activities such as pouring, measuring, mixing, and floating objects, all of which are related to the primary activity.

Since the planning of a child development facility reflects a particular ideology about child development, a space planning process was organized to engage the teaching staff in classroom layout decisions. Graphic symbols were developed to correspond with each of the children's activity areas described as learning centers. Based on the area requirement of 50 sq. ft. per child, scenarios were developed that limited the number of activity centers that could be included in the classroom. The use of realistic constraints encouraged the staff to use trade-offs effectively: They decided which centers were most important. The scenarios were descriptive statements about a typical child's day. These scenarios permitted the staff to determine which activity areas would be fixed for different age groups and which could be flexible. This process of determining appropriate adjacencies between activity areas helped the staff to clarify visual and acoustic privacy requirements between activity centers. It also provided staff members with a conceptual understanding of spatial organization and spatial planning that would make them more effective when evaluating architectural

Figure 2. Graphic Symbols Describing the Infant Area
alternatives and subsequently in modifying their own classroom.

The teaching staff worked on the spatial layout for different age groups beginning with the infants, the toddlers, and the preschoolers. Together they outlined the flow process from entering the facility to greeting the child through the manipulation of the symbols. When group members agreed to a set of relationships they glued the symbols to the base, thus representing their decision. The architect then constructed cardboard scale models corresponding to the flow patterns for different age groups of each of the areas of the facility. This second stage of process permitted the teaching staff to reconsider their earlier decisions when they saw the conflicts that arose as they were able to visualize their decisions in a three-dimensional form. Although circulation between activity centers was considered during the process of examining children's flow through the classroom, the model clearly conveyed the need to establish clear boundaries between particular centers that prevented the child's distraction but permitted the care-giver an unobstructed view of all children's play areas.

Although the three scale models included information such as furniture and equipment that was not shown in the symbol diagrams, the pieces were all movable and easily manipulated by the staff members. The activity data sheets provided a ready reference as the modifications were made to the model. When agreement to the best classroom arrangement was reached, the form diagrams corresponding to each activity area were organized to reflect the changes. Although abstract in nature, the diagrams permitted the staff members to gain a clear conceptual understanding of all

![Form Diagram of Infant Area](image)

Figure 3. Form Diagram of Infant Area.
understanding of all activity relationships in order for them to effectively evaluate the alternative building concepts and continue the planning process after the building is in use. In a similar manner, a process was developed to explore the relationship of the parts to the whole. Each of the facility's primary activities was identified and listed by the staff and designer. The list contained all the basic areas for the children's facility beginning at the parent's "drop-off" and including the children's protected outdoor area adjacent to each classroom.

The list was organized into a matrix where staff members made decisions about the location of the major parts of the facility. The activities generated from the analysis of the children's flow processes, which tracked the different age groups through the facility, were rated on the basis of privacy and closeness or proximity to each other. This diagram guided the development of the building plans though staff members found some difficulty in responding to certain spatial implications of the plan drawings. While they could follow the organization of the classroom, they could not visualize how the "two dimensional boxes" might appear nor the implications of how the classrooms were connected. The continual reference to scale models and perspective drawings enabled the staff to effectively contribute to the design development of the building process.

CONCLUSION AND DISCUSSION

The process embarked upon by the staff and the architect is clearly a departure from the traditional approach to facility development which usually denies the expertise of the user and their involvement in design decision making. Traditional designers also focus on the formal and visual issues and give less attention to the behavioral issues that can influence the solution. In this project, the architect provided a clear structure which enabled the child development staff to lend their expertise to the initial programming stages of the process. Using activity data sheets, activity symbols, and form diagrams permitted the architect to integrate the knowledge about children's behavior and requirements into a format that was conducive to making space planning decisions.

Involving the expertise of the staff in this guided process helped them to see linkages between child development goals and the types of places where these goals could be fulfilled. Their continual involvement in the process of designing the building encouraged the exchange of ideas and concepts with the architect which facilitated the staff's ability to be effective design team members. The active part of the process terminated with the design development of the children's facility which was the result of the team's involvement.
Although it has been shown that people who participate in design decisions have greater satisfaction from their involvement (Schwartz, 1978), it is evident from this experience that the dynamics of participatory process and product are different than the results of a more traditional design process.

A similar process was utilized with two different child development centers where teaching staff, parents, and administrators were involved in the programming process. When the architect was an integral part of the process, the building design proposals were clearly understood by the user/client constituency. In the instance where the programming document was completed prior to the architect being commissioned for the project, significant communication problems were manifest by the user group and the architect. The language of the program reflects the concepts developed by the teaching staff and conveyed in terms of educational goals and children's activities. The language of the architect, the floor plans and other drawings, which are the interpretation of the verbal concepts, are often foreign to the user groups, especially if they are not developed simultaneously with the program.

Thus, the implications of this work indicates that ownership in the process permits the user/client to exercise free and informed choice. The separation of the programming and design stages limits the users participation which puts at risk, a satisfactory designed product.
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Public environments
Satoshi Kose* & Toshimoto Miyata
Building Research Institute, Tsukuba Science City, Ibaraki 305 Japan

PERSONALIZATION OF NARROW OFFICE ROOM SPACE IN A RESEARCH INSTITUTION

ABSTRACT

Post occupancy evaluation of small office rooms in a research institution was conducted to initiate an improvement program of the office environment. Occupants of rooms of virtually the same plan were requested to answer questionnaires. Question items included: concept of furniture layout; subjective evaluation of the room environment; relationship between occupants in the room, etc. Furniture layout in the room was photographed. The result suggests that the senior occupant of each room gave fairly high ratings on his choice, while subordinate-occupants seemed to suffer from psychological stress of being seen.

INTRODUCTION

How to create a good office environment is a point of discussion with the emergence of automation in modern offices. From the viewpoint of the building environment, not only the function of the room but also the subjective evaluation of the occupants must be taken into account for planning. Post-occupancy evaluation is an effective method to find out design faults which have been passed unnoticed during the initial planning stage. This viewpoint is crucial for the creation of better offices for the future (Wineman ed., 1982).

Small scale office rooms are not so common in Japan, but there are some occasions when they are required as in research institutions. It is necessary for the designer to plan these office spaces with due consideration to the needs of the occupants. What is most important is whether the offices could be adjusted according to the needs and personal preferences of the occupants, including securing privacy in the offices when the space is shared with other occupants (Altman, 1975). The requirements would surely increase with the introduction of automation in the offices, and especially if an office planning with workstations of low height light partitions prevails. However, designing of such offices have been relatively few in Japan, and there lies a high risk of inappropriate planning by the designers as they tend to disregard the crucial needs of the occupants. The authors conducted a post occupancy evaluation survey of the office use in their own institute from the viewpoint of occupant satisfaction. The result and its implication for future office planning is discussed.
PHYSICAL CHARACTERISTICS OF OFFICE ROOMS

The survey was conducted for 63 small-scale office rooms of virtually the same plan between 3rd and 7th floor of the 7-story main building of the Building Research Institute. Only noticeable differences are that the majority of the rooms face south, while some others north. The position of the door is off-center and the plan is mirror-wise for neighboring two rooms. It is thus possible to draw out the effect of furniture layout and of sitting places to comfort and function of the room.

The size of the room is 3.6 m wide, 5.45 m deep with a ceiling height of 2.6 m. The window is divided into three panels, each with a large single glazing, just above the stool of 0.9 m in height that houses a fancoil unit for heating and cooling. The window panel in the center is to slide open to one side. Light gray venetian blinds are provided for the window. The room has twelve 40 W fluorescent lamps banked into six, with three on/off switches, for the window side, center, and corridor side. The ceiling is made of light gray gypsum board, the walls are light beige painted finish of gypsum board, the floor is finished with beige plastic tiles, and the steel entrance door to the room is painted black on both sides. Typical plan of the room is shown in Fig. 1.

SURVEY METHOD

The survey comprised of two kinds of questionnaire items: the first comprised of questionnaires on the basic characteristics of the senior occupant which included such items as type of research activity, relationship between multiple occupants in the room, etc. In addition, usual condition of the door, and the blind use were asked and filled out by the investigator. A summary of this questionnaire form is given in Appendix I.

![Figure 1. Floor plan of the room under investigation.](image-url)
As the second kind, subjective evaluation of the room environment was collected by filling out a questionnaire sheet by the occupants themselves. Questions included subjective response on comfort, size, ease of use and atmosphere of the room, evaluation of the view through the window, and so on. They were also asked about method of storing documents, reference materials and back issues of technical journals which are crucial for research. Some basic question items derived from personality inventory test were included. The basic concept of furniture layout was asked only to the senior occupant. A summary of the questionnaire form is in Appendix II.

In addition to using a check sheet with the plan of the room, physical characteristics of the room such as placing of furniture, normal sitting position of the occupants, the use of the door, window and the venetian blinds were recorded with the assistance of photographing by a fish-eye lens camera. It looks like as Fig. 1 and 2, and it was later used to identify detailed furniture layout in the room. Normal photographs were also taken. One of them was used to record the field of vision of the senior occupants from their normal seat position, another photograph was taken from the door to check the possibility of a passer-by looking into the room. The others were used to record the general layout of furniture in the room. To avoid the effect of extreme climatic conditions (radiant heat or cold through large windows which affect the use of door and blinds), the survey was conducted during spring and autumn.

Figure 2. Fish-eye photograph of a room from the ceiling.

Figure 3. Fish-eye photograph from the senior occupant's seat.

RESULTS AND DISCUSSION

Collected data were analyzed by several factors such as story, direction of the window, or relative position of the door. Since no significant difference was noted among them, the analysis that follows was conducted for all samples as a single group.
Among 63 rooms, 26 had only one occupant, 30 had two, 6 three, and 1 room had four in this small space. Space ratio covered by furniture ranged between 30% to 50% as shown in Table I. It is a reasonable value if one takes into account of furniture provided as the basic necessity for each room. It takes up about 20% of the total floor space with a knee-hole desk and a chair for the senior occupant, a large table and four folding chairs for a talk/discussion with research colleagues/visitors, and a set of large bookshelves.

Table I. Floor area covered by furniture.

<table>
<thead>
<tr>
<th>Covered floor</th>
<th>27.5-32.5</th>
<th>32.5-37.5</th>
<th>37.5-42.5</th>
<th>42.5-47.5</th>
<th>47.5-52.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rooms</td>
<td>1</td>
<td>14</td>
<td>26</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>1.6</td>
<td>22.2</td>
<td>41.2</td>
<td>33.3</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*Average of ratio = 40.4%*

The senior occupant's desk was generally placed to have natural lights coming through the window from the left side or from the front to avoid shading by right hand during writing. Table II shows that the desk was almost always positioned nearer the window, and nearly a half of the desks took the far left corner of the room from the door.

Table II. Position of the desk in the room relative to the door.

<table>
<thead>
<tr>
<th>Position of desk</th>
<th>Far from door</th>
<th>Center left</th>
<th>Center right</th>
<th>Near door</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>left center</td>
<td>left center</td>
<td>left center</td>
<td>left center</td>
</tr>
<tr>
<td>Number of rooms</td>
<td>27</td>
<td>16</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>42.8</td>
<td>25.4</td>
<td>27.0</td>
<td>1.6</td>
</tr>
</tbody>
</table>

As to the direction of the desk (Table III), most were facing to the window or getting the light from the side. It is natural that the senior occupants try to have window light from the left. However, it is quite surprising that they placed their desk facing to the window in a third of all the rooms, if one takes into account of the well-known disadvantage of glare from the strong direct light. Typical placement of the desk is shown in Figs. 2 and 4. It was very rare to have the desk placed so that the occupant faces to the door, which is fairly common in executive offices. Fig. 5 is an ex-
ample of such a rare case.

Table III. Direction of the desk in relation to window and door.

<table>
<thead>
<tr>
<th>Direction of desk</th>
<th>Getting natural light from left</th>
<th>from right</th>
<th>Facing to door facing to window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rooms</td>
<td>33</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Percentage</td>
<td>52.4</td>
<td>9.5</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Figure 4. Fish-eye photograph of a room with the desk facing to the window.

Figure 5. Fish-eye photograph of a room with the desk facing to the door.

Two thirds of occupants felt the room narrow or too narrow (note 1). However, their general evaluation of comfort and easiness of use of the room was fairly affirmative (see Table IV). This is perhaps because it was the result of their efforts to arrange furniture (his desk and chair in particular) for maximum function of the room.

Privacy is always a great concern for occupants. In the present study, avoidance of direct view from passers-by or visitors through the door (visual privacy) was recorded and analyzed. The result shows that about 40% of the senior occupants protected themselves from directly being seen from the passer-by, as shown in Table V. Among those who provided visual shields, nearly three fourths put lockers or bookshelves near the door. Only one occupant had shields simply around his desk, and the others had shields both around their desk and near the door. Those who provided double shields were, without exception, introversive and nervous in character, and they complained of narrowness and difficulty of the use of the room.
Table IV. Subjective evaluation of the room (senior occupants).

<table>
<thead>
<tr>
<th>Rating</th>
<th>(+++)</th>
<th>(+)</th>
<th>(-)</th>
<th>(--)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort (number of rooms)</td>
<td>14</td>
<td>37</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Width of the room</td>
<td>2</td>
<td>18</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>Ease of use</td>
<td>6</td>
<td>33</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>View through the window</td>
<td>20</td>
<td>33</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Furniture layout</td>
<td>4</td>
<td>23</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>Desk position</td>
<td>9</td>
<td>35</td>
<td>17</td>
<td>2</td>
</tr>
</tbody>
</table>

Table V. Provision of visual shields against passers-by.

<table>
<thead>
<tr>
<th>Type of shields</th>
<th>Around desk</th>
<th>Near door</th>
<th>Both</th>
<th>No shields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of rooms</td>
<td>1</td>
<td>17</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>Percentage</td>
<td>1.6</td>
<td>27.0</td>
<td>9.5</td>
<td>61.9</td>
</tr>
</tbody>
</table>

They had the impression that the room is dark, closed and complicated. In spite of these negative responses, they evaluated comprehensive comfort of the room fairly acceptable.

The relative position of desks between senior occupant and principal (if there were more than one) subordinate-occupant was analyzed when there were two occupants or more. Range of field of vision was selected as being the representing factor. Both 180 degree view range (Level I: maximum obtainable view without turning the face but just moving the eyeball) and 270 degree view range (Level II: turn the face 45 degrees on both sides) were chosen as the criteria to evaluate direct view between occupants (Fig. 6). The result shows that at Level I there is no direct view between two occupants for about half of the samples. If there was any direct vision, only 8% of the senior occupants allowed themselves to be seen by the subordinate-occupant in his room. At Level II, the number of rooms with no direct view between the two decreases to 16%, and cases of mutual view increase to 35%. Still, 60% of the senior occupants do not let them being seen.

This clearly illustrates the fact that the senior occupant took the major place in deciding the furniture layout, and that avoidance of
being seen by others was one of the utmost concern. Relationship with the result of questions on personality suggested that the senior occupants who allowed themselves being seen were less nervous among the samples.

![Diagram showing field of vision for two levels](image)

**Figure 6. Definition of field of vision for two levels.**

<table>
<thead>
<tr>
<th>Table VI. Ratio of the presence of direct vision between occupants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No direct view</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Level I</td>
</tr>
<tr>
<td>Level II</td>
</tr>
</tbody>
</table>

*A signifies senior occupants, B signifies subordinate occupants.

The presence of direct view from others did not seem to affect the evaluation of the room by senior occupant because it was their own choice. However, it did affect the evaluation of the subordinate-occupants as they were brought into an already established setting that was not necessarily of their preference. Evaluation of comfort of the room by subordinate-occupant became higher if no direct view from the senior occupant existed. If there was a direct view from the senior occupant, satisfaction of the subordinate-occupant to the placement of the desk was higher when the mutual view was assured.

**CONCLUSION**

Subjective evaluation of the senior occupants suggests the general condition agreeable, but they complain of the narrowness of the room. This is because of much furniture, and more basically, too many books and documents they have to handle. Those who have their experimental laboratories can put in part of such documents there, but others have no chance of doing so. Overall positioning of the furniture has been the problem, and most occupants are not satis-
fled. However, the placement of their own desk is highly evaluated, and this seems to be the point where personalization is most successful. The situation is different for subordinate-occupants. Basic requirements for their comfort is not always met, and they can be under psychological stress. Improvement of the condition is not easily realized because of the narrowness of the room and much furniture. Another remedial measure for subordinate-occupants is to find a place of refuge outside the office room to secure privacy, and this is often done by principal subordinate-occupants of full employment status.

With the introduction of more and more personal computers in the office rooms, the room layout is expected to become less and less flexible. It is also feared that desks of the existing types are too high for keyboard operations. As it is unlikely that special desks for work stations will be brought into each office room because of narrowness, problems on VDT work will emerge in the near future.

ACKNOWLEDGMENT

The study was started during the stay of Mr. Chang Huai Sheng in the Building Research Institute as a short time visiting scientist from Harbin. His contribution for part of the survey is appreciated. The authors would like to express their thanks to Miss Kelko Watanabe of the Building Research Institute for her suggestion during the preparation of the questionnaire forms.

Part of this paper was read at the 1985 Annual Meeting of the Human Ergology Research Association held in Tokyo (Kose and Miyata, 1985). It was also partly presented at the 1986 Annual Meeting of the Architectural Institute of Japan held in Sapporo (Miyata and Kose, 1986).

Note

The narrowness is because the design standard for government office buildings gives no regard to the needs of researchers for larger spaces to store journals and documents at hand. Spaces assigned to them are only about 6 m². Dividing other utility spaces into each researcher's office room, it was widened to the present size that is about three times larger. It is beyond the standard of normal office buildings, and supposed to be enough to house two persons in a room (a senior occupant and his research assistant).

The average office area per person was around 9 m² for selected office buildings in Japan, and in three fourths of the samples it was below 10 m² (Survey of Japan Office Automation Association in 1983, cited in Okishio, ed., 1986).
REFERENCES


Appendix I. Questionnaire on physical condition of the room, etc.
(Sheet to be filled out by investigator)

<table>
<thead>
<tr>
<th>Room No.</th>
<th>Type</th>
<th>Date of survey</th>
</tr>
</thead>
</table>

1. Door was opened/closed when visited.
   The door is usually open/shut/not decided because ( ).

2. Fins of the window blinds were kept:
   horizontal/to allow light/to shield light.
   Blinds are:
   always in position/never used/depends on time and season
   because ( ).
   View through the window is:
   available/available by looking sideways/available only twisting one’s body/available only standing up.

3. Give general characteristics of subordinate occupants in the room.
   Sex M/F Age ( ) years Condition of working Employment status

4. Seat placement and reception of visitors.
   Principal occupant seat is fixed/has more than one seat.
   Talk with visitors at the desk/at the table/other (specify).

5. Characteristics of the research work of the principal occupant.
   Mainly experimental/mainly field survey/paper work at the desk.
   How often is he away from the office room? ( ) days a week.
   Where is the principal occupant likely to be away?
   Laboratory/Computer room/Meeting room in the Institute/Out of the Institute.

6. Specific comments if any.
Appendix II. Summary of questionnaire sheet on furniture layout etc.

<table>
<thead>
<tr>
<th>Room No.</th>
<th>Type</th>
<th>Date of survey</th>
</tr>
</thead>
</table>

1. This room is: good/fair/not so good/bad.
2. This room is: too wide/wide enough/a little narrow/too narrow.
3. This room is: easy to use/fair/not so good/bad.
4. Evaluate the general impression of the room by four grade rating:
   - Bright: +-----+-----+-----+-----+ Dark
   - Opened: +-----+-----+-----+----+ Closed
   - In good order: +-----+-----+-----+-----+ In disorder
   - Complex: +-----+-----+-----+-----+ Simple
   - Soft: +-----+-----+-----+-----+ Hard
   - Original: +-----+-----+-----+-----+ General
5. View from the window is: good/fair/not so good/bad.
   - Do you look out of the window for a short rest?
   - Frequently/Occasionally/Not so often/Rare.
6. Basic consideration of furniture layout (tick where applicable):
   - Lighting
   - Relationship with door
   - Relationship with window
   - Relative position with subordinate occupant
   - Relative position of furniture
   - Personal preference
   - Other (specify)
7. To decide this furniture layout was: difficult/easy.
8. Are you satisfied with this layout?
   - Yes/fairly yes/not so much/absolutely no.
   - Do you rate your desk in good position?
   - Yes/fairly yes/not so much/absolutely no.
9. Where do you store your goods?
   - Experimental laboratory
   - Somewhere in the main building (specify)
   - At home
   - Try to keep in this room
   - Other (specify)
10. Please answer the following questions (if you do not mind).
    a) Are you sociable?  Yes/No.
    b) Are you nervous?  Yes/No.
    c) Do you quickly become acquainted to a new environment?
    d) Where do you prefer to sit in the cafeteria or restaurant?
       - Near window
       - Near passage way
       - Near wall
       - Near entrance
       - Far from entrance
       - Far from other customers
       - Seat with a rich view
       - Seat with enclosedness
       - Other condition (specify)
THE EFFECTS OF EXHIBIT SIGNAGE ON VISITOR BEHAVIOUR

To enhance the educational and recreational experiences of zoo visitors, Zoo Atlanta has developed a research program to inform the design of effective exhibit signage. The research design entails a parallel study, multi-method approach to be used throughout the Zoo. The first study utilizes a "before and after" design to evaluate the impact of sign performance on exhibit performance (attractiveness). The second study utilizes a product evaluation model to determine the impact of three sign characteristics on sign performance (learning). This paper reviews the purpose and procedures of the research program and reports the results of the initial exhibit performance study.

INTRODUCTION

Exhibition facilities, such as zoos, museums, and aquariums, use interpretive or display signage to enhance the attractiveness of their exhibits and to serve as educational resources for the visiting public. Yet, while display signage is an important way of conveying information about the animal or object on exhibit, it is extremely difficult for many institutions to develop and present appropriate educational information to the public (Weiner, 1963; Serrell, 1977, 1979). Much of this difficulty derives from the large number of content and contextual variables involved in producing informational signage. Typical problems include: text which is too advanced, technical or verbose; text which is too simple or boring; text which is inadequately edited; text which is hard to read (e.g. too small); poor typography; poor figure-ground contrast; and poor sign placement or angle (Serrell, 1983; Taylor, 1981). Moreover, because it is difficult to match signage to both the design of the exhibit as well as the processing levels of a particular audience, display signage often does more harm than good; in many cases detracting from the quality of the exhibit, rather than enhancing it.

The Signage Research Team at Zoo Atlanta has developed a parallel study, multi-method research program to inform the design of exhibit signage throughout the Zoo. The first of the two studies is designed to determine the impact of signage on exhibit performance/attractiveness; the second is to assess the impact of signage characteristics on sign performance/communication. This approach will be used to conduct signage studies at each of twelve new exhibits to be built over the next three years. This paper outlines the objectives and research designs of the
two parallel studies and presents the results of the first exhibit performance study which was conducted to develop permanent signage for the new Flamingo Exhibit.

RESEARCH PROGRAM OBJECTIVES AND DESIGN

A series of brainstorming sessions were held with graphics designers, project architects, zoo staff and the Zoo Director, to identify the issues they felt would influence the effectiveness of exhibit signage. These issues fell into two categories: 1) those that focused on exhibit attractiveness in terms of how signage performance impacts exhibit performance; and 2) those that focused on communication in terms of how signage characteristics impact signage performance. These two categories formed the basis of the two parallel studies.

Study 1: Exhibit Performance/Attractiveness
The primary concern of the zoo staff focused on exhibit performance, or the impact of the exhibit, as a whole, on visitor behavior and experience. Exhibit performance is typically defined by the amount of time visitors spend viewing the exhibit, that is, its attractiveness, drawing power and holding power (Screven, 1976). However, there is little empirical evidence regarding the role of signage in exhibit attractiveness.

Serrell (1977) demonstrated that there was a relationship between the attractiveness of an exhibit, measured in viewing time, and the attention given to exhibit signage. However, it is not clear from her work whether the attractiveness of an exhibit stimulates increased interest in a sign or whether a sign stimulates increased attention to an exhibit.

Objectives. The research objectives for this study are to determine:
1) the extent to which signs are intrinsically attractive (that is, the degree to which they are responsible for increasing the number of people who view the exhibit and for influencing space use patterns); and

2) the extent to which signs stimulate increased interest in the exhibit by increasing viewing time.

A third objective which the zoo staff addressed was the extent to which exhibit performance influenced learning. Whereas many studies have used the amount of time that a visitor spends at a particular exhibit as an indicator of learning (e.g. Serrell, 1977) this assumption is questionable. The approach taken in this research is that learning cannot be isolated from a discussion of signage performance which is the focus of the second study on information communication.
Jon A. Sanford* and Ted Finlay, Zoo Atlanta, 800 Cherokee Ave.,
Atlanta, Georgia, 30312

THE EFFECTS OF EXHIBIT SIGNAGE ON VISITOR BEHAVIOUR

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visitors, Zoo Atlanta has developed a research program to inform
the design of effective exhibit signage. The research design
entails a parallel study, multi-method approach to be used
throughout the Zoo. The first study utilizes a "before and
after" design to evaluate the impact of sign performance on
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Figure 1. Zoo Atlanta Flamingo Exhibit

Research Design. In order to address the objectives identified above, the first of two parallel studies was developed. This study entails a basic "before and after" design to test the effects of signage on visitor behavior. Changes in visitor viewing time, site destination (where visitors go when faced with a choice of competing exhibits), and space use (visitor movement patterns) between the two conditions are indicators of holding power, drawing power and sign attractiveness, respectively.

In this study observational techniques are used to measure visitor viewing time, site destination and space use patterns. The "before" or baseline condition involves data collection before the installation of any interpretive signs. The "after" condition occurs after installation of mock-up signs and uses the same data collection techniques as in the "before" condition.

Study 2: Sign Performance/Communication
A second concern of the zoo staff was the impact of signage characteristics on signage performance. Whereas previous research focused on a limited number of design characteristics, such as size of text and color of the background (Bitgood, et al., 1985; Hodges, 1978), the zoo staff identified three types of sign characteristics which they felt would have an impact on interpretive signage to communicate information: 1) informational content, 2) graphic presentation, and 3) sign location.

Objectives. Specific objectives for this study are to determine:
1. Content - the reading level necessary to communicate with zoo visitors (i.e. to increase their knowledge), as well as the type of information they want to know about an exhibit;
2. Presentation - the most effective format for attracting zoo visitors as a precondition for communicating with them; and
3. Location - the optimum placement of exhibit signs to enable visitors to see them.

Research Design. Knowledge and learning acquired from viewing an exhibit cannot be measured directly and must be inferred from
changes in what visitors know after exposure to interpretive signage (Screven, 1976). As a consequence, this study utilizes a product evaluation model to assess the effectiveness of the three sign characteristics — content, presentation and location — on visitors’ comprehension and learning. Several types of baseline data are obtained from random samples of zoo visitors prior to the installation of exhibit signage. These data include: 1) what visitors know and want to know about flamingos, 2) visitors' ability to understand and recall information from signage text when it is on a typewritten handout; and 3) visitor movements in and around the exhibit.

![When is a Flamingo like a Whale?](image)

**Figure 2. Example of Flamingo Exhibit Signage**

After the baseline data are collected, test data are collected using the same mock-up signs as in the Attractiveness Study. The protocol used in the pre-test phase is repeated, with the exception that the typewritten handout is replaced by the mock-up signs. The test data can then be compared to the pre-sign data to determine the effectiveness of the signs in: 1) increasing visitors' knowledge about flamingos; and 2) communicating with the visitor (e.g. are signs more effective than a handout?). This information can then be used to inform the design and installation of the permanent signage.

**METHODS**

A number of methods can be used to assess the impact of exhibit signage on the learning experience of zoo visitors. While previous studies have been limited by their use of singular methods to test knowledge, attitudes and learning, the research approach described here is unique in that it utilizes a multi-method, parallel study approach to data collection. This enables the research team to simultaneously determine not only the impact of exhibit design, but also the impact of signage design and location on visitor experiences. Although the discussion of
methods which follow is applicable to all exhibits, it is presented as a case study of the initial signage research project on the Flamingo Exhibit.

![Site Plan of the Flamingo Exhibit](image)

**Figure 3. Site Plan of the Flamingo Exhibit**

**Exhibit Performance Study**

Unobtrusive observations. Three hundred-sixty, randomly selected zoo visitors were tracked from the time they entered the Zoo's Entry Plaza to the time they departed from it. The Flamingo Exhibit is contiguous to, and accessed from, the Entry Plaza (see Figure 3). In order to ascertain exhibit/sign attractiveness, drawing power and the amount of time spent looking at the Flamingo Exhibit (and in the "after" condition at each sign), visitors' points of entry to and egress from the exhibit, where they stood in the exhibit, the direction of their gaze and eye-fixing, as well as the location of the birds in the exhibit were recorded.

**Signage Performance Study**

In this study, videotape analysis, as well as tests of information recall and general knowledge about flamingos were used to measure the effectiveness of the various sign characteristics on signage performance. Only visitors who had viewed the Flamingo Exhibit were asked to participate by completing one of the surveys or questionnaires described below.

**Video analysis.** Visitors' movement patterns in the Flamingo Exhibit were videotaped at various times of the day and over a two week period. The tapes were analyzed and movement patterns mapped in order to ascertain how visitors use the exhibit (e.g. where people stood, the impact of the number of visitors in the exhibit, etc.).
Recall test. Visitors' ability to understand basic signage text was tested by administering reading comprehension tests to zoo visitors after they had viewed the Flamingo Exhibit. Using the proposed signage text as the test material, visitors were asked to read typewritten handouts and answer questions about the text. In order to compare the effectiveness of informational signs to typewritten handouts as well as the reading level required to communicate with the majority of zoo visitors, visitors' knowledge about flamingos was tested after the signs were in place by asking them to answer the same set of questions used in the test exercises.

Test of general knowledge. A test of general knowledge was administered prior to the installation of signs by asking zoo visitors to answer the same questions as in the recall test, but without the benefit of having read the informational handout first. The purpose of this test was to establish zoo visitors' knowledge of flamingos as a basis for comparison for what they knew after exposure to the signs.

Attitudinal survey. A short, open-ended questionnaire was used to ascertain visitors' subjective responses to the design of the exhibit (attractiveness) and what they would like to know about flamingos. These data were used to determine what information, from the visitors' perspective, should be included in the signs.

RESULTS

The results of the case study reported below focus on the Flamingo Exhibit Performance Study which illustrates the effects of signage on visitor behavior.

Drawing Power. As Figure 3 illustrates, the Flamingo Exhibit is immediately to the east of the entry gates, with the Zoo Spine, which leads to all other exhibits, located directly ahead in the visitors path of travel. Baseline observations without signs showed that almost 76% of the 400 zoo visitors went to the Flamingo Exhibit first; whereas only 16% walked past the Flamingo exhibit and followed the Main Spine. The other 8% went to the Gift Shop or Children's Zoo. Follow-up testing with signs in place showed that the signs did not appear to affect exhibit drawing power as 75% of the sample went to the Flamingo Exhibit first.

Holding Power. The mean viewing time for the exhibit without signs was approximately 80 seconds. However, there were sharp differences in viewing time as a function of the location from which the visitor observed the exhibit. In addition, group composition also appears to influence viewing time. The 11.3% (41 people) who remained in the plaza level, spent, on the average much less time (50.6 seconds) viewing the exhibit than
those who descended into the exhibit (82.4 seconds). In addition, viewing time was longer when adults were accompanied by children (82.1 seconds), or in an organized group (117.6 seconds) than when adults came either alone or with peers (68.6 seconds).

When observations were made with the mock-up signs in place, the mean viewing time for the sample actually decreased by almost 9 seconds from 80 to 71 seconds. This drop in viewing time is probably attributable differences in the time of year when the data was collected. The initial data was gathered in early fall when temperatures were warm and the vegetation in the exhibit was lush and green. The follow-up testing was done in February, and although the temperature was a factor (the mean viewing time was 67 seconds when the temperature was 40 degrees versus a mean time of 75 seconds when the temperature was 65 degrees), differences in the appearance of the exhibit due to the effects of winter on the vegetation may have also been a factor.

There was a similarity between the two data collection phases in terms of group composition. In both conditions adults accompanied by children spent more time (mean = 75 seconds in the after condition) viewing the exhibit than did adults who either came alone or with peers (mean = 55 seconds in the after condition).

Although the addition of signage to the exhibit did not increase the mean viewing time, those visitors who read the signs stayed at the exhibit for a longer period of time than those who did not. This increase in viewing time was slight for those who read one sign (mean = 74 seconds), however, those who read two or more signs spent an average of 103 seconds at the exhibit.

Sign attractiveness. The Flamingo exhibit was designed so that visitors could enter either by stairs directly off of the Entry Plaza or by a shallow ramp which parallels the left side of the exhibit. However, the observation data in the "before" phase indicated that visitors, contrary to design expectations, tended to enter the exhibit from the steps (82.3%) and only rarely (6.4%) used the ramp. Even the majority of parents with strollers went down the stairs rather than using the ramp.

The data not only show that circulation flow within the exhibit did not follow a linear pattern, but also that people tended to center themselves in the exhibit. That is, zoo visitors would walk down the center of the stairs and stand along the center of the viewing area. However, the data collected after the Flamingo Signage was installed indicate that the signs may have influenced space use. First, 56% of the people who viewed the exhibit read at least one sign. Since the signs are all located along the perimeter of the exhibit (see Figures 1 and 3), zoo visitors would have had to alter their tendency to center themselves as was observed in the initial observations. In addition, 8.3%
more of the sample (97%) went into the exhibit when signs were in place, than when the signs were absent (88.7%).

DISCUSSION

Exhibit performance includes exhibit drawing power, holding power and sign attractiveness. When zoo visitors are faced with a choice between competing alternatives, the percentage of people that choose a particular exhibit is a measure of that exhibit's drawing power. The location of the Flamingo exhibit in relation to the Entry Plaza is such that visitors could by-pass the exhibit by going either to the Children's Zoo, the Zoo Spine, the Gift Shop or the Necessities Shop prior to going to the Flamingo exhibit. As a result of this competition among attractions, the degree to which the Flamingo Exhibit was successful in capturing visitor attention was a measure of its drawing power.

Both baseline data without signs in place and data after signs were installed indicated that the Flamingo Exhibit had a large amount of drawing power with approximately 75% of the visitors in each sample viewing the exhibit before going anywhere else.

Yet, while the data did not indicate that signs play a role in attracting people to view the exhibit, they do seem to play a role in drawing people into the exhibit as 97% of the people who viewed the exhibit in the "after" condition went into the exhibit as compared to only 88.7% in the "before" condition.

A second indicator of exhibit performance, holding power, was measured by the amount of time an individual spent viewing the exhibit. Although the length of viewing time actually decreased between the two phases of this project, this finding can probably be explained by the differences in conditions between periods of data collection. As a result, additional data will be collected in the spring.

Finally, although the pattern of space use was consistent across both "before" and "after" conditions, there is evidence that signs are (to a degree) intrinsically attractive and altered space use. In contrast to the movement patterns before signs were installed, zoo visitors did not always enter the exhibit down the center of the stairs and remain in the center of the exhibit after the signs were in place. Rather, 56% went to the perimeter of the exhibit to read one or more of the signs.

In summary, although the results of this study indicate that the addition of signage does not increase the holding power of the exhibit, this finding can be questionable because of the influence of the weather. It does appear, however, that signs do influence visitor space use patterns and that a majority of visitors will adjust their "natural" patterns in order to read at
least some of the signs. Moreover, those people who read either two or all three of the signs did spend a significantly longer period of time at the exhibit (an average of 103 seconds) than would be expected from either their group composition or the amount of time that it would take to read the signs. There are two possible explanations for this. Either the signs could have stimulated more interest in the exhibit or the 17% of the sample who read two or more signs were simply more interested and that is why they read more signs.

DESIGN IMPLICATIONS

Although additional data collection under weather conditions more similar to the baseline conditions might clear up some of the inconsistencies in the before and after data, there are some design implications which can be derived from this study. First, signs are intrinsically attractive; visitors will go out of their way to read them, but only up to a point. Whereas 56% of the people read at least one sign, no more than 23% read any one of the three signs and only one person read all three signs. Thus, while people may their preferred behavior patterns to read one sign, they are unlikely to do it for two signs, much less three. Therefore, in order to maximize the number of signs that will be read, it is probably better to locate some of them within the natural movement patterns of the visitors. As the design (especially shape and orientation) of the Flamingo Exhibit makes this very difficult, space use analysis should be an important consideration in design. Additionally, three signs may be too many for this exhibit; however, this is difficult to determine from the data.

This study also indicates that exhibit design plays an important role in space use and attractiveness. Prior research has shown that people getting close to the animals is an important factor in the attractiveness of an exhibit (Normandia, 1986). This study indicates that perceived closeness may be as an important design factor as actual closeness. This is evident from the tendency of the zoo visitors to get as close as they could to the center of the exhibit, even though the siting of the exhibit (which slopes uphill) is such that visitors in the Entry Plaza are probably closer to the flamingos and also have a better view.

Finally, even though the length of viewing time found in this study was comparable to previous studies, this study did not support previous findings that associated viewing time with certain quantitative characteristics of the exhibit. For example, Serrell (1977) found a relationship between exhibit size and viewing time. Similarly, others found viewing time to be dependent on: the size of the animal (Bitgood, et al., 1985), the amount of animal activity (Hodges, 1978; Martin and O'Reilly, 1982), and the presence of young animals (Bitgood, et al., 1985).
Because the Flamingo Exhibit did not display any of these characteristics viewing time may have been a function of more qualitative aspects of the exhibit such as the type of animals displayed, its design characteristics (e.g. the presence of trees, water and terrain) and the interaction between animals and the design of the habitat. In fact, the decrease in viewing time between the "before" and "after" conditions may support this hypothesis as it may have been the result of a deterioration in the landscape design features due to the winter.

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CHANGING NOTIONS OF THE LANDSCAPE – THE AVENUE IN THE NEW WORLD, ITS SOCIAL AND SPATIAL IMPLICATIONS

This paper considers the changing notion of landscape in contrast to environment using the avenue as an element of the landscape. It explores the avenue from the Renaissance to the 18th century in Europe and Britain and then moves to the New World. It particularly examines the changing notions of the avenue in Australia contrasting the early notions of baroque idealism with the eventual ordered grid, developed by surveyors. The notion of avenue and the tree species used are considered in terms of their meaning to the community revealing some interesting paradoxes in social attitudes to environment and landscape.

The history of the avenue in Australia is complex. It is derived from changing notions of landscape and urban form from the Renaissance through to the late 18th century when the first town plans were developed.

The notion of landscape as a view or prospect carries social implications of power and order. This is in contrast to the concept of environment which is all that surrounds – a place which can be experienced wholistically. The environment has carried the social implication of nurture in the Old World and exploitable wilderness in the New World.

This paper will explore one aspect of landscape, the avenue, and how the changing notions of the avenue are related to changing social values which result in different spatial implications.

The notion or idea of landscape is founded on the relationship between society and the land (Cosgrove, p.13). So closely is the avenue tied up with social values that at times it is representative of order and control, while at other times it becomes symbolically associated with the democratic principles exemplified by nature or environment. The avenue is defined in this paper as a means of access or approach and may vary from a wide straight street lined with repeating elements (trees, columns or uniform buildings) to a winding rural walk or drive with trees.
The concept of the avenue was revived in the Renaissance when the rising mercantile capitalists sought ways to invest their new urban form with a veil of decency using classical orders (Mumford, p.418). The avenue became an important symbol of the baroque city where it not only symbolised order and power but also the new notions of horizontal and continuous space (Mumford p.421). The avenue with trees at this time was a rustic tree-lined path in the villa garden; the satyric scene for pastoral philosophising (Anderson, p.28).

By the 17th century the concept of the avenue had changed to one of the grand monarchist statement of autocracy, particularly in France. The baroque avenue now included the avenue of the hunting park or country estate. They were grand vistas through the forest radiating from the central autocratic palace. The social and resulting spatial implications were of power and order manifested as strong geometric spaces. They were places for ostentatious display - courtly rituals and their inherent implications of who shall experience this place and who shall not.

By the mid 18th century, however, the enlightenment philosophers were dreaming of ideal environments, utopian towns and the notion of the avenue began to change from the monarchist view of the land they controlled to the idealists' concept of avenue as the entry to the utopian town. Rousseau even returned to the notion of the avenue as a rustic path in his concept of a social utopia where the philosophy of equality would be represented by the landscape (Anderson, p.59).

Such notions of city design were essentially French and were not shared by the British at the time, who felt that "a garden in a street is no less absurd than a street in a garden" (Stuart, 1771, cited in Armstrong, 1986, p.18). The avenue in Britain was a winding drive to a noble estate. This was a less aggressive statement of power but an elitist element, nevertheless.

The late 18th century was marked by a period of interest in urban design where utopian concepts were being developed to correct the urban social problems of Europe and Britain. Despite the utopian ideals considered by philosophers and architects, by the 19th century the avenue in cities assumed an autocratic form - the avenues of authority attributed to Haussmann (Anderson, p.87). Socially these avenues clearly
stated who was in control and spatially they brutally separated closely woven old communities.

In the utopian fervour of the 18th century, it is interesting to see how the notion of the avenue was translated to the New World, both in North America and in Australia. In the New World, one found avenues similar to those in European baroque cities as elements in the new town plans. These avenues implied order in the wilderness as well as grand visions for settlements which could extend empires. Such avenues were evident in James Oglethorpe's Plan for Savannah in 1733 and in the Ellicott version (1972) of L'Enfant's Washington. That the autocratic avenue should represent the new Republic of North America promoted intense discussion at the time (Reps, p.319).

In Australia, the proposed plan for the first city, Sydney (April, 1788) was axial, symmetrical and consciously symbolic of authority with a 200ft (66m) wide diagonal symbolic avenue leading from the water's edge to the crest of the hill where it was to be terminated by a stately government house. Similarly the plan for Parramatta (1791) had a 200ft avenue leading from the river to the government house. A contemporary stated that it was "of such breadth as would make Pall Mall and Portland Place hide their diminished heads." (Eldershaw, p.184) Both these fine town plans and their 18th century avenues were lost.

Instead the avenue of the English romantic garden was introduced and together with early notions of baroque avenues established a cultural heritage of two types of avenues.

In the early 19th century Governor Macquarie's wife who was skilled in the art of landscape gardening saw the young colony as her estate. She created romantic winding avenues terminated by lookouts which commanded long views to the sea. This notion of the avenue, the winding romantic drive, has continued to be an element in country estates and in large recreational parks.

Of equal interest is the other notion of the avenue - the ordered, regimental grid of street planting. This was decreed in 1829 by Governor Darling and Major Mitchell, army men and their surveyors. Streets in all towns were very wide and were planted with trees from the northern coastal rainforests - the Moreton Bay fig, the silky oak, the white cedar and the brush box. Such examples of mid 19th century plantings
occurred in far west arid towns as well as the more temperate towns on the western slopes and particularly the coastal towns.

Why were the rainforest trees an important element of the early town avenues? From the botanical collectors' journals, it would appear that the rainforest tree had great meaning for the Europeans at the time. There were frequent references to the beauty of the rainforest trees in contrast to the antipathy expressed about the eucalypts (Armstrong, 1986, pp.81-83). The delight in the rainforest tree was possibly associated with Rousseau's notion of the noble savage in Antipodean gardens of Eden. This was a far cry from the reality of the unyielding Australian landscape and yet the rainforest tree was planted and survived in a wide range of conditions which encouraged the dispirited community to believe that the land could be fertile if only they could discover its secrets. The rainforest tree became a symbol for both the Old World and the new Australian settlement.

As the colony developed, the avenue in Australian country towns continued to be a strong element in the cultural landscape and it is interesting that the periods of heaviest plantings tended to occur when the environment was most under stress. In the 1880s perception of the environment changed as decades of exploitation had degraded the land so badly that an environmental concern was aroused. The community undertook massive tree plantings, however the tree plantings occurred in the towns, that is, the landscape not the environment. The notion of the avenue was one of environmental saviour - an act of placation by politicians rather than an attempt to deal with the real environmental problems.

By the 20th century another rainforest tree began to appear as an avenue. This tree, however, was an imported tree - the Canary Island palm. It was felt that Sydney should have a tropical appearance, so the palm was suggested for stylistic reasons - a trivialisation of the original meaning of the rainforest tree.

After World War I, the avenue assumed another meaning. The soldiers returning from Europe with memories of the Lombardy poplar in the battlefields of France, planted memorial avenues of poplars for lost heroes in parks and reserves. They also planted memorial avenues of kurrajong trees. This is an Australian tree renowned for its ability to survive
under adverse conditions. The use of an indigenous tree as a memorial co-incided with an increasing awareness of the beauty of the Australian environment which was now perceived as landscape, particularly when viewed from the road. So the notion of the avenue of the 1940s was one of the environment - a simulated natural landscape of randomly planted eucalypts whose informality was symbolic of nature. This romantic avenue wandered free through the countryside as roadside planting while in the towns the rise of bureaucracy and middle men demanded that avenues be of small colourful trees, horticulturally managed into small controlled forms. Thus the avenue as suburban gardeneaque occurred in the towns while romantic free eucalypts formed avenues in the countryside. The social implication of these new town avenues was one of domesticity, order, neatness - suburban mediocrity.

Although there was a short period of indigenous planting during the Environment Movement of the 1970s, these plants were mostly shrubs; the rainforest giants having been sacrificed for the needs of the car, powerlines and other manifestations of technology. More recently there has been a nostalgic return to the older avenues in some of the urban renewal projects. Sadly, however, these museums of a previous era are often created by taking the original trees from country towns or estates and transplanting them to the new 'disneylands' - the heterotopias (Foucault).

The avenue has been a sensitive barometer of social attitudes through the long period of the Renaissance to the baroque and particularly during the 18th century when there was much discussion about European autocratic urban design in contrast to the notion of social responsibility as exemplified by the English romantic garden (Armstrong, 1985, p.203). The changing social meanings of the avenue have resulted in different spatial qualities from the wide straight avenues of order and control to the organic winding avenue - a natural retreat.

The use of avenues in the towns of Australia, often planted with rainforest trees, is derived from the principles of Renaissance urban form translated into the New World by the Laws of the Indies as well as the British notion of colonial avenues as enclaves found in India. The avenues in the town carry implications of order and control, however the spreading rainforest tree also implies the leafy retreat. That trees were planted for shade does not answer the question why rainforest trees were used in a
predominantly arid landscape. The original choice of these trees was made by botanists; later other trees were used in different climatic regions but always examples of the rainforest tree persisted.

Some philosophical ecologists suggest that there is a need for a "resacralized nature and a sacramental perception" (Tobias, p.39). It is interesting to look at the symbolic role of the Australian rainforest tree and its incorporation into the avenues in Australian towns while outside the towns massive despoilation of the environment has occurred. The avenue in the New World can be seen as representing the sacred and the profane; and implies a paradox in the perception of the landscape. It is suggested that the changing notion of the landscape, i.e. from landscape to environment has alternated and this continual paradox has been reflected in the changing form of the avenue over 200 years of white settlement.

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A PICTURESQUE TOUR OF LANDSCAPE SOCIOLOGY (1)
Michel Conan

Landscape has stirred little more than casual interest among sociologists during the last fifteen years in France but the mere fact that attempts to think about landscape in sociological terms have been made stands out as a picturesque landmark in the realm of ideas. Ever since W. Gilpin descriptions of British scenery (2) gave rise to picturesque attitudes in sketching and touring we have learnt that changing approaches to landscape cannot usually be divorced from changing uses of the environment or from environmental change itself (3).

Landscape has such rich meaning in common language that sociologists in France have refrained until very recently from using the word altogether. Such uneasiness is quite obvious in R. Ledrut's *Images of the City* (4) where he systematically avoids characterising the city as landscape even though he acknowledges that citizens were using the word during their interviews. But this is not the only reason. Landscape belonged to geography. Here was the rule The intellectual division of labor that has been brought about by the establishment of academic disciplines among the humanities has set apart geography (close to natural sciences) and history (close to social sciences: sociology, demography, political science). Interest in space or environment was taken to mean disinterest for the notion of time, to testify for a choice in favor of technocratic thinking as opposed to critical thinking. At most one could indulge in studying social uses of space.

Following upon Pierre Bourdieu's steps (5) Bernard Kalaora (6) has approached social uses of landscape through a study of social uses of Fontainebleau forest (7) an outstanding feature of the Paris region. First he asked how does the visitors' social structure compare with the overall Paris region population. This showed a clear social imbalance: the richer or the more educated the people, the more numerous among visitors in Fontainebleau. Of course Fontainebleau forest is very well known for its picturesque landscapes but so is it also for its rock climbing and for picknicking facilities. So that visiting the forest or walking along its footpath cannot be readily equated with appreciating the landscape. A further inquiry through interviews of a sample of visitors enabled him to find out that a minority of them did in fact appreciate the landscape, and that the social structure of its constituency was even more elitist than the visitors' as a whole. Yet this investigation raised two further questions: what does landscape mean to them? how did such cultural differences with respect to forest uses between different social groups come about?

In order to answer these questions he turned to a genealogical approach of the development of culture (8) and showed how a pattern of attitudes towards the environment had been established by landscape painters in the second third of the 19th century (9). This pattern was further used by a
state forest manager to improve the forest environment in order to change the attitudes of visitors and to make them more conversant with the painters (10). This has developed over time into the establishment of Fontainebleau forest as an outstanding landscape scenery (11) well known to a cultivated elite which is recruited mostly among the well-to-do and the highly educated members of French society.

Such an approach shows actually how a powerful social group has succeeded during the 19th century in gaining public recognition for capital improvement and management of the forest along its own cultural whims. It suggests forcibly that different social groups might have different attitudes with respect to man-environment relationships (12). Hence sociologists have been cautioned not to take unwittingly sides with a social group the culture of which they share. It was even suggested that landscape definition should belong to the landscape producers themselves, that is, in the countryside, to the farming communities (13).

This trend of ideas has spurred a small number of sociological investigations that were trying to unravel landscape production processes in the countryside (14), and in rural communes colonized by city dwellers searching for leisure amenities (15), and even in the city of Marseilles (16). It turned out that this process by itself had greater significance for most social actors than its outcome, landscape itself, because it implied a meaning-making activity through which a social group expressed its identity, or its search for an identity (17). So, landscape, territory and cultural identity came to be a cluster of narrowly linked concepts in sociological reports.

At any given time a place may be inhabited by several groups which are sharing a few amenities, competing for a few others and even struggling towards different relationships between men and their environment (18). Such attitudes contribute to shaping the world and building up territories and sense of place as well as sense of group identity. But such processes may result from a variety of social processes. Many individuals creating a personal place for their family, their kin, or their business may unwittingly contribute to the creation of a new landscape; social groups competing for some control over larger changes in the local society may find it convenient to take an ideological stance on landscape; still other social groups may be competing for conflicting models of environment-use and land-use, to be followed in the future: conflicts about nurture actually (19). Local debates on such matters are mitigated by social compromise and inertia of environmental change. Social domination by itself would mold any local landscape according to some exogenous references assigning its shape meaning and social uses according to a single pattern: let us call such a process, monumentality, that is making a place into a monument. Yet it is constantly kept in check by a whole variety of processes arising from local initiatives imprinting the "firm" (20) of diverse social groups upon the environment. We may call this territoriality. Then it makes sense to understand landscape as the outcome of dialectical relationships between monumentality and territoriality (21).

Much remains to be done in order to describe such processes but it still begs a question: where are the mental schemes coming from which are
commonly followed by actors in the production of landscape, whether aiming at monumentality or territoriality?

Many researchers have convincingly argued that picturesque attitudes promoting travel as an aesthetic pursuit among the well-to-do classes during the 19th century have been highly influential in promoting an interest in visual improvement of local landscapes (22). It has followed a different fate according to the social dynamics of territorially and monumentality - so that landscape value has been distributed over the countryside in a fairly uneven manner. Such differences have been reflected in further differences in environmental management in order to attract a growing number of tourists: so that landscape value has led to landscape transfiguration.

Yet such a visual appreciation of landscape, derived from painting appreciation and sketch practice in a culturally elitist society has been giving way during the last century, at least, to a fairly different approach. Visual literacy is still very important, but instead of deriving pleasure only from a well balanced pictorial view, a panorama to use an early XIXth century phrase, it calls for selecting a few limited cues in a view that afford the spectator an interpretation of the sense of place from an historical, cultural or scientific point of view. Industrial museums for instance as well as folk culture museums introduce visitors to a discovery of landscape that emulates the kind of aesthetic education that collection of landscape prints had been providing its XVIIIth century audience albeit in a totally new vein. Instead of introducing to a visual discovery of countryside qua landscape it invites the reconstruction of societies of the past from a deconstruction of the present visual appearance of cities and countrysides alike, and singling out of the most symbolic cues. We have called this the palimpsest model: deciphering the various situations written one after another onto a single piece of parchment (23). This is clearly exemplified in the manuals for environmental discovery in the national parks, the historical footpath (24) or the cities and regions themselves: landscape is a source for an infinite number of human cultures that have been describing or shaping a place, it is becoming a general symbol for human activities and as such it evades any finite number of meanings that can be attached to it nowadays (25). Yet it tends to become a particular kind of symbol expressing the contradiction within contemporary cultures between the striving for universality of each culture almost, and the almost universal acknowledgment of the need for cultural plurality.

This shows clearly that the analysis of landscape cannot rest any longer with dual research approaches calling on the one hand upon an objective description of landscape to be provided by earth scientists and geographers, and on the other hand upon a study of representations called from environmental psychology or aesthetic theory. Augustin Berque (26) has challenged such a simplistic division of research labor in his own studies of the Japanese landscape and he has proposed to adopt a medial point of view that calls forth a study of the relationship between society, space and nature which he calls milieu in a not too unfamiliar way and introduces to the study of both its ecological and symbolic character and meaning which he calls mediance (27). This is a dynamic concept since men derive
some symbolic meaning from their ecological surroundings and contribute accordingly to its ecological modelling. Man-environment relationship is an on-going process of change. A. Berque calls it trajectivity. Hence he stresses the importance of the embeddedness of material, practical and symbolic changes that seem to evade our attention when studying landscape. It seems so tempting to look at the countryside as if it were possible to behold an everlasting landscape with an appreciating eye! The present interest in a more dynamic attitude, deciphering past social meaning-making that has shaped the landscape demands that researchers start paying attention to trajectivity.

NOTES

1. This paper is a follow-up of a larger survey presented at the "Colloque Franco-Japonais sur la Recherche Paysagère" organised by M. Augustin Berque at the Maison Franco-Japonaise (n°3, 2 chome, Surugadai, Kanda, Chiyoda-ku, Tokyo), Octobre 1987.


4. LEDRUT, Raymond (1973) Les images de la Ville, Anthropos, published with the assistance of the Délégation à la Recherche Scientifique et Technique.


7. To a large extent a place comparable to New Forest for its historical and cultural significance in the development of a picturesque appreciation of landscape in France and Great Britain. Cf. GILPIN, W., A picturesque tour of New Forest.

8. He took his inspiration from the genealogical methodology used by Foucault in Surveiller et Punir.

9. Augustin Berque calls such patterns "Trajectoire" suggesting a new conceptual approach for geographical analyses of landscape which seems very promising. We shall not use it in this text lest we might suggest an anachronistic description of the actual development of ideas. Nevertheless we think that Berque's concepts offer a very interesting alternative to common language ambiguities. We shall point out in the notes a few more concepts. Cf. BERQUE, Augustin (1986) Le Sauvage et l'artifice, Les Japonais devant la nature, Paris, Gallimard; (1987) Urban Landscapes as an expression process, in Colloque Franco-Japonais sur la Recherche Japonaise, op. cit.

10. Such an odd approach reaching for changes in the pattern of relationship between persons and place can be called after Augustin Berque a trajectivity scheme.

11. We may see here an instance of the conduct that the Japanese call "mitate" : seeing Fontainebleau forest as if it were a Barbizon landmark (called in Japanese a "meishi"), in such a way that the memory of the original "mitate" is fading away. It is worth noting that the "artefaction" process that has been carefully analyzed and illustrated by Alain Roger in "Nus et Paysages" (1978; Aubier, Paris) has been found out to be very important in the formation of landscape appreciation in Japan. Cf. HAGA, Toru (1987) Landscapes appearance in Japanese Poetry, in Colloque Franco-Japonais sur la recherche paysagère, op. cit.; and NAKAMURA, Yoshio "The Japanese perception of nature - a feeling of affinity for the four seasons", in Look Japan, July 10th, 1983. Yet the artistic traditions involve major cultural differences that should not be forgotten. Cross cultural analysis could be extremely valuable on such a topic. Cf. Also ROGER, Alain (1985) Land and Landscapes - archetypes and patterns, in Colloque Franco-Japonais sur la recherche paysagère, op. cit.

12. In Augustin Berque's term we would say more briefly that we may witness conflicting trajectivity schemes heralded by unequally empowered social groups.


19. Nurture is a developmental process which may derive from a trajectory. We have been clumsily trying to express a general observation: any social change process is reflected into a new trajectory, but some of them make trajectory itself into a stake of social bargaining, while few make the trajectory scheme into a stake of conflicts for historicity.

20. Firm is taken in an extended meaning: any signs that may betray the identity of their producer.

21. ANSELME, Michel, JOLLIVET, André and BOUTRON, Jacques (1983) "Les jardins du petit séminaire", in Peraldi, Michel, op. cit. It must be clear now that monumentality and territoriality are two classes of trajectory schemes and that all trajectory schemes do not necessarily belong to these classes: pursuit of the introduction of a new crop, or gardening fashion for instance.


25. Cf. SENDA, Minoru (1987) Changing perspectives of landscape scenery in Modern Japan, in Colloque Franco-Japonais sur la Recherche paysagère, op. cit. Senda takes quite a different view speaking from such a different cultural perspective but I find it interesting to note that he claims a reappraisal of the symbolic value of landscape in a modern materialistic?) Japan.


27. Ibid.
Landscape has had a central meaning for the German youth movement of the Weimar Republic. The bourgeois part of this movement has developed respectively taken over (Riehl, Löns, Francé) an immobile ideal picture of landscape which corresponded to a preindustrial societies way of nature appropriation and power structure. Their perception of landscape ignored people living there. Man was understood not as a social being but as coined by landscape, culture was understood as rooted in the landscape. Therefore a change of landscapes was perceived as destructive for culture and man. The immobile picture of an ideal landscape has been stable over the last five or six decades with some groups of society. It has had its highpoint during National Socialism, but is of influence still today in Germany. It appears that this immobility is detrimental towards conceptions of a democratic society at the doorstep to the 21st century.

Non-human nature changes permanently. There never was a state of natural balance. Since man and woman have entered the world changes of nature became accelerated and modified in a typical human way. The speed of this human-introduced changes seems to have increased over time. Consequently that what has been called landscape changed its shape more and more rapidly. Since the beginning of industrialization some people felt afraid of industry-induced landscape changes. Landscape changes seem to be felt as alarming. This fear of the new landscape (note 1) then seems to be a more recent phenomenon. It also seems to be combined with the perception of landscape as an aesthetic category. However, in order to develop out of non-human nature landscape as an aesthetic category, humans needed to be free from the necessity to secure their own survival against nature (cf. Pielmeier 1980, 14).

Such a perception of nature as a landscape therefore seems to have been a privilege of social elites (cf. Groening 1984, 36). If then this perception of nature is dependent on specific living conditions, there may be social class-specific ways of perception and evaluation of landscapes. I will follow this thesis and take as an example the bourgeois part of the youth movement in the Germany from about 1900 till 1933. In the philosophy of this youth movement of the early 20th century nature and landscape played an essential role (note 2). The bourgeois part of the youth movement is often characterized popular as "Wandervogel" (migrating birds).
Older representatives of the German Landespflege (Landespflege is a concept of landscape-planning which claims to be holistic) often refer to this youth movement and seem to have been influenced by its philosophy. Today some declare this youth movement an early ecological movement and praise its ideal of nature and landscape as a starting point for models of future landscapes. Therefore it should be interesting to analyze the perception and appropriation of landscape in the youth movement and to try to reconstruct its ideal landscape. Only such an analysis may help to assess the relevance of such ideals for future landscape design (note 3)

My thesis is that the bourgeois youth movement followed a static ideal of landscape in a preindustrial society corresponding to the social power structure and the state of agriculture. This ideal seems to have been constitutional for Landespflege conceptions during the last six decades. A static ideal of landscape, however, neither meets actual nor future demands of nature appropriation from a democratic and highly industrialized society at the doorstep to the 21st century.

In order to develop a framework for the understanding of the ideal landscape of the youth movement it may be helpful to ask for the reasons why so many in the youth movement liked hiking. Hiking for the bourgeois part of this movement was the most important way of exploring nature. For the workers youth movement hiking first had had pragmatic aspects. They wanted to recreate in their scarce leisure time in order to be prepared for the hard working conditions in the work week to come. Contrary to that the bourgeois youth disposed of a sufficient amount of school-holidays and it was not subdued considerable physical stress and unhealthy working conditions. Hiking for this youth seems to have been an escape from the reality of a bourgeois existence in a capitalistic society. This society manifested itself in the industrial towns where the youth movement began. Hostility towards industrialization is also mirrored in many articles in journals of the bourgeois youth movement.

The escape of the youth from the social reality, from 'civilisation' as this reality often was named defamatorily, had to lead out of the big cities as the symbols of the hated society. The search for the utopian equivalent to their own social existence (cf. Böhme 1987,8) could not result in the spatial goal of a wild nature as represented by uninhabited wilderness. Quite contrary, the goal were landscapes where one hoped to find harmony between society and nature, where it seemed possible to cope with "the tensions between rationality and emotion, spirit and body, politics and person, culture and nature" (Eckert 1987,39). Among the attempts to cope with these tensions the bourgeois youth movement preferred such landscapes which had been formed for centuries by agricultural and silvicultural activities, and had not yet been changed visibly by industry and tourism, when the youth movement discovered it (figure 1).

Members of the bourgeois youth movement have written extensively about their walking tours and their experiences of landscape. There
does not seem to have been a specific ideal landscape like heath or highlands. There are, however, elements of a landscape which allow to identify a landscape as an ideal landscape. These elements are sketched in an article dealing with the Luneburg Heath, a landscape in North Germany between the cities of Hamburg and Hannover: "And is not my inner soul that enjoys the harmonic beauty of the landscape. With its decayed ruins; with its huge erratic blocks, with the criss-cross of the fields; with the variation between field and forest, with the dodging creek, with the charming villages, with its thatched roofs and its indigenous architecture" (Goebel 1909, 80; all quotes translated by the author).

![Image: Romantic painting of an ideal landscape, reprinted in a journal of the bourgeois youth movement (1926)]

This description which stands for many in journals of the bourgeois youth movement proves, that a historical, cultural landscape with a given proportion of fields, forests, meadows, rivers, historic buildings and villages, was felt to be harmonic and was regarded their ideal landscape.

**LANDSCAPE PERCEPTION AND SOCIAL DISTANCE**

I assume that a first pragmatic reason for the development of a static landscape ideal, which bars modifications in this landscape, is the fear of a disturbed image of memory. The landscape experience of the hiking youth was highly emotional. Landscape for them became a decisive realm of experience which often structured their later life. The intensive emotional experience of a landscape with poor accessibility provoked an interest to keep these landscapes, which were regarded as beautiful, the way they looked, only to satisfy one's aesthetic desires. The disregard for the people living in
these landscapes must be noted. In the opinion of the bourgeois youth movement the people living there no longer should have a right to change landscape, be it for the use of advanced technology in agriculture, be it for the use of technically improved building material, be it for advanced architectural design or be it for opening up new sources of income, e.g. tourism.

One example may prove this disregard. Schomburg, a leading representative of the "Wandervogel" and later on of the youth hostel movement, describes a moving landscape experience in his Wandervogel-time. Visiting the same place 60 years later he became furious when he had to realize that this landscape of his youth has not been preserved the way his memory had preserved it for him: "We climbed at the first pale daybreak with fatigued limbs the top of the Köterberg. From the old massive watch tower we saw a moving picture which indemnified us for all the trouble we had to endure. ....... When I visited this home mountain again 60 years later I became very disappointed, even was indignant. What had they done with my mountain? Just under the summit English barracks. I looked in vain for the watch tower: a hotel had been attached to it. Hundreds of motor-cars stood there so that one got the impression of a big town parking lot. A radar-station was the least stumbling stone still. How had they destroyed my home, my mountain of gods" (Schomburg 1970, 18ff.).

This socially disrespectful claim to preserve the landscape of one’s own juvenile experience seems to correspond to the way landscape was perceived. Numerous articles in the journals of the bourgeois youth movement support this thesis. The bourgeois youth movement was more disrespectful towards social conditions in the landscapes than were the proletarian youth. Instead landscape, humans and nature were seen from a perspective which lacked reality, at least the reality of the population which earned their living in the landscapes, which had been selected for the hiking tours. The view of the youth movement at a landscape time and again started from the top of the hills over the landscape below. It was enticing to overlook social problems down there in a seemingly peaceful landscape. There are many examples of this kind of landscape perception (figure 2/3). In 1909 a member of a group of the Wandervogel describes his impressions in the following way: "I had climbed the tower and admired the marvellous scenery. At the horizon black firwoods contrasted sharply with heaven, and the evening-sun shed a golden light over the edges of the white little clouds. Deep in the valley lay the tranquil little village - a scene of peace" (Schimmer 1909, 81ff.).

The view from the summit indicates an elitist way of landscape perception. Another sign for this elitist perception is the idea that in view of such overwhelming natural phenomena human problems must become unimportant. Generalization of own feelings by hiking bourgeois youth was often expressed in articles in different journals. Representative of this kind of generalization is the following statement taken from a narration about a mountain
tour: "If you look down from this height, 1800m above the sea and much higher than all human matters, down the human bustle, then you will commiserate with mankind in its useless need. Life would not be so hard if we would not complicate it" (Müller 1914, 8).

From such an elitist position possessive titles were proclaimed upon the landscape, considering those of the inhabitants as of secondary importance. Many a member seems to have wandered through the landscape "in a feeling of ownership of this blessed piece of land, which opens wide in front of me, spanned by the immaculate azure of an August heaven, interspersed with the glow of the midday-sun, to which it totally abandons. This land is mine, for more mine than his, who cultivates it or to whom the land was bequeathed by the ancestors. Because I conquered and incorporated it spiritually and mentally, I am deeply rooted in it through experiences of rare power,
depth and uniqueness in a mutual process of flowing, of influencing in its original sense" (Gaebel 1923, 24). Night walking tours with especially intensive nature perception and an even more restricted perception of social aspects seem to have strengthened such convictions.

THE REDUCTION FROM CULTURE TO NATURE

An essential reason for the fear of the new landscape seems to have been the fear to loose memory and identity. Contrary to the proletarian youth movement with its perspective of a socialistic society, the bourgeois youth movement looked for identity in the past (and in the corresponding landscape), but not in the present or in the future. Besides the imobile landscape perception of the bourgeois juveniles had its fundamentals in an ideological edifice of volkish, biologicist and nationalistic thoughts. This I can only outline here. According to these ideas man was coined to a large extent by the landscape he lived in. Genuine culture therefore is "bodenständig" (rooted to the soil), it has its origin in nature and in the regional landscape. Landscape modifying activities therefore tended to be destructive towards culture and ultimately towards a people also. Therefore preindustrial landscape, the ideal landscape of the bourgeois youth movement, had to be preserved as it was.

This preindustrial landscape corresponded with specific structures of society, which by authors as Riehl were advocated as "natural". Apart from authors as Riehl, Löns and others, the natural scientist Raoul H. Françé seems to have played an important role in popularizing such ideology. He wrote numerous popular-science publications in which he tried to prove the close relationship between man and nature, respectively landscape. In the journals which were read by the members of the bourgeois youth movement Françé is referred to quite frequently.

Another phenomenon – the idea to solve social problems by settlement – is to explain before this ideological background. By settling an opportunity seemed to emerge to root again organically man respectively race or nation in an adequate landscape. Most of the bourgeois groups fostered this ideology of settlement. In the proletarian part of the movement, however, this ideology had no influence. Obviously the proletarian youth were more sceptical towards such claims about the relationship between man, culture and nature.

During National socialism the idea of a race-specific landscape and corresponding landscape-design seems to have had special impact. At least the activities of a landscape-planning board under the leadership of Reichsleander SS, Heinrich Himmler, seems to point into that direction. During World War II Himmler had been appointed a "Commissioner for the Affirmation of German Culture" (Reichskommissar für die Festigung deutschen Volksstums). The task of his planning-board was to remodel Polish landscapes into German landscapes, so that after the expulsion of Polish people and the reshaping of the landscape German settlers could feel home there (cf. more detailed in Gröning/Wolschke-Bulmahn 1987). It was the first time in
the short history of German landscape-planning, that there seemed to be a chance to realize conceptions of an ideal landscape. The conformity of these landscape conceptions with the type of ideal landscape in the bourgeois youth movement of the Weimar Republic is suggestive (figure 4). A more detailed analysis is necessary. Nevertheless there is a high personal continuity between members of the bourgeois youth movement and the landscape-planning board of Himmler.

![Image](https://example.com/image.png)

Geschlossen, im Baumaterial einheitliches Dorf.*

**Figure 4** Mäding, a member of Himmler’s planning-board, publishes 1942 in his book "Landespflege" pictures of old rural landscapes as ideal landscapes.

Immobile ideas of landscape seem to exist also in German landscape-planning today. One indication may be the revival of regionalistic conceptions of landscape. On the one hand there is an aesthetic argumentation for a historic landscape which claims to be exclusive. On the other hand so-called ecological argumentation becomes increasingly exclusive towards historic landscapes of primarily agricultural character. I believe both argumentations are not adapted to future demands for landscape-planning. There is no doubt that the preservation of particular pieces of nature (landscapes respectively parts of it) is necessary. But nevertheless we will need planning efforts which reflect social development, anticipate the implications upon non-human nature and develop alternatives for the design of future human environments.

The bourgeois youth movement did not stimulate such an understanding of landscape-planning. On the contrary an immobile, backward orientated understanding of landscape turned out to be helpless towards new social developments and new technical developments too. For the future we need socially valuable landscapes, i.e. from cultural, ecological, economic and other points of view valuable land-
scapes. For that a landscape-planning is required which is able to criticize an immobile understanding of landscape and is able to grapple with the development of new landscapes in a creative way.

Notes
1 The heading "The Fear of the New Landscape" refers to an article by Gert Groening "Die Angst vor der 'neuen' Landschaft als Ausdruck von Zivilisationsschwierigkeiten" (1984).
2 Social class-specific differences in the understanding of nature are explored in greater detail by Groening/Wolschke-Bulmahn 1986.
3 The need to develop perspectives for the design of future landscapes results out of the fact that in the Federal Republic of Germany more than 1 million hectares of agricultural land will be taken out of production until the end of this century.

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Mark Francis, Center for Design Research, Department of Environmental Design, University of California, Davis California, USA

GARDENS IN THE MIND AND IN THE HEART

This paper reports on the results of a study of peoples relationships with their gardens in California and Norway. This research project has involved ethnographic interviews which explore the meaning of everyday, common gardens. Several categories of garden meaning are identified including garden as a setting for creativity, a retreat from the outside world, a private activity, a social place, a connection to one's personal history, a reflection of one's personality, a productive landscape, a symbol of caring and as a declining landscape. The implications of the research on garden meaning for environmental design and research will be discussed.

GARDENS & GARDENING

Gardening is firmly established as a popular leisure activity, engaged in by many people of all ages in many different settings and cultures. But why do people garden? The answer may be imbedded in what a gardens really mean to people. For many people, a garden is a place to escape, an opportunity to make a place of one's own, or a way to control part of a world which is largely out of control around them. These are human dimensions of gardens which have largely been ignored by garden art or garden history. The reasons why people develop relationships with gardens may be a rich source of theory about why the landscape looks and feels the way it does. Is it as technical or mechanical as the nursery industry or many garden magazines lead us to believe? Or as visual or aesthetic as some garden designers or artists interested in garden argue?

As a designer and researcher whose work has focused more on the public landscape, I came to the garden as a potential reservoir of theory and concepts useful for understanding the relationship of people and the landscape (note 1). For the past three years we have been conducting in-depth ethnographic interviews with people about their relationships with their gardens in California and Norway (note 2). Some of the people we have interviewed are garden enthusiasts but most are common gardeners. We have sought to reveal the gardens people carry inside themselves through recording with maps and interviews their childhood memories of gardens, their present garden perceptions of their own garden as well as their larger ideal garden images. Our initial analysis and findings based on over 300 hours and 3500 pages of interview data with people about their feelings toward their gardens begins to point to some of the dimensions of garden meaning. What people have told us about their gardens also presents some broader
implications for environmental design researchers and landscape architects.

GARDENS IN THE MIND: THE IDEA OF THE GARDEN

Our interviews show that gardens exist very much inside people - in their minds and hearts. It may be a garden people visited or used as a child which remains as a memory of a favorite place. Or it may be a garden they have visited or passed by which lingers as a place of beauty or meaning. It may also be a place with which they have an active relationship, a garden next to or near where they live. These places have unique qualities which differ in form and meaning from what is commonly described by garden design theory, horticultural records or historic surveys. An example of the garden inside people can be seen in the comments of one person we interviewed about his garden. "A garden for me is just a nice place. I am not really a gardener - I just like plants. My garden is just part of my life. It is part of where I have lived. It offers me pleasure and relaxation. It also offers physical relaxation."

MEANING THROUGH HUMAN ACTIVITY: MOWING THE LAWN AND OTHER GARDEN DELIGHTS

Meaning is bestowed on gardens through human action. Our research on people's relationships with their gardens has found people's direct involvement with and control of their gardens to be important dimensions of the meaning they attach to their gardens. Much of the satisfaction gardeners report is connected to control or manipulation, pleasure gained from the simple act of mowing the lawn or weeding a flower bed. This human action helps to intervene between the gap which often exists between their ideal images or childhood garden memories of garden and the everyday reality of their garden. Some of the common meanings of the garden we have found through our conversations with gardeners include:

The garden as a setting for creativity
Gardeners frequently described their gardens as places for personal expression and renewal. For example one person stated "Working in my garden is meditation for me. It's a spiritual place, it is very uplifting." Another gardener we interviewed, a computer analyst, commented "I often feel a sense of accomplishment working in my garden. It also offers me a sense of creating a place. It is something I am totally responsible for. I feel very relaxed and creative in my garden - this is not true in my work." The immediate feedback people gained through creating things in their gardens was also important to the people we interviewed - as one person commented "you can see progress instantly".

As a retreat from the outside world
Many people valued their garden as a retreat from the pressures of daily life. For example, one gardener we interviewed said "It's a good way to get away from all the pressures since there is no pressure gardening." Many of the people we interviewed stated
that they would prefer to spend a weekend in their garden then to
go away. When asked to rank thirteen benefits gained from their
present garden, "allows for relaxation" was ranked on top by
people we interviewed followed by "provides privacy" and "contact
to nature".

As a private activity
Gardening is largely done in private without considerable
interaction between family members. It is a solitary act. As one
person said "I mostly garden by myself. The kids are sometime
with me but it is not really a family activity".

As a social place
Social activity is left for family gatherings after the garden
work is finished or as an opportunity to discuss gardening with
neighbors over the fence. For example, one person commented "I
often have conversations with my neighbors about my garden. I try
and make the neighbors side pretty for them. People like what I
have done". The garden provides a neutral way for one to talk
with their neighbors, exchange information without the formality
of more organized ways of contact. For example one gardener said
"we do not socialize that much with our neighbors, so the garden
is my contact."

As a connection to ones personal history
Gardens can provide a connectedness of people to their own
personal histories. One person discussing her favorite part of
her garden commented "...I like the fact that we have an over 200
year old oak tree. It represents the fact that I am seven
generations of Californians. I like that." People often stated
that they would like to recreate parts of their favorite childhood
garden. For example, one person in remembering a favorite place
in her grandmothers garden said "there was a concrete bench that
we used to go to and contemplate things. That is something I
would like to put into my (present) garden."

As a reflection of ones personality
Many gardeners also see their garden as an extension of their
personality. For example one gardener said "my garden must
reflect parts of my personality. Some sections are chaotic and
some are very orderly - that is what I think I am too."

As a productive landscape
Several of the people we interviewed see a garden as something
productive, which is planned and planted with a purpose. One
gardener commented "For me the idea of garden is something that
bears fruit or vegetables, something you raise with a purpose. It
is something you are growing to use." "Growing flowers" and
"growing vegetables" were ranked first and third as the most
important activities for people in their present garden.

As a symbol of caring
Personal involvement and manipulation of ones garden in turn
communicates a sense of caring to others. The garden then takes
on a public meaning, serving as a symbol of love and care which is
often perceived by friends and neighbors. This sense of caring has been found to be often absent in the larger public landscape.

As a declining landscape
Comparison of people's drawings of both childhood and present gardens shows an alarming erosion of some the most important elements of favorite childhood gardens as found in modern gardens. For example, in our interviews with several generations of one family of gardeners, some of the elements found in people's childhood gardens such as wild area and older vegetation are lacking in their smaller, more manicured present gardens. Favorite places shown on childhood garden drawings such as "rocks in woods to jump off of", "empty lot with big Eucalyptus tree", and "strawberry patch" were not part of present gardens. As a result, the experience of their children of present garden are quite different than their own past experience.

DESIGNING THE UNFINISHED: LANDSCAPE ARCHITECTS AS GARDENERS

Garden design has been treated by many design professionals recently as an inferior part of professional practice. Many designers often look down on garden design as a tool for the rich or a distraction from our larger social and ecological responsibilities. Yet, gardens are the roots of our profession and provide an opportunity to reconnect our profession with the millions of people involved with gardening. How can a deeper understanding of the social and cultural importance gardens infuse landscape architecture and other design professions? How would a deeper understanding of garden meaning change our professional roles?

John Habraken, an architect and chair of the Department of Architecture at MIT has stated that architects are primarily carpenters, involved in building places which are static and inflexible. He argues that architects need to be more like gardeners, concerned with the ongoing care and repair of buildings over time. I fear that many landscape architects have become more like carpenters as Habraken points out and less like gardeners. We have forgotten our connection to the earth and are now more concerned with abstract art or abstract theory largely drawn from a distance from the earth. As Karl Linn has characterized landscape architects, we no longer get dirt under our fingernails. While we may have close intimate relationships with our own gardens, we retreat to our offices or studios content to shape the land on paper and from a distance.

A quite different and perhaps more useful perspective is to view garden design and the larger landscape design process as an evolutionary process. In this model, the master plan or master designer is obsolete, replaced by a professional concerned with maintaining an ongoing and intimate relationship with landscapes and their users over time. For example, garden relationships change during different stages in one's life. How many gardens are designed to grow old with, capable of responding to ones needs and additional leisure time as they become retired and elderly?
The evolutionary model of garden design is perhaps best exemplified by one Davis gardener we interviewed who commented "I design my garden as I putter in it. It is in process, always will be in process... I am changing it all the time. When I feel my garden is totally finished, I will move." For him and many others we interviewed, a garden is an opportunity to continually modify and change the world around them.

GARDEN MEANING & ENVIRONMENTAL DESIGN

Garden meaning offers a rich reservoir of theory and concepts for environmental design as well as other fields. It is critical, especially in fields such as environmental design and landscape architecture, in need of critical theory, to be asking basic questions about why gardens are important to people. Yet much work remains to be done. Empirical studies are still alarmingly few with most theory based on design experiments and speculation. Garden meaning as an area of enquiry and practice may continue to be a fruitful path to pursue for a profession in search of useful theory. Only through asking basic questions such as what do gardens mean can we reconnect the design professions to the landscape of everyday life.

Notes

1/ This paper is based on an earlier paper presentation at the Meanings of the Garden Conference, University of California, Davis, May 14-17, 1987.

2/ This research has been supported by the UC Agricultural Experiment Station and a fellowship from the Royal Norwegian Council for Scientific and Industrial Research (NTNF). Research assistants for the project include Frieder Luz, Randi DeLuci, Patricia Quintero and Margarita Hill.

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Yoichi Kubota, Dept. of Construction Eng., Saitama University
255 Shizo-ohkubo, Urawa, Saitama, 338 Japan

EVALUATIVE DIFFERENTIATION OF RIVERSCAPE

ABSTRACT

On a macroscopic scale, landscape resources along streams in the Kiso River basin are segmented typologically by way of experimental psychological methods in order to classify their visual quality for preservative and ameliorative planning of riverscape. Riverscapes observed on each viewpoint can be subdivided according to their compositional appearance. Eight major categories of the confrontal riverscape are identified by means of Quantification Theory, while the up-stream and the down-stream riverscapes are categorized into twelve and ten groups respectively. Conspicuous elements effective on preference are discerned empirically.

PURPOSE OF THE EVALUATIVE DIFFERENTIATION OF LANDSCAPE

Landscape as environmental resource
Landscape seems to be limitlessly varied in species owing to the difference in various factors such as the position of viewpoint, the direction of sight line, the physical definition of space structure, and so forth. It is, however, possible to extract spectra of types of landscape as regards the specific principal objects which attract the attentions of viewers, as far as the distribution of viewpoints around them and the physiognomy of visual appearance of observable at each viewpoint are considered. For example, Litton et al. (1974) tried to describe landscape with water by means of three units, namely, landscape, setting and waterscape, taking into account of the scale of space. The purpose of categorizing landscape, for planners especially, is to obtain the overall framework of landscape types present in the area considered. It is equivalent to outline how many kinds of landscape will at least be encountered in such area from specific kinds of viewpoint. By way of this procedure, landscape resources to be evaluated will be selected objectively to a certain degree.

Planning process and evaluative differentiation of landscape
On the other hand, the aim of landscape evaluation shares increasingly requisite portion in the planning of public space to adjust the interaction between human behavior and environment, especially on a macroscopic scale. The planners of public works are keenly required to objectify their process of judgment in planning context. Such inductive way might be alternative to deductive or empirical conception on the environment to be planned. The needs
for incorporating the objective classification of landscape has become more concomitant in the planning process of public works in Japan where urbanization mingled the local context of environment in a uniform way.

The knowledge derived from the cross-reference on the landscape types extracted from the differentiation and evaluation of them will be a matrix on what kinds of landscape are highly weighed and what are their determinant factors and components. Otherwise, focusing upon landscapes of low evaluation, their obstructive and degrading factors will be identified to be removed or landscaped in consideration of the determinants of preferable landscapes.

In several precedent researches such as works by Leopold (1968, 1969), dominant landscape types are morphologically selected in a intuitive way. This paper tries to offer a objective way for extracting landscape types seen from a specific kind of viewpoint.

ARTICULATIVITY OF RIVERSCAPE

Physical context of river basin in Japan
The topographical context of river basin in Japan is varying multivalent and segregated into tangible scope. It is a kind of miniascape on a large scale produced by stream erosion. Landscape in a river basin had been segmented by temperate vegetation and through the long history of rice culture.

The recent wave of urbanization has been intervening in the ecological consistency of river basin and the composition of riverscape has been affected by artificial alteration. Especially river works for flood control sometimes degrade the visual quality of river space. Embankments have been heaped up as though they were to form hills, and river walls have been covered with concrete blocks for permanent protection, both of which have produced monotonously uniform riverscapes everywhere. It has become indispensable to orient the conception on planning river environment specifically from visual aspect, that is, to contemplate how to organize the visual definition of space through landscape from the macroscopic standpoint.

Prototypes of riverscape
Riverscape is defined as landscape with the stream of water as its principal "figure" in the sense of Gestalt psychology. It will be subdivided into at least three prototypes; up-stream axial, down-stream axial and confrontal or cross-axial riverscapes on the premise that the river is viewed from such places as roads on embankment, bridges and the like. This heterogeneity of river space is justifiable because river denotes the edge or boundary of both sides, while functioning as the directional axis in regional space according to its stream [Higuchi (1983)]. Viewing the confronting side over the stream is symbolic experience to recognize that the terrain is divided. A bridge is thus the symbol of unity of both sides [Simmel (1909)].

The river basin as the field of planning is, however, vast even
if it is subdividable. Contrarily, the necessity for identifying resourcible places out of reasonable articulation of river space is pressing. This contradictory requirement must be reconciled. As a substitutive way for discriminating the categories of riverscape, experimental procedure would be applicable as proposed in this paper.

Methodology of research
In this case study executed in reference to the Kiso River basin, located in the mid-west of Honshu Island in Japan, a series of experiments making inquiries about photographs were adopted. Three major rivers in this basin, which are among the largest rivers in Japan, were chosen for the principal objects of study, and photographs were taken according to specifications with regard to the position and direction of view for presentation in the experiments instead of actual visit on-site. This substitutional method is obviously a kind of simulation, applied owing to the temporal and economical restraints, as it is impossible to make every subjects of experiments experience each on-site riverscape in the same condition. The researcher must assume their potency of reproductive imagination instead of presence in situ.

EXPERIMENTS ON DIFFERENTIATION AND EVALUATION

Selection of photographs for experiments
There is no appropriate way of describing comprehensive differentiation and evaluation of landscape on a large scale but limited and controlled methods. Photographs were taken corresponding to the three prototypes of riverscape, namely, up-stream axial, downstream axial and confrontal directions of sight line were set at each viewpoint on the embankments on both sides of each river. These samples does not cover all types of riverscape exhaustively, but the selected 53 viewpoints on the embankments are openly accessible and typical of viewpoint in the river space. The following two kinds of experiment were preceded by preliminary experiments with photographs taken at 354 viewpoints at an interval of 1 kilometer to verify the methodology and reduce the burden of experiments by selecting 53 viewpoints. The number of subjects was 5 non-residents for differentiation, and 15 for evaluation.

Experiment of differentiation
The method of experiment on differentiation of riverscape was based on grouping of photographs by the subjects. Each subject out of 30 non-residents was asked to group a set of 53 photographs into arbitrary number of subgroups, identifying the comprehensive similarity in visual appearance among the selected samples, in respect of three sets of photographs corresponding to three prototypes respectively. This procedure is a kind of paired comparison, and based on the fundamental cognition of categorization of people.
Experiment of evaluation
As for evaluation experiment, subjects (47 residents and 26 non-residents) valued on a rating scale with five grades each sample of riverscape presented in random sequence irrelevant of on-site order, judging the comprehensive quality of visual appearance of each set of prototypes.
This kind of evaluation experiment should cover not only residents but also potential visitors in general, as the former might have special familiarity with places in the area concerned. The subjects include the residents in this river basin together with inhabitants of other areas, because it was necessary to confirm whether resourcible riverscape could be differentiated or not.

ANALYSES AND CONSIDERATIONS

Differentiated riverscapes
The data obtained from the differentiation experiment were transformed into "Probability of Coincidence" defined as the frequency ratio of incidence that any pair of photographs appear in identical subgroup, that is, how many subjects grouped the pair. This index represents the similarity between two objects put together, and can be compiled into a form of symmetrical matrix. Quantification Theory / Type IV, which is a kind of multi-dimensional scaling technique to obtain spatial expression of clusterized groups of differentiated objects, was applied to this matrix in order to calculate its Eigenvectors as the coordinates of each objects in psychometrical space.
The result in reference to confrontal riverscape is displayed in Figure 1. The horizontal axis in this configuration means the degree that such objects in near distance as trees, a bridge, a boat or other things symbolically representative of viewer's ego [Appleton(1975)] affect the comprehensive impression of the riverscape. The vertical axis corresponds to the orderliness of area in near distance. If affluent water surface is visible, such riverscape will be located in the upper part of configuration. Eight major categories of riverscape types corresponding to clusters in Figure 1 were identified with characteristics described in Table I. Representative riverscapes from these categories are shown in Figure 2. There were several riverscapes which do not belong to any cluster. Typical scenes are shown in Figure 3.
As for the up-stream axial prototype, twelve categories were differentiated as shown in Table II, and ten groups for the down-stream axial were extracted as shown in Table III respectively. The meaning of the axes of their configurations after Quantification Theory were much the same as that of confrontal riverscape. By plotting these results on the map of the basin and extending them to 354 viewpoints in preliminary experiment, it was proved that in the case of the confrontal riverscape, shown in Figure 4, the river space tends to be segmented on a small scale in comparison with the up-stream axial and the down-stream axial. This result means that the axial riverscape appears in the composition of explicit linear perspective by the form of embankment and is
Figure 1 Configurative expression of differentiated confrontal riverscapes by means of Quantification Theory / Type IV

Table I Differentiated types of confrontal riverscape

<table>
<thead>
<tr>
<th>Type</th>
<th>Typical Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Water surface is dominant.</td>
</tr>
<tr>
<td>II</td>
<td>Tree-lined embankment against mountains in far distance stretches horizontally beyond affluent stream</td>
</tr>
<tr>
<td>III</td>
<td>Reedy marsh, sandbar and the shallows give variety to riverscape ending on opposite side.</td>
</tr>
<tr>
<td>IV</td>
<td>Floodplain, water surface, opposite embankment and background mountains form moderate riverscape.</td>
</tr>
<tr>
<td>V</td>
<td>A bridge is the feature.</td>
</tr>
<tr>
<td>VI</td>
<td>Tree-lined embankment in medium distance is viewed over floodplain and stream.</td>
</tr>
<tr>
<td>VII</td>
<td>A strip of water surface lies between grassy floodplains on both sides.</td>
</tr>
<tr>
<td>VIII</td>
<td>Stream is almost invisible as floodplains are densely covered with grass.</td>
</tr>
</tbody>
</table>

Figure 2 Typical scenes from 8 types of confrontal riverscape
Figure 4. Segmentation of river space in terms of confrontal riverscape
Figure 3 Confrontal riverscapes with characteristic feature

Table II Differentiated types of up-stream axial riverscape

<table>
<thead>
<tr>
<th>Type</th>
<th>Typical Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Artificial objects spread random in neighbourhood.</td>
</tr>
<tr>
<td></td>
<td>A bridge blocks sight line to be a landmark.</td>
</tr>
<tr>
<td></td>
<td>A bridge lies orderly in medium distance.</td>
</tr>
<tr>
<td></td>
<td>Trees line along embankment from near to medium distance.</td>
</tr>
<tr>
<td></td>
<td>Abundant water spread out beside estuary embankment.</td>
</tr>
<tr>
<td></td>
<td>Mountains are in close distance.</td>
</tr>
<tr>
<td></td>
<td>Provincial scenery with farmhouses rests beside affluent stream.</td>
</tr>
<tr>
<td></td>
<td>A bridge in medium distance defines the riverspace.</td>
</tr>
<tr>
<td></td>
<td>Bush and grassland occupy the near and medium distance.</td>
</tr>
<tr>
<td></td>
<td>Distant view is visible beyond bush and grassland.</td>
</tr>
<tr>
<td></td>
<td>Feature of trees or structures stand in far distance.</td>
</tr>
<tr>
<td></td>
<td>A bridge lies in medium or far distance.</td>
</tr>
<tr>
<td></td>
<td>Well-shaped embankment continues to the background by affluent water.</td>
</tr>
<tr>
<td></td>
<td>Skylines of mountains outlines the figure of landscape.</td>
</tr>
</tbody>
</table>

Table III Differentiated types of down-stream axial riverscape

<table>
<thead>
<tr>
<th>Type</th>
<th>Typical Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Artificial objects spread random in neighbourhood.</td>
</tr>
<tr>
<td></td>
<td>A bridge in near distance is the principal object.</td>
</tr>
<tr>
<td></td>
<td>Road and roadside objects are conspicuous in the front.</td>
</tr>
<tr>
<td></td>
<td>Trees line along embankment from near to medium distance.</td>
</tr>
<tr>
<td></td>
<td>A bridge in medium distance is the principal object.</td>
</tr>
<tr>
<td></td>
<td>A bridge in medium or far distance accents the river channel.</td>
</tr>
<tr>
<td></td>
<td>Open landscape with continuous embankment shapes linear perspective composition.</td>
</tr>
<tr>
<td></td>
<td>Wide open riverscape with affluent water.</td>
</tr>
<tr>
<td></td>
<td>Distant view is visible among trees covering neighbourhood space.</td>
</tr>
<tr>
<td></td>
<td>Skylines of mountains outlines the figure of landscape.</td>
</tr>
</tbody>
</table>

almost stable and unchanging within the neighborhood of viewpoint like the vista of townscape [Nakamura(1982)], while the confrontal riverscape fluctuates when the viewpoint is moved accompanying the horizontal overlapping of figures in sight.

Evaluated riverscapes

The result of evaluation experiment, shown in Figure 5 in the form of profile, tells that preferred riverscapes tend to range over the left side of each river, where the mountains defining the distant background are clearly visible on the opposite side. The implication of this tendency is that usually flatly-concaving river space will be rated high when its visual appearance takes hierarchical composition from the near to medium and far distance defined by preferable components.

The heterogeneity of visual experience at each viewpoint was verified by the result that the evaluation of confrontal riverscape
Figure 5 Evaluation profile

Table IV Components of highly evaluated riverscapes

<table>
<thead>
<tr>
<th>Components</th>
<th>[percentage]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountains in the background</td>
<td>75%</td>
</tr>
<tr>
<td>Tree-lined embankment of opposite side</td>
<td>75%</td>
</tr>
<tr>
<td>Grassland or bushland on floodplain of opposite side</td>
<td>58%</td>
</tr>
<tr>
<td>Grassland or bushland on floodplain of standing side</td>
<td>46%</td>
</tr>
<tr>
<td>Trees near the embankment</td>
<td>39%</td>
</tr>
<tr>
<td>Stream-governing river works on standing side</td>
<td>29%</td>
</tr>
<tr>
<td>Sandbar in the stream</td>
<td>18%</td>
</tr>
<tr>
<td>Bridge</td>
<td>18%</td>
</tr>
</tbody>
</table>

Figure 6 Examples of highly evaluated riverscape
differs occasionally from that of the up-stream axial or down-stream axial even viewed at the identical spot. The components of highly rated riverscape with marks higher than the average plus standard deviation are identified as in Table IV. These components are discernible from representative riverscapes shown in Figure 6. The first two components are dominant in the most favored riverscapes, which are the typical sceneries of rivers in Japan looking as if gardenized by some means. There was no discrepancy in the results between residents and non-residents.

IMPLICATIONS TO PLANNING

Categorical shift by artificial intervention
By matching the results of differentiation and evaluation, some groups proved to consist mainly of positively evaluated riverscapes marked with circle in Figure 1, while some other groups contain the positively evaluated samples and the negatively rated ones marked with triangle in Figure 1. The latter subcategoric difference is mainly caused by the maldistribution of artificial objects within the composition of riverscape.
When the necessity for altering river environment with river works for flood control arises, it will matter which category the altered riverscape belongs to, or how far the degree of visual quality will be changed. The subcategorical shift or intercategoric transition should be considered in planning and design of river works in view of their environmental meanings.

From categorization to inventory of landscape resources
The riverscapes of high preference can be regarded as part of visual resources of this river basin. The components of preferred riverscapes are interpreted as the objects of preservative planning. Objective categorization is, however, insufficient, because historical heritage of the meanings of scenic spots should be taken into account. Moreover, characteristic features may not be included in the sample photographs. So it is necessary to adopt historical-geographical approach and morphological approach as well. Morphological description of spatial composition of landscape can be combined with cultural semiology, because the viewer of landscape has his cultural background influencing evaluation.
In making the preservative plan of this river basin, historically well-known scenic spots were surveyed to elucidate their spatial structure of landscape experience together with more generalized approach by space morphology. Landscape models defined by terrain form in Japan were extracted by Higuchi(1981) and well describe the symbolical meaning of mountains and rivers for Japanese. The riverscapes evaluated highly in the experiment are certainly contain these components in good composition. In addition, those components viewed in near distance with the stream function as symbolic access to the water are also enhancing factors to let the riverscape inventoried as landscape resource. So evaluative differentiation can offer a basic information.
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Perception, cognition and memorization
Giovanna Axia*, Department of Developmental and Social Psychology
University of Padova, Via B. Pellegrino 26, 35137 Padova, Italy

LANGUAGE AND ORIENTATION: MEMORY FOR ROUTE ELEMENTS IN VERBAL
DESCRIPTIONS BY CHILDREN AND ADULTS

ABSTRACT

The main aim of the present study is to investigate the relationship between knowledge represented by language and ability in purposefully remembering information on new environments. Subjects were 22 6-year-old children and 22 adults, whose verbal descriptions of a route in a novel urban environment were analyzed. Results show that adults remember more structural features of urban environments than low landmark potential elements. The same trend was observed among 6-year-olds with high conceptual-linguistic ability, while the opposite trend was found in 6-year-olds with normal such ability. The results are interpreted focusing on the role of the "knowledge base" in memory strategies.

INTRODUCTION

The general issue addressed by the present research is the development of representation of natural places expressed by means of verbal descriptions. Although it is impossible to summarize the literature on the development of macro-spatial cognition (for a recent review, see Cohen, 1985), we agree that most studies have focused on the development of the cognitive mapping of spatial information of large-scale places. Allen (1985) recently suggested considering the development of macro-spatial cognition as the development of the capacity to control macro-spatial information. In effect, in order to perform successfully macro-spatial activities such as, for instance, searching for hidden objects or describing a route to another person, children must select purposely among different environmental features. From this viewpoint, the development of macro-spatial cognition also involves control of macro-spatial information, that is, it also involves meta-cognitive abilities. Evidence may be found supporting the hypothesis that the ability to select purposefully environmental information in order to perform orientation tasks develops with increasing age. For instance, DeLoache & Brown (1983) showed that
very young children are capable of simple memory strategies when searching for hidden objects in a familiar room. In other words, on simple orientation tasks, from an early age children show an ability to select the environmental features which are relevant to their purpose and can remember them and their locations. However, when the task involves orientation in large-scale places such as portions of urban environment, subjects must select only those environmental elements which have a potential as landmarks among a huge number of environmental features. In this respect, children are more poorly equipped than adults, so that they scarcely produce memory strategies to remember routes across large-scale places (Allen et al., 1979).

Ittelson (1973) discussed the peculiar characteristics of environmental perceptions and suggested, among other things, that environments are perceived as meaningful units. From this viewpoint, perception of environments is also related to the system of meanings, to the content, and to the organization of conceptual information in long-term memory. The main aim of the present study is to investigate the relationships between knowledge of the world represented by language and ability in purposefully remembering verbal information about new environments. In particular, it is suggested here that, in perceiving a novel environment, subjects' ability in controlling environmental information is related to the level of their conceptual knowledge. Until now, children's verbal descriptions of environments and, more generally, cognitive processes related to language and orientation seem to have received little attention. Compared with other methods, verbal reporting seems to be difficult for young children (Matthews, 1985), although other researches have indicated that analysis of verbal reports is useful when children's images of places are examined (Axia, 1986; Axia & Nicolini, 1985). The main expectation of the present study was that, when asked to describe a new route, adults would mention overall the environmental items useful for orientation in space (e.g., streets, landmarks such as buildings, shops, etc.), while 6-year-old children would mention both environmental items with some orientation potential and items with no orientation potential, e.g., people, cars, etc.

The second aim of the present study is to investigate the possible contents of "route schemata". The literature suggests that from an early age humans have "place-schemata" which include expectations about environmental elements to be found in a given place (Ratner & Myers, 1981). It has been shown that such know-
knowledge influences adults' memory performance in recalling environments (Mainardi Peron et al., 1985). According to Goldbeck (1985), environmental features may be divided into two main categories, structural and organizational. Structural features refer to the physical characteristics of the environment which are discrete and objective elements of macro-space, such as roads, landmarks, walls, etc., while organizational features refer to the arrangement of items in space, e.g., the spatial relationships among environmental elements. It may be proposed that routes in urban environments are composed of two main types of structural elements, e.g., "horizontal" (pavement) items on which people can walk or drive (including streets, side-walks, pedestrian crossings, etc.) and "side" items which define the borders of the route itself. Since these types of environmental elements are the side boundaries of the route, they seem similar to the "containing features" of Goldbeck (1985, pp. 229-231). When pedestrians follow a route across the center of a city, they usually find various types of features containing their walk. For instance, some elements have a high landmark potential because of their perceptual saliency. However, in natural urban environments there are many elements which are scarcely salient from a perceptual viewpoint, as they are generally embedded within larger buildings, e.g., shops, entrances to cinemas, cultural or political associations, etc.. Embedded items can of course also be used as landmarks for orientation once they have been noticed and remembered. However, it is suggested that they may be noticed mainly by people who know what they are and who can attribute functions and names to them. From this viewpoint, it is their general conceptual knowledge of the urban environment that allows people to consider embedded items as relevant environmental features. From the above considerations it emerges that at least three types of environmental items may be found along an urban route: "horizontal" items (on which physical movement is performed), "isolated" (perceptually salient) items, and "embedded" items (whose landmark potential is related to the subjects' encyclopedia). It is hypothesized here that the three types of items are differently remembered by children and adults; in particular, adults are expected to remember more embedded items than children.

METHOD

Subjects
Forty-four subjects were examined, 22 males and 22 females. They were divided into two groups, one of 22 twenty-year-old undergra-
duate students and one of 22 children (mean age 6;5; range 6;0–7;5). The subjects had never encountered the examined area of the city before. The 22 children were also subdivided into two groups of 11 subjects each, according to their scores on the Vocabulary Test of W.I.S.C.H., standardized for Italian children. One subgroup was composed of children who obtained medium scores, the other of children with high scores, i.e. whose mental age was at least one year superior to their actual age.

Material and Procedure
Subjects encountered a portion of urban environment belonging to the historical center of Padova, a city in Northern Italy of about 250,000 inhabitants. All subjects followed exactly the same route, i.e., crossing streets at the same points and walking on the side of sidewalks closest to the buildings. Each subject was accompanied individually by the experimenter and walked for about ten minutes. Before starting on the walk the subject was told: "Now we're going to have a walk together near here and then we'll come back here. Please pay attention to what you see because you'll be asked to describe the route we walk along to a person who does not know it". The experimenter then made sure that the child understood the instructions. During the walk the experimenter maintained a friendly but not over-responsive attitude, when necessary transferring the child's attention from him- or herself to the environment. After the walk, the experimenter took the subject into an interview-room inside the building from which they had left. Here they met a male student who was the experimenter's confederate and to whom the subject would address her/his description. The subject was introduced to the confederate and then told: "He doesn't know Padova at all. So please try to remember the route we have just walked along, and explain it to him so that he can figure it out for himself". Subjects' verbal reports were taped and transcribed.

RESULTS
Subjects' verbal reports were analyzed by three independent judges who extracted all verbal expressions referring to recognizable environmental items. Agreement between judges was .87.

All items recalled and named by subjects were first divided into two main categories. The first category grouped 34 "route items", i.e., structural items along the route (e.g., bookshop, pedestrian crossing, traffic island, church, etc.). The second category
contained 37 "general items", i.e., items which, although present in the environment, had no landmark potential. Examples are cars, trucks, people, pebble, door-bell. This category also included ambiguously described route items, e.g. streets, buildings, etc.. The 34 route items were then divided into three categories: 14 horizontal items (e.g., the first street, the first pedestrian crossing, etc.), 6 isolated items (statue, church, etc.), and 14 embedded items (hairdresser's shop, old house, etc.). Subjects named 71 items. This datum was considered as the maximum amount of environmental information available in memory. The proportion of recalled items over total number of items was computed for each subject. The following analyses of variance therefore employed arcsin transformations (Winer, 1970). The alpha level accepted for all post-hoc tests was .05.

The first analysis of variance considered the factors age (adults, children), sex (males, females) and type of elements (route items, general items). Results are shown in Table 1. The factors age \( (F (1,40) = 8.168, p < .03) \) and type of element \( (F (2,40) = 32.981, p < .001) \) were significant. The interaction between age and type of element was also significant \( (F (2,40) = 41.774, p < .001) \). The Newman-Keuls test revealed that, as expected, adults recalled more route than general items, while children recalled the same numbers of both types of items. Children also recalled more general items than adults did.

The second analysis of variance considered only children's performance on the following factors: linguistic ability (superior, medium) and type of elements (route items, general items). Only the interaction between linguistic ability and type of element was significant \( (F (2,20) = 6.533, p < .017) \). Results are shown in Table 2. The Newman-Keuls test indicated that children with high linguistic ability recalled more route than general items, while the opposite was true for children with medium linguistic ability.

The third analysis of variance was carried out on proportions of horizontal, isolated and embedded items respectively, over total recall for route items, and considered the following factors: age (adults, children) and type of route elements (horizontal items, isolated items, embedded items). Both the factors age \( (F (1,42) = 38.49, p < .001) \) and type of route element \( (F (2,84) = 19.774, p < .001) \) were significant, as was the interaction between the two factors \( (F (2,84) = 16.028, p < .001) \). Results are reported in Table 3. The Newman-Keuls test showed that adults recalled more
horizontal and embedded items than children did. Adults also recalled more horizontal and embedded items than isolated ones. Instead, children recalled the same quantity of items in each category.

A final analysis of variance considered the factors linguistic ability (superior, medium) and type of route elements (horizontal items, isolated items, embedded items). A slight tendency for linguistically gifted children to produce more route items was observed ($F(1,20) = 3.139, p < .08$): high linguistic ability group: $\bar{x} = .312$; medium linguistic ability group: $\bar{x} = .191$.

DISCUSSION

Adults' verbal descriptions of routes have been analyzed by Klein (1982), who distinguished between interactive, cognitive and linguistic components. The present paper considers some cognitive aspects of children's descriptions and compares them with adults' performance. Knowledge about places is considered here as schematic in structure and organization (Mandler, 1984). The main focus is on the effects of different levels of conceptual knowledge on inventory information in route descriptions. Recall of elements with high or no landmark potential in a novel environment is studied in college students, linguistically gifted 6-year-olds, and linguistically normal 6-year-olds.

Although the results apparently confirm that different kinds of environmental elements are recalled in route descriptions due to subjects' age (Waller, 1986), in fact, 6-year-olds taken as a single group turn out to be less capable of selecting purposeful environmental information than adults. However, a closer analysis of the children's data reveals two opposite types of behavior, more closely related to subjects' linguistic-conceptual ability than to their age. In particular, inasmuch as only qualitative aspects of recall are considered, children with high linguistic ability seem to behave like adults, that is, they recall mainly environmental elements which are useful for orientation. Instead, linguistically normal children mainly mention items with no landmark potential.

A second issue of this study was the development of memory for different types of environmental elements with high landmark potential. A previous study on verbal descriptions of familiar environments had revealed that, in both children and adults,
recall is linked to place schemata. In particular, developmental differences were found in the recall of places which do not stand in memory on the same categorical level as place units (Axia et al., in press).

The results of the present study also confirm the existence of developmental differences in recall of environmental elements with high landmark potential. In children's memory horizontal and embedded items take on the same importance as isolated ones, but neither predominate in recall, as in adults' memory. Here again, we might observe the role of type of subjects' schemata on descriptions from memory. Moreover, no difference in recall for horizontal, isolated or embedded items is found between linguistically gifted or linguistically normal children.

Considered overall, these results suggest an effect of linguistic-conceptual competence on selection of environmental information to be recalled in order to describe a novel route. It might be objected that linguistically gifted children obviously perform better than normal children on verbal tasks. Although this objection cannot easily be dismissed, the whole pattern of these results may reduce its force.

Depending on the type of linguistic test employed here, children who obtained high scores had a wider conceptual knowledge of the world in comparison with normal children of the same age. In other words, the former were able to attribute meanings to a variety of natural objects and could refer to them using the appropriate words. When the children of high linguistic ability encountered the new environment, they were probably able to attribute meanings to a range of various environmental features which was larger than that of children with normal linguistic ability. In this way, they were able to discriminate more easily among different environmental items in order to select only route items with high landmark potential, as they had been requested to do. On the other hand, even linguistically gifted children did not seem able to discriminate between different types of route elements, i.e., items with high landmark potential.

In conclusion, the results of the present study suggest that, in describing a route in a novel environment from memory, adults mainly select elements with high landmark potential, particularly horizontal and embedded items, while 6-year-olds do not show any process of selection in environmental elements with high landmark potential. However, a difference between linguistically gifted
and linguistically normal children was found regarding the selection of elements with high landmark potential, as opposed to elements with no such potential. Linguistically gifted children remembered fewer elements than adults, but they seemed to have already developed the ability to "know how to know" (Brown, 1975) a new route which was to be later described. These results seem to confirm the importance of the "knowledge base" in children's memory (Ornstein & Naus, 1985), especially in the development of memory strategies (Chi, 1985).

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Winer B.J. (1970), Statistical Principles in Experimental Design,
TABLE I. Mean proportions of route and general items recalled by adults and by children (brackets: standard deviations)

<table>
<thead>
<tr>
<th>Age</th>
<th>Route items</th>
<th>General items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>.134 (.047)</td>
<td>.021 (.036)</td>
</tr>
<tr>
<td>Children</td>
<td>.036 (.023)</td>
<td>.039 (.026)</td>
</tr>
</tbody>
</table>

TABLE II. Mean proportions of route and general items recalled by children of high and normal linguistic ability (brackets: standard deviations)

<table>
<thead>
<tr>
<th>Linguistic ability</th>
<th>Route items</th>
<th>General items</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>.044 (.02)</td>
<td>.029 (.016)</td>
</tr>
<tr>
<td>Normal</td>
<td>.028 (.025)</td>
<td>.049 (.031)</td>
</tr>
</tbody>
</table>

TABLE III. Mean proportions of route items recalled by adults and by children (brackets: standard deviations)

<table>
<thead>
<tr>
<th>Age</th>
<th>Horizontal</th>
<th>Isolated</th>
<th>Embedded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>.119 (.042)</td>
<td>.032 (.029)</td>
<td>.098 (.058)</td>
</tr>
<tr>
<td>Children</td>
<td>.029 (.029)</td>
<td>.022 (.021)</td>
<td>.024 (.03)</td>
</tr>
</tbody>
</table>
A study of recognition of pictures was conducted with reference to the assumption that direction changes in wayfinding are specified through a process of perspective coordination. Perspective of the pictured scenes was varied as a judgment factor in the study phase. The distractors used in the recognition test consisted of new scenes in one condition but new perspectives of old scenes in a second condition. Performance in the former condition decreased when subjects judged dimensions related to perspective in the study phase, as compared to dimensions related to content. Equal performance was obtained when new perspectives were used as distractors. A mixture of two recognition strategies in the latter condition, assumed to be relevant in the real environment, was proposed as an account for the failure to obtain the predicted cross-over interaction.

INTRODUCTION

In the cognitive mapping literature, landmark recognition has generally been assumed to be important for the traveler’s possibility to select appropriate paths at choice points (e.g. Allen, 1987; Golledge, 1987). However, the issue of how and why landmark recognition may entail this important direction function has yet to be clarified.

According to Gibson’s account of spatial orientation and wayfinding (Gibson, 1979), moving organisms find their way in the environment through a process of opening up of the vista ahead. Vistas are regarded by Gibson as a kind of complex, interconnected landmarks. A structure of vistas can open up in a large number of alternative ways due to the existence of several possible directions in which to move next. The process of opening up of vistas must rely on some minimum degree of familiarity with the surroundings. In this type of surroundings it is likely that one or a few landmarks or salient objects exist which are possible to recognize on the basis of previous perception of them. At the same time, it is possible that the path of travel is not a complete repetition of a single, old path but some combination of segments of several old paths. Further, a person’s explorative looking behavior may be different during two travel events. Consequently, efficiency of recognition may depend on the difference in perspective of the same objects as viewed during travel at different points in time. The extent to which this is the case awaits answers from experimental research (cf. Loftus, Nelson, and Kallman, 1983; Jolicoeur and Kosslyn, 1983).
A closely related possibility is that travelers way of attending to buildings and other features may lead to memory encoding not only of content information but also of information related to the perspectives of landmarks or salient objects. If this information is accessible during events of recognition, it may form the basis of a process of coordination of the perceived and the stored perspective alternatives. The product of the process is a perceived direction towards a place at which the stored perspective was encoded. This direction may be used for the purpose of selecting the best path among available alternatives.

Coordination of perspectives may constitute a type of process with explanatory significance because it appears to be a kind of mechanism which may causally link action to recognition (Böök, 1986a,b; Böök, 1987). In this respect, it complements accounts of wayfinding in which procedural rules of a type similar to S-R or S-R-S associations (e.g. Kuipers, 1983) play an important role. The reason for this advantage is that the directions, assumed to be the outcomes of coordination, are not confined to the physically available path directions in the surrounding. A path for continued travel may always be possible to select among those available according to the rule of closest alignment with a generated direction. Approximately perfect alignment, making comparisons superfluous, may nevertheless exist as a common special case, particularly after some period of travel during which specific environments become increasingly familiar. In brief, the argument here is that procedural rules need to be learned. Coordination of perspectives during travel may underlie learning of rules which contribute to the flexibility of wayfinding behavior.

However, the prerequisite assumption that travelers can use stored information related to perspectives is problematic in itself. It appears reasonable to assume that memory for perspective may depend largely on the effectiveness by which stored content information can be accessed with respect to completeness, whether or not the information is stored as a structure of distinct details or as more global information about the general appearance or type of scene (cf. Loftus and Kallman, 1979). If subjects, due to orientation needs, pay much attention during events of encoding to information related to perspectives, such as distance towards salient objects or the orientation of them, the amount of encoded content information may suffer. Given that the type of dependency, mentioned earlier, is strong, the reduced amount of encoded content information may be sufficient for successful recognition but not for access to information related to the old perspective. On the other hand, if encoding is mainly content oriented, perspective information may not even get efficiently registered in memory.
An experiment on recognition memory for pictures of real-life scenes was conducted to illuminate the suggested interaction. The hypothesis was that perspective should be recognized more easily when the subjects judge dimensions related to the perspective of a building in the scenes during the study phase than when they judge dimensions which are more related to the content information of the scene. A reversed effect of type of judgment was predicted in a task requiring recognition of content.

METHOD

Apparatus
The individually serving subjects were seated in a dimly lit booth in front of a terminal connected to a PDP 11/44 computer. Color slides were rear-projected on a transparent screen by a Leitz projector. The size of each projected picture was 64 x 42 centimeter (width x height). The horizontal visual angle was 44 degrees.

Materials
Buildings at 31 places in the Swedish city of Umeå (about 80 000 residents) were photographed with a camera (50 mm lens) held at eye-level. Places assumed to be familiar to the subjects were avoided. Most of the slides were taken from sidewalks. Twenty places were photographed at two different observation positions from which the same building could be seen (see Figure 1). The centre of the camera window was directed at the middle of the building in the camera view. In each pair of alternative perspectives the same one or two sides of the building were visible in both pictures. One or more other buildings were visible in the periphery of most of the pictures. The distances to and the orientations of the main buildings were assessed from maps. The range of distances was about 40 to 130 meters.

![Figure 1. Illustration of the materials used.](image)

Procedure and Design
The procedure consisted of a study phase followed by a test phase. Twenty pictures were each presented for 10 seconds in
the study phase. The time intervals between presentations were 10 seconds. The subjects were not informed that their memory should be tested later. The study instructions only described two types of judgments to be made for each picture. One group of subjects estimated the distance to the main building from the camera location and the orientation of the building. Five rating categories had to be used by the subject. For distance they were defined as 40 meters or shorter (1), 41-60 meters (2), 61-80 meters (3), 81-100 meters (4), 100 meters or longer (5). The angle formed by the front-back axis of the building and the line of sight to the centre of it in the projection was used as the definition of the orientation of the building. The rating categories were defined as larger than 45 degrees to the left (1), between 21 and 45 degrees to the left (2), between 20 degrees to the left and 20 degrees to the right (3), between 21 and 45 degrees to the right (4), and larger than 45 degrees to the right (5). Another group of subjects estimated the age of the building in each picture and how much they liked the building, with respect to any preferred criterion. The rating categories for age were: before 1950 (1), between 1950 and 1960 (2), between 1960 and 1970 (3), between 1970 and 1980 (4), and after 1980 (5). The categories for likableness were: not like at all (1), not like it (2), is indifferent to it (3), like it (4), and like it much (5). The order between the two estimates was counterbalanced across subjects. The two pictures showing different perspectives of the same place were also counterbalanced across subjects such that two subgroups in each condition viewed different perspectives in the study and test phases, respectively. The pictures were presented in individually randomized orders. Five practice trials were run. After the study phase, there was a retention interval of 30 minutes, during which the subject remained in the laboratory answering an attitude questionnaire with items which were unrelated to the experiment.

Two between-subjects test task conditions were orthogonally combined with the two study task conditions. Twenty pictures were randomly presented in the task condition used for measuring memory for information related to perspective. Half of them were copies (targets) of pictures in the study phase, and the remaining ones were pictures with new perspectives (distractors). The assignment of perspective alternatives to the old and new categories were counterbalanced across two subgroups of subjects. The resulting two subsets of pairs of pictures were formed through random assignment under the restriction that the frequency distributions of distance and orientation were approximately equal. In the task condition in which recognition of content information was measured, the 20 pictures from the study phase and 11 distractor pictures of new places were presented in random orders. The response task in each condition was, first, to classify the picture as "old" (O) or "new" (N), and, second, to rate confidence on a 5-point scale. Each test picture was presented for 30 seconds.
Subjects

Fourty-eight students from the University of Umeå were selected from a pool of voluntary subjects. All subjects had at the time of the investigation lived in Umeå for less than one and a half year. Equally many subjects were randomly assigned to four conditions.

RESULTS

Proportion hits, false positives, and the $A_g$ measure were computed for each subject and submitted to separate ANOVAs. The $A_g$ measure is a distribution-free equivalent to the more commonly used $d'$ (Nelson, 1984). This measure was preferred because the number of observations per subject was small. The condition means are presented in Table I. For proportion hits, the condition with age and likableness judgments yielded higher performance than the condition with distance and orientation judgments, $F(1,44) = 13.28$, $p<.01$. The interaction between the

Table I
Proportions hits, false positives, and $A_g$ for different study and task conditions.

<table>
<thead>
<tr>
<th>Study task</th>
<th>Test task</th>
<th>Hits</th>
<th>False positives</th>
<th>$A_g$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age and likableness</td>
<td>New content</td>
<td>.94</td>
<td>.01</td>
<td>.97</td>
</tr>
<tr>
<td>Distance and orientation</td>
<td>New content</td>
<td>.70</td>
<td>.07</td>
<td>.90</td>
</tr>
<tr>
<td>Age and likableness</td>
<td>New perspective</td>
<td>.83</td>
<td>.24</td>
<td>.89</td>
</tr>
<tr>
<td>Distance and orientation</td>
<td>New perspective</td>
<td>.76</td>
<td>.18</td>
<td>.85</td>
</tr>
</tbody>
</table>

effects of study task and test task was also significant, $F(1,44) = 4.10$, $p<.05$. As can be seen in Table I, the difference between the two study task conditions was larger when new places were used as distractors than when new perspectives of old places were used. The interaction was not disordinal, since the condition with distance and orientation judgments yielded lower hit proportions in both test tasks. This was confirmed by tests of simple main effects, which showed that the effects of study task were significant only for the content-recognition test, $F(1,44) = 16.07$, $p<.01$, and that the effects of test task was close to significant for the condition with age and likableness judgments, $F(1,44) = 3.74$, $p<.10$.

The results for proportion false positives were similar to those for proportion hits but the pattern of significant effects were different. The content-recognition task yielded lower rates than the perspective recognition task, $F(1,44) = 21.69$, $p<.01$, and the interaction with study task was close to significance, $F(1,44) = 3.02$, $p<.10$. The form of the
interaction was almost disordinal, since the condition with age and likableness judgments yielded lower rates than the condition with distance and orientation judgments in the content-recognition condition, but the reversed effect was obtained in the perspective task condition. Tests of simple main effects showed that the effect of type of test task was significant for the condition with age and likableness judgments (p<.01), as well as for the condition with distance and orientation judgments (p<.05).

For the Ag measure both main effects were significant, F(1,44) = 7.80, p<.01, for study task, and F(1,44) = 11.44, p<.01, for test task. As suggested in Table I, the level of performance for the content-recognition task was depressed by ceiling effects in the condition with age and likableness judgments.

DISCUSSION

The results suggest that recognition of content decreases when too much time is devoted to paying attention to information related to perspective rather than content. This may explain the equality of performance for the two groups of subjects who had to remember information related to perspective. One group of subjects might have encoded content details accurately but not encoded much information related to perspective. The other group of subjects might have done the reverse. If it is reasonable to assume that access to content is a partial prerequisite for accessing available information related to perspective, it follows that a net result of equal performance should occur.

An alternative interpretation should be considered because of its possible importance for analyses of explorative movements as components of wayfinding processes. A difference in the perspective of the same building, viewed from spatially distinct observation points at different points in time, is usually correlated with a difference in the perceivable content details. This covariance may be utilized by a moving person during wayfinding, particularly in visually cluttered environments with complex occlusion patterns. The traveler may recognize only some part of the surrounding and subsequently search, through locomotion and head movements, in those directions in which the number of familiar details increases per moved distance. This content-based strategy may constitute a complement to the perspective-coordination process proposed in the introduction. In the present experiment a similar strategy might have been adopted. Consequently, subjects might have rejected the new perspectives, not due to memory for the old perspective, but because they noted new content details which they classified correctly as such. Correct responses could thus have represented inferences rather than perspective retrieval. This strategy might have been more frequently used by the subjects who judged age and likableness because more content information was probably encoded in that condition.
Performance in the perspective recognition task might thus have represented the influence of two wayfinding strategies, each based on recognition memory. According to one strategy, persons obtain knowledge about how to proceed by coordinating the perspective of a currently perceived object and a different perspective of the same object as represented in memory. According to the second strategy, persons obtain the same type of knowledge by looking and moving in directions which lead to systematic changes in the degree of match between memory representations for content and perceived content. For example, travelling from a less familiar to a more familiar region may be controlled through a continuous increase over time in the degree of match. At points of high degree of uncertainty, the process may switch to rely more on the former type of strategy. In the present experiment, it is possible that the subjects who paid more attention to perspective used the first type of strategy more extensively. The subjects who paid more attention to content could not have used the matching strategy directly. However, this strategy has an inverse variant, meaning that wayfinding is based primarily on search for new content information (negative recognition) when the travel direction is from a less familiar to a more familiar region. The outcome may or may not be the same as a search strategy based on positive matches (positive recognition). In the experiment, this would mean that the subjects' tendencies to look for new content details were more pronounced than in the other condition, relative to a basic and stronger tendency to look for old details. The latter must always be strong, whether in the experiment or in the environment, since all strategies discussed require positive recognition of content as a basic prerequisite. A weak support for this interpretation was the fact that the proportion false positives was higher in the content-recognition task for judgments related to perspective than for judgments related to content but that the reverse relationship was obtained in the perspective-recognition task. When subjects in the former conditions were required to look for content details in the test phase, those who judged distance and orientation might have used the negative recognition strategy to a higher extent. In the perspective-recognition condition, however, this strategy should have been more likely for those who judged age and likableness because they could not access information related to perspective as easily as should have been possible for the remaining subjects in the same task condition.

The fact that persons' attitudes can vary considerably during viewing and encoding of spatial information in the environment and that these attitudes can affect recognition, at least of content as demonstrated in the present study, is perhaps not known to architectural designers and planners. After more extensive research on the role of perspective for recognition it may be possible to formulate principles of design. These should take into account the structure of visibility of salient
objects with respect to their perspective transformations within regions of vantage points defined on the basis of invariant content information.

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Nobuhiro Suzuki, Yoshihiro Kondo and Toshio Tsushima
Department of Architecture, Science University of Tokyo

A SURVEY OF WATER IMAGERY WITH RESPECT TO THE ENVIRONMENT OF LAKE UNION IN SEATTLE

We asked water imagery of Lake Union by a questionnaire to 64 houseboaters and 37 uplanders. The result showed that houseboaters recognized more clearly various water characteristics and feelings about Lake Union than uplanders. Houseboaters gave higher evaluation to attractiveness and value of the lake. Comparing imageries obtained by the questionnaire, results of interview, and observation of the environment, we obtained physical characteristics of the environment which explained the causes of houseboaters' water imageries. They were:
1. A lake and houseboats,
2. Nature adjacent to a houseboat-visiting wild animals and four seasons,
3. A floating deck close to the water,
4. A small lake.
Majority of uplanders who could see a part or all of the lake rated it very attractive, whereas less than half of those who could not did likewise.

1. Introduction

Lake Union is a small lake in the center of Seattle. There float 487 houses on cedar logs or concrete box-foundations. People in Seattle call them "Houseboats" although they are immobile, being moored to docks.
This is a report of our survey of water imagery of the houseboaters and of uplanders (people living on land) with respect to their water environments. Hereafter, we will use the following abbreviations: HB for houseboater, Upl for uplander, and LU for Lake Union.

2. Outline of the Survey

Chosen Areas
We chose two types of areas: one is the East Lake Houseboat area and the other is the contrasting upland area on the east side of the lake. The upland area consisted of two types of residents - those who could see Lake Union from their houses and those who could not (Figure 1). We hoped to compare water imagery of residents who experienced different environments with respect to water.

Photo 1
Houseboats on LU
Photo 2
Traditional one-storey houseboats and new two-storey houseboats on LU

Figure 1 Location of respondents and their visibility of LU

Figure 2 Layout plan of houseboats
Method and Contents of the survey

We collected primary data from the University of Washington and from the City of Seattle. These were: geography, climate, planning documents of Lake Union, water quality, and history and structure of houseboats, etc.

We visited residents in each survey area and had interviews with about 20 people concerning their water imagery and their communities.

We delivered questionnaires and collected 101 responses concerning LU (Table 1). Questionnaires to HB were delivered through the post box and were collected individually in one week. Those to UPL were done through two schools: Seward Elementary School and the Department of Architecture and Urban Planning, University of Washington.

Contents of the questionnaire are shown in Table 2.

Characteristics of the Environment and the Respondents

We described characteristics of LU and houseboats in terms of:

- Mild climate with a long rainy winter;
- Water quality with signs of pollution;
- 100-year history of houseboats on LU;
- A community unit of houseboats moored to docks (Figure 2);
- Structure of houseboats floating on cedar logs or concrete box-foundation.

Table 1. Questionnaires delivered and collected

<table>
<thead>
<tr>
<th>Delivery Address</th>
<th>Delivery Number</th>
<th>Collection on LU</th>
<th>Collection on Seattle's other water</th>
<th>Percentage of del. &amp; col.</th>
<th>Date of del. &amp; col.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB</td>
<td>35</td>
<td>62</td>
<td>64</td>
<td>62/95 (67)</td>
<td>840501</td>
</tr>
<tr>
<td>Seward's parents</td>
<td>112</td>
<td>28</td>
<td>12</td>
<td>28/112 (24)</td>
<td>840501</td>
</tr>
<tr>
<td>Seward's teachers</td>
<td>25</td>
<td>3</td>
<td>37</td>
<td>3/25 (12)</td>
<td>840516</td>
</tr>
<tr>
<td>U.Washington professors</td>
<td>106</td>
<td>8</td>
<td>17</td>
<td>8/106 (7.4)</td>
<td>840516</td>
</tr>
<tr>
<td>Total</td>
<td>338</td>
<td>101</td>
<td>49</td>
<td>101/338 (30)</td>
<td>150/338 (44)</td>
</tr>
</tbody>
</table>

Table 2. Contents of the Questionnaire

<table>
<thead>
<tr>
<th>1. Water imagery</th>
<th>What &quot;water&quot; reminds one of, and impression or feeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Water imagery of LU</td>
<td>1. feeling: vivid, beautiful, soothing, awesome, etc.</td>
</tr>
<tr>
<td></td>
<td>2. spatial order: direction, expanse, focus, separation, etc.</td>
</tr>
<tr>
<td></td>
<td>3. water characteristics: coolness, wetness, movement, reflection</td>
</tr>
<tr>
<td>3. Evaluation of LU and its environment</td>
<td>1. attractiveness</td>
</tr>
<tr>
<td></td>
<td>2. satisfaction with physical &amp; social environment</td>
</tr>
<tr>
<td></td>
<td>3. value of desirable location with respect to LU</td>
</tr>
<tr>
<td>4. Closeness to the water</td>
<td>1. distance</td>
</tr>
<tr>
<td></td>
<td>2. visibility</td>
</tr>
<tr>
<td></td>
<td>3. contact(kind &amp; time)</td>
</tr>
<tr>
<td>5. Personal data</td>
<td>1. location</td>
</tr>
<tr>
<td></td>
<td>2. time length in present home and city</td>
</tr>
<tr>
<td></td>
<td>3. sex</td>
</tr>
<tr>
<td></td>
<td>4. age</td>
</tr>
<tr>
<td></td>
<td>5. number &amp; ages of children living together</td>
</tr>
<tr>
<td></td>
<td>6. rent or mortgage payment</td>
</tr>
</tbody>
</table>
Table 3 shows the characteristics of the respondents. LU contact modes: boating, canoeing, or sailing were popular ways of being in contact with Lake Union for both HB and UpL. Feeding water fowl such as Canada geese and mallard ducks, and walking by the water were popular, too. Watching the water was the most popular form of contact chosen (27% of HB and 25% of UpL). Listening was chosen by HB only. There are subtle sounds of water and wild animals which are audible only to HB.

Table 3. Characteristics of the respondents

<table>
<thead>
<tr>
<th>The respondents</th>
<th>House Boaters ps (%)</th>
<th>Total</th>
<th>Uplanders ps (%)</th>
<th>UW &amp; Seward's teachers</th>
<th>Seward's Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility of LU</td>
<td>Those who can see</td>
<td>64</td>
<td>37</td>
<td>27</td>
<td>10</td>
</tr>
<tr>
<td>Those who can't see</td>
<td>64</td>
<td>18</td>
<td>10</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Age</td>
<td>~24</td>
<td>1 (1.6)</td>
<td>3 (8.1)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>25~44</td>
<td>32 (30.0)</td>
<td>25 (67.6)</td>
<td>23</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>45~64</td>
<td>23 (35.9)</td>
<td>8 (21.6)</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>65~</td>
<td>6 (9.4)</td>
<td>0 (0.0)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>no answer</td>
<td>2 (3.1)</td>
<td>1 (2.7)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>male</td>
<td>24 (37.5)</td>
<td>13 (35.1)</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>female</td>
<td>33 (51.6)</td>
<td>21 (56.8)</td>
<td>18</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>no answer</td>
<td>7 (3.1)</td>
<td>3 (8.1)</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Any children?</td>
<td>Yes</td>
<td>39 (60.9)</td>
<td>31 (83.8)</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>No</td>
<td>23 (35.9)</td>
<td>4 (10.8)</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>no answer</td>
<td>2 (3.1)</td>
<td>2 (5.4)</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Length of time</td>
<td>y:year m:month</td>
<td>max. min. mean</td>
<td>max. min. mean</td>
<td>max. min. mean</td>
<td>max. min. mean</td>
</tr>
<tr>
<td>in present home</td>
<td>36y 2m 7.3y</td>
<td>7.8y 13y 6.4y</td>
<td>13y 1m 6.4y</td>
<td>25y 1y 9.1y</td>
<td></td>
</tr>
<tr>
<td>in Seattle</td>
<td>70y 3m 21.7y</td>
<td>21.8y 34y 2y 13.5y</td>
<td>60y 5y 30.1y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of a home</td>
<td>studio type</td>
<td>2 (3.1)</td>
<td>1 (2.7)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>one bed room type</td>
<td>14 (21.9)</td>
<td>3 (8.1)</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>two bed room type</td>
<td>30 (46.9)</td>
<td>9 (24.3)</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>three bed room type</td>
<td>12 (18.8)</td>
<td>10 (27.0)</td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>more</td>
<td>0 (0.0)</td>
<td>11 (29.7)</td>
<td>9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>no answer</td>
<td>6 (9.4)</td>
<td>3 (8.1)</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rent or mortgage</td>
<td>(%) ~200</td>
<td>7 (10.9)</td>
<td>3 (8.1)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>payment per month</td>
<td>200~400</td>
<td>11 (17.2)</td>
<td>11 (28.9)</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>400~600</td>
<td>12 (18.3)</td>
<td>8 (21.6)</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>600~1000</td>
<td>10 (15.6)</td>
<td>11 (29.7)</td>
<td>8</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1000~</td>
<td>10 (15.6)</td>
<td>0 (0.0)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>no answer</td>
<td>14 (21.9)</td>
<td>4 (10.8)</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

4. Water Imagery of Lake Union

Attractiveness:
Both HB and UpL found LU very attractive (HB 4.2, UpL 3.7 on a scale 1 through 5).

Water characteristics:
Figure 3 shows characteristics of the water of LU reported by HB and UpL. Horizontal expansive surface was the most chosen. However, choice of cleanness was low.
Water feeling:
Figure 4 shows feelings about LU chosen by HB and UpL. They shared similar feelings about LU in spite of the difference in location of their residences. They described LU as very pleasant (HB 3.9, UpL 3.5). They found it soothing and relaxing. It was not depressing, awesome, nor destructive. They found it precious and irreplaceable.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Some-what</th>
<th>Very much so</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) coolness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) wetness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) horizontal expansive surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) changing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) gentle movement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22) floating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24) reflection of color or light</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25) reflection of sound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18) crashing sound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19) cleanliness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21) sinking nature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29) melting nature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3. Characteristics of the water of LU found by HB and UpL

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Some-what</th>
<th>Very much so</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) refreshing or renewing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) enlivening or vivid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) beautiful</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) soothing or peaceful</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) relaxing or relieving</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22) precious or irreplaceable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20) time passing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21) recalling past</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) mysterious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) depressing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) foul</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18) awesome or frightening</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19) destructive or fierce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4. Feeling about LU by HB and UpL

What LU Symbolized for HB and UpL.
We asked HB and UpL what LU symbolized. 48 HB and 23 UpL responded to this question. The following were mentioned as representative symbolic elements of UL.
- A water-oriented and unique life style was mentioned by 23% of 71 respondents (HB 11 ps, UpL 5ps); for example, "The city of Seattle, a water-oriented way of life" was a statement made by a HB, "Houseboats"-mentioned by a UpL, "The northwest, our way of life" - by a HB.
- Nature in a city, 21% (HB 10, UpL 5): "closeness to nature while living in the heart of a big city" - HB, "A delicate balance between city and nature" - HB, and "Gem within the best of a beautiful city" - UpL.
- Peaceful, safe and pleasant haven, 20% (HB 11, UpL 3): "Peaceful haven" - HB, "Safety from invaders" - HB.
- Diversified uses of an urban lake, 13% (HB 6, UpL 3): "Commercial as well as pleasure" - UpL, "Working Lake" - UpL, "A multitude of activities, ever changing" - HB.
- Past of Seattle or past of a family, 8% (HB 2, UpL 4): "History, time, ecology" - UpL, "A part of the city's past" - HB, "Early married years when we lived in house-boats" - UpL.
- Symbol of life, 8% (HB 4, UpL 2): "Life and death" - HB, "Life - everything needs water to live" - UpL, "Vigor and life" - HB.

**Table 4. Value of LU for HB and UpL at different rental or mortgage levels**

<table>
<thead>
<tr>
<th>Value of LU ($) per month</th>
<th>Rents or mortgage payments per month</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>300</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>150</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>75</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>HB (ps)</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>UpL (ps)</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

**Value of the lake**

We asked, "How much more would it be worth to you per month to be able to have your home in your most desirable location with respect to Lake Union?" Table 4 shows the number of persons at different values on the vertical column and rents or mortgage payments for the houses per month on the horizontal column. Respondents were 23 for each of HB and UpL. The average value of HB was $139 additional payment, whereas it was only about $84 for UpL. For example, 13 HB chose about $150 or more, whereas only 6 UpL did so. Looking at the lower portion, only 3 HB chose about $13, whereas 7 UpL did so. Average rental or mortgage payment was about $590 for HB, whereas it was about $474 for UpL. For example, 3 HB were paying about $1200 and no UpL were paying that much. At the lower end, only 6 HB were paying about $300, whereas 10 UpL were doing so.
The average value of LU they chose varies from $139 of HB which is 24% of their average rental or mortgage payments to $84 of UpL which is 18% of their average rental or mortgage payments. HB valued LU higher not only in absolute money value but also in terms of the greater proportion of "worth" value they would add beyond their average rental or mortgage payments.

Water's Spatial Order

We asked about recognition of Lake Union's spatial images. We also provided "don't know" in order to examined whether these were only used in architectural field (Figure 5). A focal point, broadening, and bringing scene across were highly recognized. Relatively difficult images to understand seem to be: reference plane, connecting two spaces, and bringing scene across (marks in Figure 5).

<table>
<thead>
<tr>
<th>1: Not at all</th>
<th>2: A little</th>
<th>3: Some</th>
<th>4: Very much so</th>
<th>Don't know</th>
<th>% of</th>
</tr>
</thead>
<tbody>
<tr>
<td>① a focal point of the surrounding space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>② broadens your space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.9</td>
</tr>
<tr>
<td>③ brings the scene across your space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>④ corrects your space to a certain direction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>⑤ gives your space a flat reference plane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>⑥ gives a sense of depth to your space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>⑦ becomes an edge &amp; limits expanse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>⑧ separates your space from the space across</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>⑨ water that bridges two spaces connects them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
</tr>
</tbody>
</table>

△ difficult to understand

Figure 5. Spatial images of LU by HB and UpL

5. Environment and Imagery

Comparing water imageries of LU found by HB and UpL, we could say the following: HB gave higher evaluation to the attractiveness and value of LU than UpL (Table 4). HB recognized more clearly various water characteristics and feelings about LU (Figures 3 and 4).

Figure 6 shows that HB are highly satisfied with their environment, especially with the accessibility to the water, sense of community identity, and activities on or around the water.

Comparing imageries gained by the questionnaire, results of the interviews, and observation of the environment, we could obtain physical characteristics of the environment which explained causes of HB's water imageries. There are:
- A lake and houseboats
- Nature adjacent to a houseboat - visiting wild animals and four seasons
- A floating deck close to the water,
- A small lake.
<table>
<thead>
<tr>
<th>Rating</th>
<th>Not at all</th>
<th>Little</th>
<th>Some-what</th>
<th>Much so</th>
<th>Totally</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6. Satisfaction with the environment of HB and UpL

Unique Environment of HB

A lake and houseboats: LU has large, expansive surface, or changing reflection. It could provide peaceful or refreshing feeling. And it has houseboats on its surface. Houseboats seem to be the best devices to experience such a lake.

Nature adjacent to a houseboat - visiting wild animals and four seasons (Photo 3): HB had known four seasons not only by the calendar but also by the visits of wild animals such as raccoons, beavers, swallows, coots, Canada geese, Mullard ducks, or a couple of Buttlehead ducks. HB were fascinated by such wildlife and through this contact with nature, they seem to have found the lake itself.

A floating deck close to the water: most houseboats had their own floating decks (Photo 4). A deck was a space between a house and the lake. It was a place for a canoue, a cayack, a wind surfing, flowers set in whisky barrels, or a couch. It was floating on cedar logs or on a concrete box. The floor of the deck was close to the water, 20 to 40 cm above the water. It had no handrails. There seems to be immediacy with the water in such a floating deck. The immediacy will help to find water characteristics and feeling about the water. The closeness to the water seem to enforce formation of spatial images such as "broadening one's space" or "bringing the scene across".

A small lake: LU was a small lake. It was about 1 km wide to east and west, and 2 km long. It had a simple and unified form. Small dimensions and the simple form of the lake seem to be the causes of a sense of "a focal point". Sharing a small lake seems to help unite HB closely. And the small distance to the shore across and the large expanse of the lake beyond one's visual field seem to be the causes of "bringing the scene across".

Visibility of LU and its Attractiveness Rated by UpL

The attractiveness of water seems to be influenced by the visibility of the water. 16 UpL (43%) could see LU from their houses and 21 persons (57%) could not. People who could see a part or all of LU rated LU's attractiveness much higher (Table 5). 75% of those who could see LU rated it very attractive; whereas only 48% of those who could not did likewise. Under the broken lines of Table 5, we showed a similar relation between the visibility of LU and pleasantness to sit near the water.
Table 5. Visibility and attractiveness of LU by UpL

<table>
<thead>
<tr>
<th>Visibility</th>
<th>not at all</th>
<th>somewhat</th>
<th>very much</th>
<th>exceptionally so</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>21ps/37(57%) attractiveness</td>
<td>11ps (62%)</td>
<td>10ps (43%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pleasantness</td>
<td>13 (62%)</td>
<td>8 (38%)</td>
<td></td>
</tr>
<tr>
<td>a little~all</td>
<td>16ps/37(43%) attractiveness</td>
<td>4 (25%)</td>
<td>12 (73%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pleasantness</td>
<td>4 (25%)</td>
<td>12 (73%)</td>
<td></td>
</tr>
</tbody>
</table>

We could say the following by this survey:

- Water, be it a lake or a river, can enrich our mind by its physical characteristics, arousing various feelings about it. We have seen this in "4.1. Attractiveness", "4.2. Water Characteristics", and "4.3. Water feeling".
- Water can bring people together and thus become a connector of people with people by its spatial function. We have seen this in "4.6. Water's spatial Order" and "5.1-4) A Small Lake".
- Water can remind us of our past and thus become a connector of past and present. We have seen this in "4.3. Water Feeling" and "4.4. What Water Symbolized".

We could also point out that we have observed the above three points in our survey of water imagery done in various cities in Japan. It is exciting to obtain similar reactions in the surveys conducted in two different cultures. We hope that the water imagery could be an international language.

Photo 3 Canada geese, daily visitors of houseboats
Photo 4 A floating deck of a houseboat

We would like to express our appreciation to those who helped us greatly in this research: to Professor Jim Wise for helping us make the questionnaire in English; to Mrs. Beth Means for typing it; to the Department of Architecture of the University of Washington and to Professor Phil Thiel for inviting Suzuki as a visiting professor and aiding him in the research; to Science University of Tokyo for giving Suzuki an opportunity to study in Seattle for one year; to the Floating Homes Association and Seward School; and Professor Judith Heewagan, Professor Richard Alden, and many interviewees.
Perception and symbolism
Marc Crunelle : architecte, docteur en psychologie de l'espace.
Institut Supérieur d'Architecture Victor Horta, Bruxelles, Belgique.
U.L.B. - Campus de la Plaine - C.P. 248 - Bd du triomphe, 1050 Bruxelles.*

PERCEPTION TACTILE DES SOLS

RESUME.

Ce texte tente de démontrer comment au départ d'un relevé de sols d'habitations sur 3 continents et d'une observation phénoménologique, le toucher kinesthésique des pieds est à chaque fois stimulé de la même manière. L'homme pénétrant dans une maison se détend progressivement et l'attention qu'il est obligé de donner nécessairement à ses gestes s'estompe petit à petit pour la transférer à d'autres activités. Le toucher étant le sens du proche, du contact, l'aménagement des sols des maisons favorise précisément la prise de contact et de là, la rencontre avec l'autre.

LECTURE DES SOLS DE TROIS MAISONS.

Bruxelles: à l'extérieur, du gravier qui crisse et sur lequel nos pieds cherchent toujours un peu l'équilibre; puis un seuil en pierre stable mais creusé au centre; ensuite, dans le hall, de larges dalles en pierres plates aux joints fortement marqués; du plancher aux joints serrés dans le couloir; du parquet dans le salon et finalement un large tapis épais et moelleux devant le feu ouvert.

III. 1: nature des sols rencontrés dans le parcours de la maison bruxelloise.
Maroc: la rue en terre: dure en été et boueuse en hiver; un seuil ferme en pierre; de la céramique dans le couloir; de la brique vernissée dans la cour (Woust ed dar) et du marbre autour de la fontaine; finalement du tapis dans le séjour (Diwan).

ill. 2: nature des sols dans le parcours de la maison marocaine.

Japon: la rue en terre: ornières ou boue suivant la saison; passé la porte, une aire en terre battue (Doma); face à l’entrée, on enlève ses chaussures pour accéder à une zone de plancher surélévée (Ita No Ma) plus plate et plus lisse, ensuite, des nattes en paille de riz (Tatamis) dans l’antichambre et finalement au "centre" du lieu, des coussins sur les nattes (Tatamis).

ill. 3: nature des sols dans le parcours de la maison japonaise.
Trois parcours ne sont évidemment pas suffisants pour établir une règle générale sur l'aménagement des sols. Néanmoins,
- toutes les maisons bourgeoises du XIXe siècle et bon nombre de maisons individuelles aujourd'hui en Europe reprennent dans le même ordre, cette succession de matières perçues par les pieds et que nous avons décrites dans le cas de Bruxelles;
- le plan de la maison marocaine est traditionnel et se retrouve dans la majorité des habitations d'Afrique du Nord;
- quant au Japon, J. Pezeu-Masabau a montré que si la proportion des zones les unes par rapport aux autres (terre battue, bois, tatamis) variaient du Nord au Sud du pays, l'ordre de succession de ces zones est toujours respecté et "la coexistence de ces trois types de sols et leurgradation identique caractérisent l'habitation japonaise rurale et urbaine, ancienne et récente".

Nous pouvons observer par contre que:
- dans chacun des trois parcours décrits ci-dessus, plus on s'approche du coeur de logis, du "centre" du lieu, plus les matériaux s'adoucissent. Il apparaît qu'à chaque fois, une même pratique tactile est aménagée, voulant créer au centre des maisons les sols les plus doux, expression optimale s'oposant à l'extérieur, au chaotique, au désordre.
- cette gradation de matières recouvrant les sols et perçues par les pieds, va de pair avec le trajet allant de l'extérieur à l'intérieur, du froid au chaud, du désordre à l'ordre, du brut au travail. Les sons suivent ce parallélisme: ils sont aigus et "crus" à l'extérieur, sur les surfaces dures et finissent par être "épais" et assourdis sur les surfaces douces.

Peut-être peut-on trouver aussi ce qu'on pourrait appeler la fonction sécurisante des sols: qui consisterait à disposer le corps de telle manière que la tact et les gestes soient les plus fluides possibles, les moins présents à l'esprit; en d'autres termes, qu'on n'y fasse plus attention. Comme si, dans le budget énergétique limité que chaque homme possède, l'attention qu'il accorde à ce sens kinesthésique devienne la plus faible possible, pour laisser place à d'autres facteurs d'intérêts moins primaires: dialogue, contact humain, détente, loisirs.

Sur les sols extérieurs, la présence tactile est très forte et "consomme" beaucoup d'énergie. Le degré d'attention qu'il faut pour marcher sans se cognir, pour ne pas trébucher et "regarder devant soi", font que nous ne nous trouvons pas dans des conditions propices à la détente, à une conversation philosophique ou un comportement amoureux. Par contre, dans les lieux construits, l'agencement intérieur, prédispose le corps à un autre comportement. Ce toucher tant présent au dehors, cette forme de toucher qu'on pourrait appeler de primaire, voire de survie, fait place à une autre forme de sensibilité tactile plus sensuelle: celle de la prise de conscience des matières nous entourant (soyeux des tissus, épaisseur du tapis, moelleux des coussins) et d'un "entourement" non agressif qui prédispose le corps, par là mise en éveil de nouveaux registres tactiles, à un comportement de dialogue, de contact. Ce que les Anglais appellent le "home", ce lieu chaud et feutré, en est l'exemple typique.

Analyse des trajets.
1. Nous observons dans ces différents parcours qu'après le gravier, un seuil en pierre plate à l'entrée de la maison, ou comme au Japon, une aire en bois légèrement surélevée en contraste d'avec la terre, devient une marque
tactilement accueillante et sécurisante du fait de trouver de la stabilité. C'est en effet le premier stade mettant l'homme à l'aise. Durant des siècles, les rues en terre étaient fort instables à la marche, boueuses et glissantes par temps de pluie, dures et remplies d'ornières par temps sec. La marche nécessitait beaucoup d'attention afin de ne pas trébucher, se tordre le pied ou glisser. Le seuil plat et stable était la première marque tactile du passage d'un monde chaotique à un monde ordonné.

2. Se présentent ensuite sous les pieds, des dalles en pierre, du carrelage, du marbre, du plancher: une succession de matériaux de plus en plus lisses, de plus en plus doux, d'une dureté graduée et assemblés au moyen de joints larges au début, pour passer à des joints plus serrés. C'est le deuxième stade: l'homme se sécurise par étapes. Après le seuil, on lui rend ses gestes plus fluides, moins crispés au moyen de sols plats, unis, stables et sans accroc (raison pour laquelle on est réticent à placer des entre-portes au sol); marches d'escalier de hauteurs identiques, poignées de porte à hauteur de ceinture, interrupteurs faciles d'accès, etc... toutes choses ayant pour but de faciliter nos gestes et où seul le toucher (de petite surface) des pieds et celui plus ponctuel des mains entrent en jeu. La kinesthésie réalise au premier chef cette fonction rassurante: marcher sur des sols plats demande moins d'attention que sur un sol chauffé, cela décrits l'homme, le met en confiance et lui apporte une tranquillité d'esprit du fait qu'il sait qu'il ne sera pas saisi par quelqu'incident de surface.

La prévisibilité de nos gestes est liée à cette même notion: si nous savons que c'est plat, nous serons plus détendus. Si nous savons que les marches d'escalier ont toutes la même hauteur, la première élévation de jambe connue, nous pouvons le monter les yeux fermés. C'est à la dernière marche que l'on est surpris, on a levé la jambe trop haut et on retombe.

En bref: imprévisibilité de nos gestes = insécurité
prévisibilité de nos gestes = libère l'attention, met en confiance.

Cette succession de matières allant du dur à l'extérieur au doux au "centre" du lieu, qui petit à petit détend l'homme et le met en confiance, se présente comme allant toujours dans le même sens. Tout contre-sens à cette progression, à ce nivelage des reliefs nous choquerait. En effet, on n'a jamais vu un hall d'entrée en plancher suivi d'un salon en pavés; ni un couloir recouvert de tapis donnant accès à des chambres en terre battue ou en gravier. Tout porte à croire que cette "bonne pratique " ou "bonne logique" des recouvrements de sols sécurisant l'homme soit universelle. D'autre part, dans notre marche, tout accident de relief au sol, tout heurt soudain (trébucher sur une lame de parquet détachée, s'accrocher sur un carrelage déséquilibré,...) sont durement ressentis. L'homme alors se recrispe, la prévisibilité de ses gestes est brusquement arrêtée, l'adrénaline lui remonte dans le sang, s'il ne s'en suit pas un juron.

Il existe des lieux où ces accidents de parcours "réveillant" l'homme ont été aménagé à bon escient, comme par exemple dans les courtyards du Trinity College à Cambridge. Là, chaque grande pelouse centrale est entourée d'une aire de circulation en dalles de pierres plates. Afin de ne pas marcher sur le gazon, l'allée en pierre est bordée d'une bande de galets d'une largeur de plus ou moins 30 cm. Celle-ci a l'avantage de signaler à quiconque posant les pieds dessus, qu'il a quitté l'allée piétonne, tant le relief y est différent et la marche instable. Cette solution est particulièremen bienvenue la nuit ou dans la pénombre: le
réflexe de se remettre sur l'allée plus plate y est automatique. Il ne serait pas étonnant qu'une personne ivre réagisse de même.

Autre exemple: dans les couloirs de l'aéroport d'Orlando (Floride), le sol est recouvert de linoleum lisse et uni. De chaque côté, le long des murs et sur une largeur d'une cinquantaine de cm, ce linoleum est à pastilles, comme bosselé. Les pas suivent automatiquement la surface lisse. Si on s'approche des murs, ce très léger relief a pour effet de nous renvoyer vers la surface unie (pas nécessairement la plus courte), mais plus facile à la marche. Mieux, les valises à roulettes, les chariots que l'on tire aisément, se mettent à trembler, à faire du bruit en quittant la surface liser avant de cogner les murs.

Planéité des surfaces au sol signifie lieu sûr et est perçue comme telle. Un magasin, un hôtel, ou n'importe quel lieu ne contenant pas ce facteur, engendre la méfiance et ne nous attire pas (ex: carrelage défait, tapis déchiré,...). Sols stables, lisses, mais pas trop glissants, parce que donnant un résultat opposé, et donc pas la sécurité souhaitée.

Blaise Cendrars aimait à raconter comment il avait interviewé Mussolini. Ce dernier recevait les journalistes venant l'interroger, perché sur une haute estrade, au fond d'un immense salon et où le parquet était "le mieux ciré de tout Rome" ! Quiconque y entrait, un peu impressionné, ne faisait pas 5 pas avant de chuter. Mise en scène faite pour désarmer les journalistes les plus volontaires. Cendrars sachant cela, s'était exercé les jours précédents dans plusieurs endroits où les parquets étaient particulièrement glissants et avait compris que ce n'est qu'en marchant d'un pas cadencé et de manière très décidée qu'il resterait en équilibre. C'est ce qu'il fit quelques jours plus tard; arriva d'un pas cadencé tout en marmonnant une chanson militaire, jusqu'au pied de l'estrade, monta sur une chaise et trouva nez à nez avec son interlocuteur.

3. Revenons aux 3 trajets décrits plus haut. Nous remarquons également qu'après la pierre, le carrelage, le bois, se présentaient enfin "au centre" du lieu, le tapis épais, les matières douces, le mobilier profond. Au Maroc, les banquettes et les poufs; au Japon, les tatamis en paille de riz. L'homme rassuré dans ses gestes grâce aux précédents aménagements des sols se détend plus complètement encore lorsqu'il foule un tapis épais. S'il est invité à entrer plus largement en contact avec les matières, plus seulement avec ses mains et ses pieds, mais avec son dos, ses jambes, ses fesses, il perd sa "carapace", accorde sa confiance, se blottit dans un sofa, se cale entre des coussins doux et profond, se calfeutre dans un fauteuil. Il libère toute l'attention qu'il accordait à ses mouvements et gestes pour porter attention aux autres personnes, pour communiquer. Dans nos gestes quotidiens, lorsqu'on invite quelqu'un à s'asseoir, on lui glisse un coussin sur l'assise de la chaise, ou bien on lui tapote les coussins du canapé. Dans la chambre, on remet en place l'oreiller, etc... on veut ainsi que l'autre soit le mieux possible et ce au moyen de données tactuellement perçues. Ce qui explique également qu'Alvar Aalto n'a pas voulu utiliser de métal dans la conception de ses chaises et fauteuils, parce que selon lui "ce matériau ne doit jamais être en contact avec la peau".

C'est le troisième stade: l'homme rassuré et sécurisé parce qu'il a touché précédemment, entre plus largement en contact avec les matières et se laisse porter par le mobilier. De même, qu'il a accordé sa confiance, il établit le contact de manière plus détendue avec l'autre et communique dès lors plus facilement.
4. Si l'on veut sécuriser l'autre en lui confectionnant un lieu sûr où sont disposées les matières les plus agréables, les plus souples et les plus douces afin d'entrer plus complètement en contact avec lui, c'est la chambre conjugale qui devrait être la plus sensuellement tactile. C'est effectivement le cas : déjà dans le langage populaire, des expressions telles "un nid douillet", "le plumard", "dans ses plumes", "se plumer" (pour se coucher), etc... confirment cette idée de douceur. Là où la rencontre est la plus intime, où le toucher est le plus sensual, où l'autre est le plus proche, où la plus grande surface cutanée est en contact avec les matières, les textures sont effectivement les plus douces : depuis les draps, les couettes souples et légères, le lit où, comme dit la publicité "on ne sent même plus son corps", etc... Et ce qui explique la remarque de quelqu'un me parlant d'une chambre d'hôtel de passe peu accueillante : "même les draps étaient amidonnés"!

Cette idée de douceur est confirmée par les réponses d'une enquête belge de la firme Cegos Makrotest sur les personnes achetant des tapis. Si consciemment, elles prétendent n'accorder que très peu d'importance à la texture et à la souplesse des moquettes, les lieux pour lesquels elles achètent du tapis se portent néanmoins pour 36% aux chambres. Et Jésabelle Ekambi-Schmidt de préciser qu'en France, le tapis de la chambre conjugale est plus épaiss que celui du salon. Ce tapis, sur lequel on marche pieds-nus, vient en 3e position par ordre d'importance, juste derrière le grand lit et l'armoire.

5. Les différentes observations décrites ci-dessus nous permettent de remarquer que le manque de douceur à l'intérieur et de différenciation d'avec l'extérieur sont synonymes de pauvreté. Les bidonvilles ou les anciennes fermes telles que les a décrites Pierre Jakez Hélias pour la Bretagne, sont des exemples typiques : terre battue à l'intérieur, idem à l'extérieur. Le sol des églises, d'un même revêtement que celui que l'on rencontre dans les rues les bordant (la plupart du temps de la pierre) est de ce point de vue un signe d'humilité.

Par contre, et à l'opposé de ceux-là, les grands hôtels signalent leur richesse, montrent le bien-être inhérent à l'établissement tout entier en disposant un tapis épaiss déjà dès la porte d'entrée. On veut ainsi se montrer encore plus rassurant en présentant la texture la plus douce le plus en avant possible, comme allant à la rencontre de l'autre. Cette sensation veloutée de souplesse du sol s'étend partout dans le grand hall, mais aussi sur les marches d'escaliers, les ascenseurs, les couloirs.

Le fait de marcher sur une surface douce déjà à l'extérieur est la marque la plus élevée de bien-être et d'estime que l'on puisse accorder à ses invités, hôtes ou personnalités. "Dérouler le tapis rouge" jusqu'au pied de l'avion ou du train le jour de la visite d'un chef d'état étranger ; le faire descendre les marches de la mairie lors d'un mariage prestigieux, ou rencontré récemment sur le trottoir devant la vitrine d'un décorateur, est la marque tactile la plus riche. Dans ces exemples, aucune gradation n'est recherchée, ni utilisée, on passe tout de suite du sol le plus dur à la surface la plus douce, de la brutalité du béton à la souplesse du tapis, de la dureté de la pierre à la consistance moelleuse de la laine.

6. Les différentes séquences de revêtement de sol ne sont pas toujours abouties comme décrites ci-dessus. Si la pose de tapis ou de moquette est quasi généralisée (700 millions de m² sont produits chaque année en Europe), des
réticences néanmoins existent quant à leur présence dans nos intérieurs. Si le fait de poser un tapis sur le sol a toujours été depuis les Egyptiens et les Babyloniens, un signe, une marque voulant mettre l'autre à l'aise, sa signification n'est pas acceptée comme telle par tout le monde. Un intérieur sécurisant est pour certains associé à propreté du sol et au bon fini des matériaux. Plus c'est propre, plus c'est habité et donc sûr. Mais dans l'esprit de beaucoup de gens, seulement ce qui est lavable à l'eau peut être considéré comme propre. Or, ce n'est pas le cas du tapis.

Dans le cadre de notre doctorat, les expériences de différenciation sémantique que nous avons menées selon la méthode d'Osgood, il est apparu que le tapis, même pour des sujets jeunes (moyenne d'âge de 22 ans) demeure pour 63% d'entre-eux, plus sale que propre. Beaucoup d'architectes et de médecins sont encore réticents à l'idée de poser de la moquette dans les hôpitaux et les aspects négatifs mentionnés par les acheteurs de tapis dans l'enquête de la Cegos Makrotest, sont surtout en rapport avec l'entretien (difficultés d'entretien, se salit vite, prend la poussière, etc...).

7. Ces deux décennies ont transformé profondément nos intérieurs et des innovations techniques nous permettent de réduire les différentes séquences qui existaient auparavant entre l'extérieur et le cœur du logis, afin d'être doux plus rapidement. On assiste en fait à un décalage général dans la gradation des matières: les matériaux durs (pierre) se trouvent désormais à l'extérieur, sur les trottoirs, les rues et remplacent l'ancienne boue; et à l'intérieur, les tapis prennent la place de la pierre, du carrelage ou du marbre.

Tels sont les points illustrant ce rôle tactile des sols, qui est la sécurisation graduelle de l'homme au moyen toucher obligé des pieds et de la kinesthésie (beaucoup moins conscientisés que le toucher des mains). Au départ d'un relevé de sols d'habitations sur 3 continents et d'une lecture phénoménologique, nous avons tenté de démontrer que la gradation de plus en plus douce des sols se présentant à lui, avait pour but de détenir l'homme par paliers, sans quoi, ces textures allant s'adoucissant depuis la rue jusqu'au "centre" du lieu, n'aurait pas de sens. En effet, fonctionnellement, un même matériau dur et lavable (ex: vinyl) recouvrant uniformément tous les sols suffirait logiquement à le protéger du froid et de l'humidité ascensionnelle. Or ce n'est pas l'homme qui a changé ses habitudes, ni modifié ses comportements, mais bien les techniques modernes qui se sont efforcées de produire des recouvrements de sol doux et résistants (ex: tapis), s'adaptant ainsi à un besoin psychologique de toujours.

Le toucher est le sens du proche, du contact et de la rencontre.
L'homme se sécurise dans un espace nouveau si on lui rend d'abord ses gestes plus fluides, moins crispés à l'aide de sols lisses et plats; ensuite, rencontrant des matériaux doux, il se détend, accorde sa confiance, entre plus largement en contact avec les objets mobiliers et finalement avec l'autre. Libéré de l'attention qu'il devait accorder à ses gestes, il comprend que les matières douces qu'il rencontre, sont des marques de confiance et de sécurité qu'on lui procure. C'est parce que: plus je touche, plus je suis en sécurité et inversement, plus je suis en sécurité, plus le contact sera important, que je prouve que je me sens bien dans un espace. Ce "sens" exprime ainsi la preuve de notre réelle acceptation d'un lieu. Mis dans de telles dispositions, l'homme se sent bien et se sent bien avec les autres, les relations sont meilleures et il communique d'autant mieux.
Références.


Del Miglio Carlamaria, Nenci Anna Maria, Paluzzi Silvestro (psychologists), Pastore Daniela, Testa Giorgio (architects)
University of Rome "La Sapienza", Rome, Italy
Dipartimento di Psicologia. Via degli Apuli, 8 - 00185 Roma*
Dipartimento di Rappresentazione e Rilievo, P.zza Borghese, 9 - 00186 Roma

BODY IMAGE AND GRAPHIC REPRESENTATION OF THE ENVIRONMENT

The rate of change of one's own body image was studied during the "subjectivization" process of the environment. According to our general hypothesis, thanks to its structure and variety as well as its firm or flexible boundaries, such a rate determines the degree of separation between one's own "Self" and the surrounding space, and influences the evaluation and the awareness of this space. The research was carried out on 169 first year students in Psychology and Architecture, by means of projective tests and graphic representation of private and public spaces, and allowed us to maintain a relation between the body experience, cognitive style and space representation.

THEORETICAL BACKGROUND
In the process of exchange between the subject and the environment, the body is a functional mediator of development. Fisher and Cleveland (1958) point out that everything that is perceived and experimented with occurs within the context of one's own bodily experience. The body is the "container" of personality, which guarantees and maintains a spatial area in which the I or Self resides and is structured. Schilder (1935) formulated the concept or body image in a widely accepted form (Del Miglio, 1980): it is the systematic, cognitive and affective image both conscious and unconscious, that an individual has developed in relation to his body. Such an image is formed through sensory, cenesthetic, emotional, ideational and relational elements form the time of one's birth (Schonfeld, 1973). As the individual grows, the mental representation of his body also matures, along with the growth of his spatial-temporal structuring, intended as the understanding and topological placement of objects in space and events in time (Piaget, 1957). In particular, certain bodily experiences and indicative of certain parameters (boundaries, articulation, regions, barriers) make it possible to reveal a more or less clear-cut separation from one's self and the surrounding environ-
ment, such as to influence the representation of space itself (Lewin, 1970; Fischer & Cleveland, 1958; Norberg-Schulz, 1971; Moles & Rohmer, 1985). The body image in the context of environmental psychology thus accounts for one of the implicit behaviours influenced by the "inner processes" of the individual, fundamental to the understanding of the "subjectivization" or "environmental representation" processes. They are believed both to mediate the effects of the psycho-environmental aspects on the individual and to direct the action of human behaviour itself towards the environment (Downs & Stea 1973; Bonnes, 1977, 1978). Implicit behaviours are indeed processes based on the construction of reality. Such behaviours are processes of cognitive construction in relation to the more global experience that the individual has acquired within the entire environmental context (Levy-Leboyer, 1980).

The general purpose of this paper is to verify the relations existing between the representation of the body image and the graphic representation of space.

Among the many parameters that may be considered when characterizing the body image, we prevalently focused on the global-articulate dimension characterizing the cognitive style, which may be detected through the drawing of a human figure (Witkin et al., 1962). After all, there is some correspondence between the biological body (physiological trim), the body one experiences (body image and its boundaries) and the functional trim of the mind.

Moreover, emphasis is also placed on investigating the subject's "reading" of the environment through graphic representation or "narration".

The drawing interpreted as a language, in fact, is a process through which graphic signs are chosen, built and juxtaposed in order to achieve a certain significance (Massironi, 1982). From an object to articulated space, the drawing always provides an interpretation and an explanation, which makes use of only some elements among the endless possibilities, and is conditioned by socio-cultural contents. The various types of graphic representation, from those that are "spontaneous" and are intended as expressions of perception, to those that are qualitatively "structured", are all expressions of drawing. The latter are a complex reflection on perceptions, through a mental manipulation, a "visualization and an orientation" of the connection of all the parts making up the object in space, even vis à vis one's own body position or "viewpoint" in space.
METHODOLOGY

The investigation was conducted on 79 students enrolled in the first year of Architecture (46 M, 33 F) and 90 students in the first academic year of Psychology (41 M, 49 F) at the University of Rome. This interdepartmental study was funded by the Ministry of Public Education (1985-87) and covers a more extensive range. Among other things, in fact, it is also to be extended to the students completing the last year of the same two faculties. It is indeed important to determine the extent to which a greater maturity and the acquisition of building notions and space representation techniques may influence this problem.

The tools we used are as follows:

1-a) Fisher and Cleveland's Barrier and Penetration Scales;
b) Human Figure Drawing evaluated according to Witkin's Body Sophistication Scale, in order to study the boundaries and articulation of the body image.

2 - A specially prepared questionnaire for the representation of public and private spaces. The questionnaire was composed by questions aimed at elucidating the dimensional, dislocational and proportional resolution of spatial episodes of a habitual or sporadic use for public and private spaces. In this paper, partial results of the questionnaire are reported, referring to the questions that require a graphic representation of space.

More in detail:

1a - The use of the Barrier and Penetration scales makes it possible to study how an individual perceives his own body (more or less separated from or confluent with the environment) and its boundaries, which are the plane of contact with the surrounding space. Fisher and Cleveland (1958) maintain that the properties ascribed by an individual to the contours of the objects perceived in Rorschach's test, reflect the way in which he perceives the boundaries of his own body, according to two different modalities. The answers that consider the peripheral regions of the objects as clean-cut, well defined and substantial are classified as "Barrier" responses. The answers in which the fragile, insubstantial and indistinct structure of the peripheral regions of the objects is stressed, are classified as being "Penetration" responses. In a new theoretical and operational interpretation of this technique, Saraceni and Ruggeri (1982) hypothesize a matching "mental boundary" function, in other words, a psychic organization that is structured in relation to the body surface perception. Rorschach's test was performed on a group scale, by the projection of slides. The responses were assessed according to two types of scores, a Total Barrier (Tb) and a Total Penetration (Tp) score,
calculated for each subject as the ratio between the respective Barrier and Penetration values and the total evaluable answers (as suggested by Fisher and Cleveland in order to make the results statistically comparable).

1b - According to Witkin et al. (1962), the degree of body image articulation, expressed in the human figure drawing, is correlated to the cognitive style. Cognitive styles are peculiar and consistent modes of functioning that individuals manifest in their perceptive and intellectual activities. The degree of articulation and structuring in relation to the perception of one's own body, provides information on the methods of analysis of the experience that characterize the development of psychological differentiation. In the subjects, this differentiation represents the ability to feel separated from the outer environment, with which they continuously maintain a dialectic relationship. This mode of relating to one's self, to others and to the surrounding world, is linked to a host interrelated characteristics inter alia the way of perceiving one's own body, as being more or less articulate, and the ability to extract simple figures from a complex context.

Witkin's Sophistication Scale of the body image implies an overall evaluation of the human figure drawing, according to a score ranging from 1 (highly sophisticated drawings, high level of form and detail) to 5 (more primitive and childish drawings).

2 - The subjects were asked to draw a set of "objects" related to public and private space: house (q. 10); private lodging: real (q. 12a) and ideal (q. 12b), and a Rome square (q. 13). Rather than concentrating on the "distortion" of the various spatial elements represented, the evaluation focused mainly on the graphic projection technique towards which the subjects are oriented: A - plan, spontaneous elevation; B - perspective, disposition of masses, spontaneous axonometry; C - perspective, disposition of masses, spontaneous axonometry + details; D - elevation, disposition of masses, axonometry, controlled perspective; E - elevation, disposition of masses, axonometry, controlled perspective + details. The choice of such a technique expresses the subject's degree of spatial maturity, the index of evolution in the graphic depiction of the objects in the surrounding world. Some proportion and relative detail indexes were moreover considered. Each graphic response of the subjects was evaluated by placing it within the context of one of the various categories (from A to E) and assigning it the matching score included between 1 and 5. A set of corrective coefficients referring to graphic elements were considered, such as the type of stroke and the closing of lines (q. 10 and q. 13), and the relative proportions of the represented
spaces (q. 12 a and q. 12 b). Such coefficients amounted to 0.15 for each added detail, and were added to or subtracted from the basic score of the category for each subject.

RESULTS
In table I, the M and SD of the variables used are reported separately for Psychology and Architecture, along with the student (T) comparisons between such variables. By comparing the mean values of all the variables it may be observed that the Architecture students present lower Barrier scores and higher Penetration scores as compared to the Psychology subjects. Although the values are within the normal range, the students of architecture were found to be more confluent with the environment.

The two groups showed no differences in terms of cognitive style (W). However, the Architecture students revealed better graphic performances in the representations of the house (q. 10), of the ideal lodging (q. 12 b) and of the square (q. 13).

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>PSYCHOLOGY</th>
<th></th>
<th>ARCHITECTURE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Total Barrier</td>
<td>(Tb)</td>
<td>0.171</td>
<td>(Tb)</td>
<td>0.116</td>
</tr>
<tr>
<td>Total Penetration</td>
<td>(Tp)</td>
<td>0.102</td>
<td>(Tp)</td>
<td>0.128</td>
</tr>
<tr>
<td>Human Figure Drawing</td>
<td>(W)</td>
<td>3.288</td>
<td>0.985</td>
<td>3.192</td>
</tr>
<tr>
<td>Graphic Representation of the house</td>
<td>(q.10)</td>
<td>1.690</td>
<td>0.822</td>
<td>2.031</td>
</tr>
<tr>
<td>Graphic Representation of the &quot;real&quot; lodging</td>
<td>(q.12a)</td>
<td>1.507</td>
<td>0.967</td>
<td>1.786</td>
</tr>
<tr>
<td>Graphic Representation of the &quot;ideal&quot; lodging</td>
<td>(q.12b)</td>
<td>1.931</td>
<td>1.155</td>
<td>2.137</td>
</tr>
<tr>
<td>Graphic Representation of the square</td>
<td>(q.13)</td>
<td>1.770</td>
<td>1.119</td>
<td>2.283</td>
</tr>
</tbody>
</table>

Table I - Means and Standard Deviation. PSYCHOLOGY (male and female): N = 90. ARCHITECTURE (male and female): N = 79.

As regards the correlations (Pearson's r) between body parameters and graphic representations of space, in the Architecture group (Table II) the correlations emphasize that analytical style (W) correlates with a more complex graphic representation of the house.
### Table II - Correlation matrix: ARCHITECTURE (Male and Female) N= 79

<table>
<thead>
<tr>
<th></th>
<th>Tb</th>
<th>Tp</th>
<th>W</th>
<th>q.10</th>
<th>q.12a</th>
<th>q.12b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Penetration</strong></td>
<td></td>
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<tr>
<td><strong>Human Figure Drawing</strong></td>
<td>.048</td>
<td></td>
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<tr>
<td><strong>Graphic Representation of the house</strong></td>
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<tr>
<td>q.10</td>
<td>.149</td>
<td>.018</td>
<td>-.257</td>
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<tr>
<td><strong>Graphic Representation of the &quot;real&quot; lodging</strong></td>
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<tr>
<td>q.12a</td>
<td>.049</td>
<td>.041</td>
<td>-.078</td>
<td>.338</td>
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<tr>
<td><strong>Graphic Representation of the &quot;ideal&quot; lodging</strong></td>
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<tr>
<td>q.12b</td>
<td>.089</td>
<td>-.035</td>
<td>-.129</td>
<td>.271</td>
<td>.602</td>
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<tr>
<td><strong>Graphic Representation of the square</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>q.13</td>
<td>.003</td>
<td>-.031</td>
<td>.039</td>
<td>.386</td>
<td>.353</td>
<td>.479</td>
</tr>
</tbody>
</table>

### Table III - Correlation matrix: PSYCHOLOGY (Male and Female) N= 90

<table>
<thead>
<tr>
<th></th>
<th>Tb</th>
<th>Tp</th>
<th>W</th>
<th>q.10</th>
<th>q.12a</th>
<th>q.12b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Penetration</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Human Figure Drawing</strong></td>
<td>-.232</td>
<td></td>
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<tr>
<td><strong>Graphic Representation of the house</strong></td>
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<td></td>
<td></td>
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<tr>
<td>q.10</td>
<td>.225</td>
<td>.079</td>
<td>-.160</td>
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<tr>
<td><strong>Graphic Representation of the &quot;real&quot; lodging</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>q.12a</td>
<td>.085</td>
<td>.103</td>
<td>-.102</td>
<td>.032</td>
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<tr>
<td><strong>Graphic Representation of the &quot;ideal&quot; lodging</strong></td>
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<td></td>
</tr>
<tr>
<td>q.12b</td>
<td>.121</td>
<td>.023</td>
<td>-.124</td>
<td>.327</td>
<td>.266</td>
<td></td>
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<tr>
<td><strong>Graphic Representation of the square</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q.13</td>
<td>.151</td>
<td>-.271</td>
<td>-.263</td>
<td>.414</td>
<td>.263</td>
<td>.428</td>
</tr>
</tbody>
</table>

* P < .05  
** P < .025  
*** P < .01  
**** P < .005

556
In the Psychology group (Table III), a correlation seems to exist between analytical style and a better graphic representation of the square. However, other significant correlations do exist between the mode of perception of one's own body, less confined and more "confluent" with the environment, and the mode of representing public or private spaces. More specifically, high Barrier scores correlate with a better representation of the house \( r = .225 \quad p \quad .02 \) and low Penetration scores correlate with a better representation of the square \( r = -.271 \quad p \quad .005 \).

For both groups, the correlations between the graphic tests are high and positive. Only in Psychology students no significant correlation was found between the representation of the house and that of the real lodging.

It may thus be concluded that in their graphic performances, the Architecture students do not rely on the subjective experience of their own body and rather refer to their own cognitive style, unlike the students of Psychology. In the latter, in fact, the graphic performance is correlated with the Barrier and Penetration indexes, though to different degrees.

CONCLUSIONS

For both groups significant relations seem to exist between articulate and analytical cognitive style and elaborate and detailed graphic representations of public spaces.

Even before specific training enables them to acquire greater skills for the representation of external objects, Architecture students differ from the other group for they tend to have a perceptive approach to space, more foreign to their own body experience.

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C. Tom Mitchell, Department of Psychology, University of Reading, England
c/o D-2 Pebble Creek Drive, Asheville, NC 28803, USA
affiliation in autumn: USA - Dept. of Apparel Merchandising and Interior Design, Indiana University, Wylie Hall 203, Bloomington, IN 47403

TIME PERCEPTION AND THE PROCESSING OF ENVIRONMENTAL INFORMATION

ABSTRACT

Experiments are reported in which subjects were asked to indicate when they felt 15 minutes had passed while observing each of two model environments of similar design but differing spatial scale. Three types of model environment were used: scale model railways, sitting room models and abstract, non-representational environments. Subjects' judgments of duration were significantly shorter in the smaller of the two model environments in every case except where comparisons were made with the smallest scale models of room interiors. It is suggested that the effect of spatial scale on duration judgments is related to differences in the density of the information to be processed in environments of different scale. It is further suggested that there may be an optimum value for information density related both to the scale and to the type of environment being modelled.

EXPERIMENTAL OVERVIEW

Mitchell and Davis (1987) report a series of experiments in which they investigated a hypothesis of DeLong (1981) who claims that the perception of duration is directly influenced by the scale of the environment being observed. In their experiments Mitchell and Davis presented model environments of similar design but differing spatial scale to subjects who were individually asked to indicate when they felt 15 minutes had passed while observing each of the two environments in turn. This experimental technique corresponds to the "method of production" in time estimation studies.

Experiments were conducted using three different types of model environment: model railways of 1/72nd and 1/160th scale were compared; a sitting room model of 1/12th was compared with a model of 1/6th scale and with one of 1/24th scale; and a full-scale non-representational room was compared with models of similar design at 1/12th scale and 1/24th scale.
EXPERIMENTAL FINDINGS

In all of the experiments, except those in which comparison with 1/24th scale model rooms were made, there was a significant difference in the duration produced when observing models of different scale; shorter intervals were produced when subjects observed the smaller of the two models.

The effect of underproduction of duration found in the experiments reported by Mitchell and Davis may be interpreted by saying that, from the point of view of the subject, the rate of the subjective passage of time is increased with decreasing spatial scale.

STIMULUS COMPLEXITY, INFORMATION PROCESSING AND TIME PERCEPTION

The monotonic approach
One possible explanation for the effect of scale on judgments of duration is to view decreases in spatial scale as increases in complexity—the same information is presented but in a smaller package. The results of the experiments could then be interpreted in terms of the cognitive approaches to time perception which predict that an increase in the complexity of a stimulus will lead monotonically to an increase in the rate of the subjective passage of time of a person observing the stimulus. This approach is advocated in various forms by Frankenheuwer (1959), Fraisse (1963), Michon (1967) and Ornstein (1969).

If decreases in spatial scale are viewed as increases in stimulus complexity then the results of those experiments of Mitchell and Davis in which significantly shorter judgments of duration are found with decreasing spatial scale are consistent with what would be predicted on the basis of the cognitive approach to time perception. This approach, which suggests that an increase in complexity will result in an increase in the rate of the subjective passage of time, cannot, however, account for the failure to find any effect of scale reduction on duration judgments in the comparisons with the 1/24th scale model rooms.

The optimal complexity approach
Another view of the relationship between stimulus complexity and time judgments offered by Hogan (1975, 1978) who suggested that duration judgments decrease with increasing complexity only up to a point of optimal complexity. Beyond the point of optimal complexity additional increases in stimulus complexity cannot be processed by subjects and so duration judgments are much what they would be if made under conditions of lower complexity.
Applying Hogan's notion, it may be that no effect of underproduction of duration was found in the comparisons with the 1/24th scale models of room interiors because they were beyond a transitional point of optimal complexity—they were "too complex"—and subjects were therefore not able to process them adequately.

DISCUSSION

No effect of scale on duration judgments was found in the comparison with either of the two 1/24th scale models of rooms. An effect was found, however, with the model railways of much smaller scale (1/72nd and 1/160th). In order to account for this, Mitchell and Davis suggested that there may be a different range of "appropriate" scales for modelling different types of scene.

The relationship of scale to the scene being modelled
The "appropriateness" or "inappropriateness" of a scale to the scene being modelled may be related to people's normal visual experience. One is accustomed, for example, to seeing the interior of rooms subtending a certain range of visual angles. This range is greatly exceeded in a 1/24th scale model room whose interior subtends angles so small that one is never likely to have experienced them in viewing actual rooms. On the other hand, a model railway at 1/160th scale still resembles a distant view of a train station, whereas a 1/24th scale model room interior no longer looks like a room. When a scene is modelled at an "inappropriate" scale, such as 1/24th for room interiors, then the model is no longer accepted as a scene with which one could become mentally involved and no effect of scale on duration judgments is found.

An information density approach to time perception
In accounting for their experimental results, Mitchell and Davis make specific suggestions about the way in which changes in scale affect stimulus complexity and hence the perception of time. They suggest that insofar as models of different scale (whether rooms or railways) are identical with one another, the same information is being presented to the subject, but the smaller the scale the more dense the spatial distribution of information. According to this view if a scene is modelled on a smaller scale then, provided this scale is within the range felt "appropriate", an increase in the density of information to be processed would lead to an increase in the rate of the subjective passage of time and result in shorter productions of duration.
Conclusion
The experiments of Mitchell and Davis show there to be a consistent effect of spatial scale on the perception of duration. The effect may be interpreted in terms of the capacity of subjects to process information and there may be an optimal density for information related to the type of model and the scale being used. In this view, at the optimal information density there is maximum effect on the rate at which time seems to pass.

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Erminialetta Mainardi Peron *
Maria Rosa Baroni
Gesualdo Zucco
Università di Padova, Dipartimento di Psicologia Generale, Piazza Capitanato 3, 35139 Padova, Italy.

THE EFFECTS OF THE SALIENCE AND TYPICALITY OF OBJECTS IN NATURAL SETTINGS UPON THEIR RECOLLECTION

ABSTRACT

Possible effects on memory of typicality and salience of the objects present in two natural places were investigated upon. In Experiment I three ratings of typicality and salience obtained with modalities more or less strictly connected with the environmental settings were compared. In Experiment II incidental and intentional memory for the objects were tested. Results showed that typicality of items favours their free recall but hinders their recognition, while salience of items favours their recognition. It is argued that these findings could cast some light on divergent data reported in literature about schemata effects on memory for natural places.

INTRODUCTION

The present research investigates on the relevance of place schemata - i.e. of abstract representations of place knowledge which are hierarchically structured - for memory of natural environments. With respect to a given schema, items can be divided into: "schema-expected elements", that is items which must necessarily be present in each specific instance of that schema; "schema-irrelevant elements", that is items which are compatible with the activated schema but whose presence is not necessary; "schema-opposed elements", that is items which must be absent, as their presence will question the correctness of the activated schema. Different interpretations of the relevance of schemata for memory of natural environments can be found in the literature. Bobrow and Norman (1975), for instance, suggest that as the presence of the "schema-expected elements" can be directly inferred from the activation of the schema, these items will be processed superficially and therefore will not well remembered. On the other hand, Mandler (1979) affirms that, since it is the very presence of the "schema-expected elements" which informs the subject of having activated the correct schema with respect to that specific environment, these are the items which will be more deeply processed and will therefore be better recalled than the "schema-irrelevant elements", these being in turn better
remembered than the "schema-opposed" ones. Both interpretations appear to be confirmed by experimental data reported in the literature (see, e.g., Friedman, 1979; Brewer and Treyens, 1981; Mandier and Ritchey, 1977).

Some authors have transposed the notion of schema-expectancy into that of typicality, investigating on the influence on memory performance of typicality as well as of salience of the items (Brewer and Treyens, 1981; Schuurmans and Vandierendonck, 1985; Vandierendonck and Schuurmans, 1986). Although methods and materials used vary considerably across these studies, generally the results suggest that typicality and salience affect differently memory performance, this also depending on experimental variables such as, for instance, subjects' attention level. Furthermore, it is argued that there is a negative correlation between "schema-expectancy" and salience, in the sense that one object which does not possess high intrinsic salience may become salient if it is unexpected and/or unusual with respect to the activated place schema.

Although in the above quoted experiments both recall and/or recognition were used, Authors did not focus on the possible effects of kind of memory tasks on subjects' performance. This point has however of some relevance when investigating on the effects of typicality and of salience. Other conditions being equal, it can in fact be argued that typicality could favour free recall of an object, since it makes it more easily accessible on the basis of the activated place schema, while salience could favour recognition of an object, since it is linked to the specific characteristics of the item. Furthermore, as a context effect can not be excluded in subjects' evaluations of typicality - and even more of salience - even modalities adopted to define these characteristics of the items could possibly affect subjects' judgements and, consequently, bias the results of the experiments.

The present research has two main aims: first, to verify if and how subjects' judgements of the typicality and salience of items with respect to an activated place schema can be affected by the modalities - more or less linked to the environmental context - in which such evaluations are requested; second, to investigate on the possibly different effects of the kind of task used on memory for items differing as for typicality and salience. For what refers to the first point, the ratings can take place in a situation more strictly connected just to the activated schema, i.e. on the names of the objects, or matching each single item - seen by the subject and not just imagined - with the activated schema, or having present at the same time all the objects located in the real place. It is hypothesized that typicality ratings should be less affected by these different modalities of the rating if compared with the salience evaluations. Typicality is in fact assumed to be related more to the category of the item than to the peculiarities of the specific instance of the item considered, at least as far as rather prototypical items are chosen for examination. As for salience, it is assumed that this
characteristic of the item could be more strictly related to the specific item considered, and also that it could be more strongly affected by a context effect. By and large, then, the rating of the salience should show a greater variability with respect to the rating of the typicality. To test these hypotheses, in Experiment I data obtained with these three different rating modalities are compared, while in Experiment II recall and recognition of items differing in typicality and in salience are considered.

EXPERIMENT I

Material, subjects and procedure
A university teacher's office and a university classroom were examined. For each place 16 objects were selected (see Figures 1 and 2) from a wider range of objects, all plausible with respect to the place schema considered and differing for typicality and salience. Structural elements (walls, ceiling, etc.) were not taken into consideration, since previous researches had shown that they may be considered as having a very high and rather homogeneous degree of typicality (Baroni, Job, Mainardi Peron and Salmaso, 1980; Mainardi Peron, Baroni, Job and Salmaso, 1985).

Typicality and salience of each of the 16 objects of each place were separately evaluated in 3 tests, each carried out by an independent group of 20 subjects (for a total of 120 subjects). The evaluations dealt with: 1) a list of the names of the objects (condition "names"); 2) photographs of each object on a neutral background (condition "photos"); 3) the objects located in the real environment (condition "real environment"). In all the three conditions, subjects were told that these objects were to be found in a university teacher's office (or in a university classroom) and they were asked to evaluate the typicality and - separately - the salience of each object on a seven-point scale (*7 = maximum possible evaluation), order of evaluations being counterbalanced across subjects.

Results and discussion
Data were analysed by means of Student's t test. As regards typicality, in the university teacher's office significant differences between conditions were found only for three objects: **table clock** ("names" vs. "photos", t (38) = 2.70, p < .01); **filing-cabinet** ("names" vs. "photos", t (38) = 3.01, p < .01); **telephone** ("names" vs. "photos", t (38) = 3.01, p < .01). In the university classroom significant differences for four objects were found: **university calendar** ("names" vs. "photos", t (38) = 2.43, p < .05); **real environment** vs. "photos", t (38) = 3.01, p < .01); **permanently fixed seat** ("names" vs. "photos", t (38) = 4.02, p < .01); **real environment" vs. "photos", t (38) = 3.15, p < .01); **coca-cola can** ("names" vs. "photos", t (38) = 2.27, p < .05); "names" vs. "real environment", t (38) = 2.33, p < .05); **telephone** ("names" vs. "photos", t (38) = 2.19, p < .05); "real environment" vs. "photos", t (38) = 2.56, p < .05).
For what refers to salience, in both places significant differences concerned five objects. In the university teacher's office they were: *cupboard* (*names* vs. *photos*, t (38) = 2.93, p < .01; *names* vs. *real environment*, t (38) = 2.32, p < .05); *coca-cola can* (*photos* vs. *real environment*, t (38) = 2.37, p < .05); *filing-cabinet* (*names* vs. *photos*, t (38) = 3.83, p < .01; *real environment* vs. *photos*, t (38) = 1.97, p < .05); *desk* (*names* vs. *photos*, t (38) = 4.08, p < .01; *names* vs. *real environment*, t (38) = 3.01, p < .01); *telephone* (*names* vs. *photos*, t (38) = 2.32, p < .05). In the university classroom they were: *blackboard* (*names* vs. *real environment*, t (38) = 2.78, p < .01; *photos* vs. *real environment*, t (38) = 4.08, p < .001); *chalks* (*names* vs. *photos*, t (38) = 2.21, p < .05); *coca-cola can* (*names* vs. *real environment*, t (38) = 3.39, p < .01; *photos* vs. *real environment*, t (38) = 4.78, p < .001); *permanently fixed seats* (*names* vs. *photos*, t (38) = 2.13 p < .05; *photos* vs. *real environment*, t (38) = 4.56, p < .001); *wall coat-stand* (*photos* vs. *real environment*, t (38) = 3.19, p < .01).

As for typicality, in both places significant differences in rating concerned only few items and referred mainly to *names* vs. *photos* conditions. It can therefore be argued that, as hypothesized, typicality is a rather stable characteristic of an item with respect to an activated place schema. A larger variability was observed for both places as for salience, differences ranging across all the three kinds of evaluation and concerning almost thirty per cent of the items. This indicates that salience is more affected than typicality by testing modalities - as it was expected - and that a context effect has to be considered especially when evaluating the salience of an item. These results therefore indicate that, when assessing typicality and salience of objects, ratings vary according to the testing modalities used.

**EXPERIMENT II**

**Material, Subjects and Procedure**

On the basis of the ratings obtained in the *real environment* test, for each experimental place items were grouped into the following categories: High typicality and high salience (T+S+) items; high typicality and low salience (T+S-) items; low typicality and high salience (T-S+) items; low typicality and low salience (T-S-) items. In the university teacher's office items were so grouped: books, chair, desk, table lamp (T+S+); cupboard, filing-cabinet, telephone, waste-paper basket (T+S-); coca-cola can, Walt Disney poster, television, vase of flowers (T+S+); pullover, sunglasses, table clock, tea-cup (T-S-). In the university classroom items groups were: blackboard, desk, overhead projector, permanently fixed seats (T+S+); chalks, university calendar, wall coat-stand, waste-paper basket (T+S-); art Deco poster, coca-cola can, telephone, television (T-S+); ashtray, black umbrella, cardboard tube for containing papers,
extra electric cord (T-S−).
A total of 128 subjects were equally divided into eight groups.
Each group was tested in only one of the four memory tests for
just one of the places. Tests were: Incidental memory, free
recall; incidental memory, recognition; intentional memory, free
recall; intentional memory, recognition. In the incidental
conditions, each subject had to wait for ten seconds in the
experimental room "before going to take part in an experiment",
while in the intentional conditions, he/she was told they will be
tested for their memory of the place. The free recall or
recognition task followed immediately afterwards. In the latter,
the subject was asked to indicate each object seen in the place
on a set of four photos of items belonging to the same category.

Results and discussion
An ANOVA was carried out on correctly remembered items (Fig.3).
Factors examined were place (between subjects, at two levels:
university teacher's office and university classroom), attention
level (between subjects, at two levels: incidental and
intentional), memory task (between subjects, at two levels:
recall and recognition), category of objects (within subjects, at
four levels: T+S+, T+S−, T−S+, T−S−). The rejection region was
set at p=.01.
Significant results were obtained for attention level (F(1,120)
=64.03), category of objects (F(3,360) =105) and for the
interactions place x memory task (F(1,120) =9.47), place x
category of objects (F(3,360) =20.74), attention level x
category of objects (F(3,360) =12.68), memory task x category of
objects (F(3,360) =34.29), place x memory task x category of
objects (F(3,360) =4.92), attention level x memory task x
category of objects (F(3,360) =4.82).
As expected, performance was lower in the incidental than in the
intentional memory condition for both places, and in the free
recall than in the recognition task for the university classroom.
The fact that this last difference was not observed in the
university teacher's office can be attributed either to a place
effect or to the combined effects of memory tasks and categories
of items here considered. Results indicate the importance of
taking into account these categories of items when investigating
on memory for natural places. In particular, memory is favoured -
in this order - by the following characteristics of the items: a
high degree both of typicality and of salience; a high salience;
a low degree both of typicality and of salience; a high degree of
typicality and a low degree of salience. As only results for the
first two points are consistent for both places, this suggests
that typicality alone has a small and rather inconsistent effect
on memory. The significant interactions of attention level x
category of objects and of memory task x category of objects
indicates how schemata effects on memory for places vary
according to the task required; with low attention subjects
remember better highly typical items, that is items more strictly
connected to the activated schema; these items are also favoured when memory is tested by means of a free recall task, while with a recognition task highly salient items are the most favoured, and highly salient but not very typical items are remembered better than both typical and salient items. Therefore typicality is a main factor only in a low attention condition and when a free recall task is used.

To stress the different effects of typicality and of salience, two other ANOVAs were carried out on the same data, varying only the factor category of objects, which now was T+ vs. T- in the first ANOVA, and S+ vs. S- in the second. Means in the first analysis were, in the incidental condition: $T+ = 4.03$, and $T- = 1.62$ for the free recall, and $T+ = 2.94$ and $T- = 3.53$ for the recognition task; in the intentional condition: $T+ = 4.91$ and $T- = 4.09$ for the free recall, and $T+ = 4.28$ and $T- = 5.75$ for the recognition task. Means in the second analysis were, in the incidental condition: $S+ = 4.59$ and $S- = 1.06$ for the free recall, and $S+ = 4.5$ and $S- = 1.97$ for the recognition task; in the intentional condition $S+ = 5.69$ and $S- = 3.31$ for the free recall and $S+ = 5.81$ and $S- = 4.22$ in the recognition task.

Significant results were obtained, of course, for the sources of variance in common with the above mentioned analysis and, furthermore, in the first ANOVA, for the interactions attention level x category of objects ($F(1,120) = 19.69$), memory task x category of objects ($F(1,120) = 89.03$), place x attention level x memory task x category of objects ($F(1,120) = 7.55$). In the second ANOVA the salience factor resulted significant, both as a main effect ($F(1,120) = 284.90$), and in the interactions place x category of objects ($F(1,120) = 53.42$), attention level x objects' category ($F(1,120) = 12.41$), memory task x objects' category ($F(1,120) = 8.98$), place x memory task x category of objects ($F(1,120) = 10.29$).

As it can be seen, these results stress even more how high salience always favours memory if compared to low salience, while the same is not true for high typicality if compared to low typicality, this last favouring memory in intentional condition as well as in recognition task.

**GENERAL DISCUSSION**

The results of this research stress the importance of carefully considering modalities adopted in determining items characteristics such as their typicality and salience. Varying rating conditions, the former results to be more stable than the latter, which is more context-dependent. For what refers to memory, a more consistent effect of salience than of typicality is observed, as highly salient objects are always better recalled and recognized than less salient objects, this being true both in incidental and intentional conditions. As for typicality, this factor plays an opposite role in predicting good memory, depending both on level of attention and on kind of memory task required. In fact, highly typical objects are better recalled than less typical objects, which in turn are better recognized.
Furthermore, in the incidental conditions highly typical objects are better remembered, while the opposite is true for the intentional conditions. These results appear to further enlighten schemata effects on memory for natural places, as they stress that the effects of such characteristics of the items as their typicality and salience can be investigated upon only in relation to the kind of memory task used, a variable which has been up to now underestimated in literature.

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Figure 1. The University teacher's office used. Numbers refer to the objects selected as experimental items, which are shown in the location adopted: 1) filing cabinet; 2) television; 3) tea-cup; 4) telephone; 5) waste-paper basket; 6) desk; 7) vase of flowers; 8) books; 9) coca-cola can; 10) table lamp; 11) sunglasses; 12) table clock; 13) chair; 14) pullover; 15) cupboard; 16) Walt Disney poster.
Figure 2. The University classroom used. Numbers refer to the objects selected as experimental items, which are shown in the location adopted: 1) overhead projector; 2) extra electric cord; 3) permanently fixed seats; 4) cardboard tube; 5) wall coat-stand; 6) black umbrella; 7) Art Deco Foster; 8) waste-paper basket; 9) desk; 10) chalks; 11) ashtray; 12) coca-cola can; 13) telephone; 14) television; 15) blackboard; 16) University calendar.
TABLE I.
Means of correctly remembered items per category in the two attention conditions and for the two kinds of memory tasks.

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<th>Category of objects</th>
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<td>.44</td>
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<tr>
<td>Recognition</td>
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<td>.84</td>
<td>2.41</td>
<td>1.12</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recall</td>
<td>3.09</td>
<td>1.81</td>
<td>2.59</td>
<td>1.50</td>
</tr>
<tr>
<td>Recognition</td>
<td>2.59</td>
<td>1.69</td>
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</table>
ARTIFICIAL LIGHTING INTERPRETED AS A SYSTEM OF SYMBOLS

By a historical analysis, I tried to find a system that enables us to understand symbolic meanings in artificial lighting and gives us a higher standard of discernment of the designings of light.

In my view such a system is to be divided into the following two sections:
a. The substitution of daylight as a symbol of uniformity and self-control expressed by an always available and constant lighting;
b. The differentiating lighting as a symbol of power expressed by beams of light and shining things, as a symbol of individuality and of social esteem expressed by selected sources of light and as a symbol of the positive expection and of starting new.

ARTIFICIAL LIGHTING SEEN AS A PART OF A SYSTEM OF SYMBOLS, WHICH IS INHERENT IN THE CIVILISATION OF MIDDLE EUROPE

Artificial lighting is not such a subject as for example the natural lighting in architecture, where it is obvious, that there is a long traditional development of forms, that we can use or disuse for our architectural designings, understanding more or less the symbolic meanings within these parts of architecture.

The formal shape of artificial lighting has made a huge mutation until the end of the last century.
Light from candles, oil or gas has been relieved by the omnipresent electric lighting. Facing the considerable changes, there could have been thought about a break with the former lighting traditions.

But in spite of these changes I think, that our modern ways of electric lighting may be regarded as a part of traditional systems of symbols, which still are of a very high significance in our European civilisation. In accordance with the theory of civilisation by Norbert Elias, I tried to prove this thesis by historical research.

In this way I hoped to find an understandable system of relationships in different employments of light, which help us to interpret today's various ways of lighting.
This system shall raise the linguistic level to explain the phenomenon of light, and this way it will make light design also in its creative respects more sensible.
THE MAIN FEATURES OF A SYSTEM OF SYMBOLS IN ARTIFICIAL LIGHTING

This text can only be a short summary of the findings by the historical research. It is not possible and in this place not necessary to show every historic topic that helped me to find the relations, described in the following text.

Looking for a method to split the immense field of artificial lighting, I found by analyzing the contemporary forms of artificial lighting, two obvious main groups, which can be distinguished formally:
- a more functional way of lighting,
- a more emotional way of lighting.

Today the larger group is "functional lighting in the field of action", that means: at the working places, in the traffic, etc. This group has been the main subject in the technical development, the scientific investigations and the intentions of design. Now it seems to be winning every day higher importance as an indispensable assumption of our modern way of life.
The other group is the one of the more "emotional lighting in the field of recreation", that means: in flats, churches, restaurants, etc. This group has hardly been investigated and its importance seems to grow down every day.
Beside of its functional necessities there is few attention payed on this form of lighting in the literature.

This way to distinguish the artificial lighting seems to be well-known. But there cannot be found an attempt to divide the forms of lighting, apart from the activities they are used for.
Looking for the formal objects, which are impressing on the development of these main groups, it is possible to find categories dividing the light, not the functions.

The formal object in view of the first "more functional group of artificial lighting" is the replacement of daylight as perfect as possible.

Mainly publications from out of the first half of this century draw an idealistic picture about the symmetry and brightness of daylight. In the same time its naturally changing quality and availability during one day is regarded as disturbing, and people try to get away from this trouble with the help of artificial lighting in order to get a symmetric standardized (artificial) daylight.
Today the main reason for the use of artificial lighting is to complete daylight. But this complement of daylight should not be regarded as such. I called this group of artificial lighting which is connected with function:

"substitution of daylight".

574
On the other hand the artificial lighting, which is connected with emotions, is mainly characterized by differentiation. This way of lighting is used to describe differentiately the functional, the social, the mythological or any other situations of (or in) a room. I called this group of artificial lighting:

"differentiating lighting".

To follow the question of how these two different aims in artificial lighting could develop, to receive a deeper knowledge about the meaning of every single way of lighting in our civilisation, there are two courses of development to be found, which are impressed on different social changes, as the settings of an objective are.

THE SUBSTITUTION OF DAYLIGHT

Light as substitution of daylight stretches the active fields (phases) of human life in relation to the natural times of activity and passivity, which are defined by the rhythm of night and day.

This stretch on the active phases of life does not serve to get an absolute extension of the active phases but to make human life more constant.

By artificial lighting, a separation from a control by the nature becomes possible and this way, man comes to a way of life that corresponds with the wanted code of behaviour.

Daylight or substitution of daylight are the physiological presuppositions for a visual control among people. The stronger, the more constant and multilateral relations among people are, the more important is it, that they are able to control each other and following from this, that they are able to control their own behaviour.

The degree of selfcontrol as a sign of civilisation is relative to the degree of consciousness in the use of artificial lighting. The more the process of civilisation has progressed, the more raise the demands at artificial lighting.

So long as the process of production is mainly impressed by the cycles of agriculture, there were only few chances to differ the daily rhythm of life from the natural rhythm of night and day.

Industrial work requires a rather high standard of selfcontrol from all those who work in the industrial process of production and who depend on it.

The industrialisation forces the process of separations from the controls of the nature towards to a constancy of life habits. The development of the artificial lighting is imprinted by the increasing perfection of the substitution of daylight. The object is a constant regular, bright lighting without glair, with the spectrum of daylight, that allows a permanent foreign control (Fremdkontrolle), and this way establishes a high level of selfcontrol.
To establish the degree of self-control, in other words, to establish the state of civilisation and the existing balances of power, it is necessary, that the system of artificial lighting is absolutely reliable and always available.
Artificial lighting as substitution of daylight is a presupposition of our civilisation. The model of this necessity is daylight. Because it is trying to cover the same symbolik meanings as daylight in order to change the natural night/day rhythm of man into a rhythm of life, that is always constant.

DIFFERENTIATING LIGHTING

To draw a distinction between the "substitution of daylight" and the "differentiating lighting", differentiating lighting does not serve to a creation of constant life conditions, but on the contrary it serves to describe special situations or to explain social situations or to express moments of cult.

Today's ways of differentiating lighting seem to withdraw from any classification. The formal ways of expression are too divers as if it were possible to find common formal objects, as we could find them in the substitution of daylight.
Finally the lighting of shop-windows, of dancing halls, and of Christmas trees belong to this field as well as alter-candles.

If we start to put the symbolism of light on an axis of time and then to fix the appearance of particular forms, if we start to adjoin preforms and examine ostensible or real analogies, we have to see very soon the beginnings of the Christian mythology, which found its form under the great influence from the pagan prescriptions in the middle ages. This is the basis of our modern middle european symbolism of light even in the profane fields.

I think, that three main terms of symbolism of light will be sufficient to classify all the conscious and unconscious ranges of application of light.

The Light of God
The first term will be light used as a symbol of god. The life-giving beam of light, which is sent out by god (godfather) is an original symbol for the all-embracing creative power of god.
God is not shown as a person, but it is a symbol of expression of the creative act.
The second part of the symbolism of god with light is based on the pantheistic idea of the god of sun seen as a shining figure, for example the roman Sol shown as a young man with a corona build up by beams. This aureole is the symbol for the power and glory of god.
The Christian mythology uses both of them. One as a symbol of godfather (the beam), the other as a symbol of the son (the aureole).
In the fields of profane life the symbols of god are developing to symbols of power in connection with the idea of being a representative of god on earth.

The active expression of the symbolism, the beam of light, means strength and power, the representative expression the aureole is a symbol of importance and magnificence.

Light of Life
The knowledge about the lifegiving energy of light, as a basis of nearly all the things of life, is an old cultural value. The important situations in human life are accompanied by light rites, as there are; birth, christening ceremony, the initiation in church, the wedding and the death.
Light as a symbol of life is always a symbol of the particular man. This is demonstrated by the single flame.
It also expresses the particularity and uniqueness of people. It is able to underline the status of a distinct person within a society. The more candles one person receives, the more deferential is shown.

Light of Lustration
In my opinion the less reflected term of the symbolism of light is the symbolism of lustration.
The capability of fire to burn everything, the good and the bad and to turn it all into the same ashes, the capability to take away the value or the unworthiness of things, while producing light, was already abstracted in early times from fire (from burning) and was concentrated on the light itself.
In the same way the burning of material was given up and the symbolic act of lustration originated.
The purification of the fields, cities and people from the evil, the giving of power by purification is new aim of many rites of light.
Today is the coloured, moving and mystical light, as we can find it in dancing halls, on fairgrounds but also in the fireplaces, a characterisation of the symbolism of lustration.
The lighting of lustration symbolises the distance with every day events, distance with the control by society and civilisation, and it symbolizes equality.
Being part of the tradition of a people, the lighting of lustration does not serve at a hierarchic differentiation of society but at a surmount of the common idea.
THE USE OF SYMBOLIC MEANINGS OF ARTIFICIAL LIGHTINGS

The historic research, which hardly could be shown in this text, brings us a clear answer, whether there is a tradition of symbolic forms of artificial lighting, which is of interest nowadays. Many of the usings of artificial light are the product of a long development of tradition. This tradition can tell us something about the symbolic meanings of artificial lightings in various situations.
I tried to make them more understandable by putting them in a system, that differentiates the expressions of artificial light and joins to these expressions the symbolic meanings.
I think, I could do that, because I found these meanings by following historic analogies.
The knowledge of this system of symbols may help to make lighting designs, but it can't be used as a cookery book.

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Internationale Lichtrundschau, Eindhoven
Epiloque
Niels L. Prak, Architect, TU Delft, School of Architecture - Netherlands

LOOKING BACK TO THE FUTURE

We, as organizers, have allowed ourselves the luxury of the last word. The theme of the conference was the interrelation of past, present and future of man-environment studies, so it seems most appropriate to reflect on the immediate past, i.e. IAPS-10 itself. To provide more salience for some of its idiosyncracies, I have compared it to that memorable conference of 1976 in Strasbourg.

**Table 1**
CONTRIBUTORS BY COUNTRY (exclusive plenary speakers)

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|              |        | 68          | 212          |
| by gender:   |        |             |             |
| female       | 18     | 57=26.8%    |             |
| male         | 48     | 149         |             |
| unknown      | 2      | 6           |             |

I have listed only contributors, not those attending the conference, because I could not get reliable data at the time I wrote this speech, in March of this year.
We see that the number of contributors has trebled, and that countries, even continents, which were not represented at all in 1976, now have found the way to IAPS. To be hailed with special delight is the considerable number of contributors from the Far East, in particular from Japan, Australia and New Zealand. Also visible is the large contribution from the U.S.A., doubling from 12% to 24%. And this notwithstanding the existence of EDRA!

The proportion of women has remained constant at slightly over a quarter. The wave of feminist emancipation, which hit so many areas of human endeavor in the early eighties, made no impact in our circles, at least not in the number of contributors. Either Strasbourg was very emancipated (it was organized by a woman!) or we may have reached a temporary limit.

Another interesting comparison is by discipline:

**Table 2**

**CONTRIBUTORS, BY DISCIPLINE**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>IAPS-3 1976 STRASBOURG</th>
<th>IAPS-10 1988 DELFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>psychologists</td>
<td>19</td>
<td>88</td>
</tr>
<tr>
<td>architects, planners and landscape architects</td>
<td>27</td>
<td>65</td>
</tr>
<tr>
<td>engineers</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>sociologists</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>geographers</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>philosophers</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>economists</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>medical doctors</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>anthropologists</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>historians</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>sculptors</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>pedagogues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unknown</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

68 215*

*three contributors to IAPS-10 have been trained in two disciplines

You see that the architects and planners, in the majority in 1976, have in 1988 been overtaken by the psychologists. We may probably add the engineers to the architects, without creating too much of a categorial confusion; but then they are still outnumbered. (Contributions by psychologists generally list a number of fellow research workers as co-authors of a paper. Not all authors will attend IAPS-10. Contributions by architects generally list a single author. This difference is responsible for a part of the discrepancy).

I remember that at the 1979 conference in Guildford, Surrey, Peter Stringer suggested that contributions be temporarily restricted to environmental
psychologists. The proposal was not accepted then, but it seems that he will get what he wants if this trend continues. Particularly to be regretted is the drop in the (already small) number of sociologists, from 20% to 4.6%. Unnecessary to mention the massive contribution of sociologists to our field, with the Chicago school before World War II and Chombart de Lauwe after; sociological surveys are now accepted world-wide as a planning tool. We have to conclude that the sociologists have not been sufficiently attracted, at least to this IAPS conference, and that this spells out an obvious task for the new IAPS-board. The same holds of course for geographers.

A comparison by setting (or topic) between 1976 and 1988 is more difficult to make, because of the variety and difficulty of categorization. Table 3 shows a tentative distribution over a number of cells. As the top half of the table shows, interest in the design process, in public space and in parks and nature has increased, interest in the workplace has remained constant and in residential and institutional settings has gone down. (In passing, we note that the college dorm is categorized as a residential setting, and that this paper counts contributions to symposia as well as individual papers).

**Table 3**

<table>
<thead>
<tr>
<th>SETTING OR TOPIC</th>
<th>IAPS-3 1976 STRASBOURG</th>
<th>IAPS-10 1988 DELFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>general, non-specified, etc.</td>
<td>10</td>
<td>56</td>
</tr>
<tr>
<td>residential</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>design process</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>public space</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>parks, wilderness</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>workplace</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>institutional</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Contributions, by subjects**

<table>
<thead>
<tr>
<th>SUBJECTS</th>
<th>IAPS-3 1976 STRASBOURG</th>
<th>IAPS-10 1988 DELFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>general</td>
<td>18</td>
<td>122</td>
</tr>
<tr>
<td>less privileged</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>children</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>families</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>aged</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>other</td>
<td>5</td>
<td>13</td>
</tr>
</tbody>
</table>

More alarming is the subdivision by subjects. The number of studies which relate to the less privileged has remained constant, but the study of other special groups has diminished. I have called this alarming, because in particular the proportion of the aged in every Western society (and in Japan) is rising, and it is well-known that they have special problems in coping with their physical environment. There is at least as much reason to create a special network on "Senior City" as there was once for "Childhood City!" Fortunately, this is only an accidental peculiarity of this conference, not at all representative for the field at large (Altman, Lawton and Wohlwill, 1984).
Other differences between 1976 and 1988 can be positively evaluated. The discipline as a whole moved away from the endless investigation of college sophomores and their reactions to their dorms. Also from the overwhelming number of studies in the image of the city and preferences for one place over another. The semantic differential and the repertory grid have lost their dominant position to a more balanced and sophisticated array of methods (Zube and Moore, 1987, especially chapters 10 and 11).

In content, too, considerable advances have been made since 1976 (Stokols and Altman, 1987). The field has broadened, now taking serious account of culture and of history, another science of man. The world of nature, receiving but scant attention in 1976, has become an important area of research. Environmental stress has been studied in depth. We know more about vandalism, although it is as yet unclear how it can be stopped. The relation to the design professions has been clarified and the number of architects and planners that are listening is on the increase, the attendance at this conference to the contrary. This is perhaps most visible in the firm foothold that Post Occupancy Evaluation has gained in the USA, in New Zealand and also in this country. The last few years, handbooks have been published which show how far the field has advanced beyond its origins. Apart from some sociological research, man-environment studies started in earnest in the sixties; the track-record for a quarter century looks indeed impressive.

Should we conclude that all is well and the future looks rosy? Much as I would like to close the conference on such a positive note, I think it is still too early for that.

How the achievements of man-environment studies are assessed depends on the standard of comparison. Measured against the speed and scope of development of more traditional areas, such as the sociology of labour relations or perceptual psychology, performance is outstanding. Set against the background of what we want to know - and indeed have to know to provide adequate guidelines for design - we are still very much at the beginning.

We all know that the impact of man-environment studies is fairly limited. Partly this is due to misunderstandings between people in the design professions and in the research field. We have become much more aware that scientific results have to be 'translated' to become usable by architects or planners. John Zeisel for instance, has given an excellent demonstration of how to cater to the needs of architects (Zeisel 1981). A number of architects won't listen, they are too preoccupied by esthetics to be bothered, as Alan Lipman has shown here at IAPS-10 (see also: Gutman 1983). Man-environment studies is primarily an academic enterprise, and decisions are taken elsewhere. But this last excuse is only a temporary consolation; academic research in medicine, electronics or pollution is taken quite seriously. Is it not possible that we are not listened to more often because we cannot - as yet - provide the knowledge that is required?

If there is some truth in this last hypothesis, then it can certainly not only be laid at the door of the present company. The main parent disciplines in the research field have also their difficulties in delivering the goods. The 'crisis in sociology' is a standing topic among sociologists ever since Alvin Gouldner announced its coming eleven years ago. According to the sociologist Martin Shipman: "The social sciences are in their infancy as academic
disciplines. Hence the models used change rapidly. In sociology, for example, the period to 1920 in the UK and USA was dominated by evolutionary theories and comparative studies of whole societies. From 1920 to the mid-1930s life histories and observational studies dominated in the USA based at the University of Chicago, while surveys exercised the few UK sociologists. From the mid-1930s to the 1960s, survey and statistical methods took over, only to be supplanted by interpretive methods once more in the 1970s. These changes were not produced by new techniques becoming available, but by new or revived views on the nature of human behaviour and organisation. Indeed, the fashion for qualitative, observational research came just as computers came into general use" (Shipman 1988, 22).

The psychologist Donald Broadbent made only modest claims for psychology when he wrote "We end then upon a note of doubt, with no certainty about the beliefs which future psychologists will hold. This is as it should be. Nobody can grasp the nature of things from an armchair and until fresh experiments have been performed, we do not know what their results will be. The confident dogmatisms about human nature which fall so readily from pulpits, newspapers' editorials and school prize givings are not for us. Rather we must be prepared to live with an incomplete knowledge of behaviour, but with confidence in the power of objective methods to give us that knowledge some day...... At a rough guess, two hundred more years may bring the study of behaviour up to the level which physics reached in Newton's time" (Broadbent 1964, 200-204. See also Koch 1978). Not only are the social sciences incomplete, they are also sharply divided by their views on the environment, on behaviour, and, most of all, on the human actor. Sociologists and psychologists can smile together at the 'homo economicus', the economists' model-of-man, who quickly compares costs and benefits on his pocket calculator each time he pulls out his wallet. But on issues as urbanization or stress we find adherents of the two disciplines on different sides of the fence (Fischer 1978).

The sociologist Norbert Elias has explained why psychiatrists and sociologists, who both study behaviour, so seldom look around in each other's workshop or borrow each other's tools. Disciplines which share the same object of study, but not each other's theoretical tenets, are competitors (often quite literally for grants). Each discipline has the tendency to assume control and to consider its own paradigm as the ultimate wisdom. Another discipline with a different explanation is a threat to its supremacy (Elias 1969). This argument could probably also be applied to psychology and sociology.

Paradigmatic oppositions exist not only between disciplines, but also within disciplines. White examined seven leading textbooks in cognitive psychology and was struck by the disagreement between them. Together they contained no less than 3,246 references, but only 19 (0.6%) were quoted by every author. And no more than 146 (4.5%) were cited in as many as three texts (White, 1985).

If another perspective is acknowledged, it often receives no more than a passing nod; no discussion, nor an effort to assess its special merits. In this context, I am proud to relate that Gerda Smets, a psychologist teaching at our Delft School of Industrial Design, has set up an experiment which pits Gibsonian ecological perception against the mainstream view (Smets, Stappers and Kröse, 1988).
I am not arguing for more agreement or for an 'Encyclopedia of Unified Social Science'. But it might be profitable to allow students to examine a perspective different of one's own. We might at least try to listen to each other's arguments.

Man seems to be a difficult animal to analyze, much more so than a stickleback or a Norwegian rat. With less responses wired-in, he adaptss to his environment. That may be a possible reason why Barker's behaviour settings produced such unspectacular results. Or why the published Post-Occupancy Evaluations so seldom show outright conflicts. Steve Kaplan wrote in 1983: "In recent years considerable attention has been focused on the fit or congruence of individual and environment. One might think that this extensive effort would provide insight into the sort of environments that are most suitable for people. In principle, environmental designers, planners and managers should be able to enhance their effectiveness given this rich body of theory and data. To a great extent, however, this bright prospect has not been realized" (Kaplan 1983, 311). He suggests that we view man and environment in terms of compatibility, rather than congruence or fit.

Freedman (1975) has shown that lack of space has often no effects on behaviour. Other variables in the environment may make as little impression upon us. It may be that our measuring instruments are as yet too crude to register the 'just noticeable difference', but it may also be that there is no noticeable difference. The sociologist Louis Wirth had something similar in mind when he wrote in 1945: "Physical factors, while by no means negligible in their influence upon social life and psychological phenomena, are at best conditioning factors, offering possibilities and setting the limits for social and psychological development. In other words, they set the stage for man, the actor".

Such reflections, if they hold any water, show one of the more promising directions for future research. Not the everyday environments, such as homes, parks, shops, streets and offices, but the more extreme settings: prisons, submarines, and nowadays space capsules. If we adapt only too easily to our normal environment, so that reactions remain tepid or invisible, we might step up the value of the other variable, the environment. In particular when the environment becomes aggressive, as in earthquakes or fires, is there something to be learned. The brilliant work of David Canter and Jonathan Sime on fires has shown as much (Canter 1980).

In all Western countries and in Japan, wages are slowly rising in the long term, which means that building costs will increase in comparison to the costs of other products. This implies that mistakes or even inconveniences in the man-made environment become more expensive every decade. If we can come up with results which can prevent such mistakes or mitigate their effects, we will surely find plenty of clients!

586
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IAPS is an international association of social scientists, architects and planners engaged in research on relations between people and their physical surroundings. Bi-annual international conferences have been held in Europe since 1969; IAPS was formally constituted in 1981. Topics in these conferences have been: housing (privacy, safety, special groups, gentrification); workspaces (organizational and technological changes, comfort, ergonomics, stress, social control, health facilities); public spaces (territorial behaviour, crowding, vandalism, traffic); recreational spaces (time-budgets, ecological aspects); perception (information processing, preferences, aesthetics, perceptual impact and defense, orientation) and methodology of research and education (comparative floorplan analysis, post occupancy evaluation, phenomenological approaches). In July 1988 the 10th conference has been organized in Delft (Netherlands). The centrale theme is "Looking back to the future".

The past forty years have seen tremendous changes in society and the environment. IAPS-10 seems an ideal opportunity to take stock: How do present analyses of man-environment relations compare with those of the early fifties, the critical sixties and seventies? Why did so many hopes remain unfulfilled? Can we learn from costly mistakes and set out a future course for man-environment studies?

This Volume II includes the symposia and a selection of the full length papers.

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L'IAPS est une association internationale de spécialistes en science, architectes et concepteurs en architecture et urbanisme, engagés dans des recherches sur les relations de l'homme avec son environnement. Depuis 1969, des conférences bi-annuelles ont eu lieu en Europe; en 1981, IAPS a été officiellement constituée. Les thèmes soulevés dans ces conférences ont été: Habitation (sécurité, groupes spécifiques, loyauté, travail); changements sociaux, planification, organisation, comportement, change (stress, contrôle, santé); environnement (urbain, rural, public); perception (information, préférences, esthétique, impact perceptuel, orientation); méthodologie de recherches et d'éducation (comparatistique, analyse de plans, percée d'utilisation, approche phénoménologique).

En juillet 1988 la 10ème conférence a été organisée à Delft (Pays-Bas). La thème central "Se retournent vers l'avenir".

Ces dernières quarante années ont vu d'énormes changements dans la société et dans l'environnement. L'IAPS-10 semble être l'occasion idéale pour dresser l'inventaire, évaluer les analyses actuelles concernant les relations de l'homme et son environnement, contrastent avec celles du début des années cinquante, des années soixante-dix et des années soixante-dix. Pourquoi tant de désillusions? Les perspectives d'avenir sont-elles toujours aussi optimistes? Si oui, comment les réaliser? Si non, en quoi consiste cette célébration? Peut-on certainement retrouver la voie à suivre en ce qui concerne les recherches sur l'homme et son environnement?

Ce Tome II contient les symposiums et une sélection des communications intégrales.