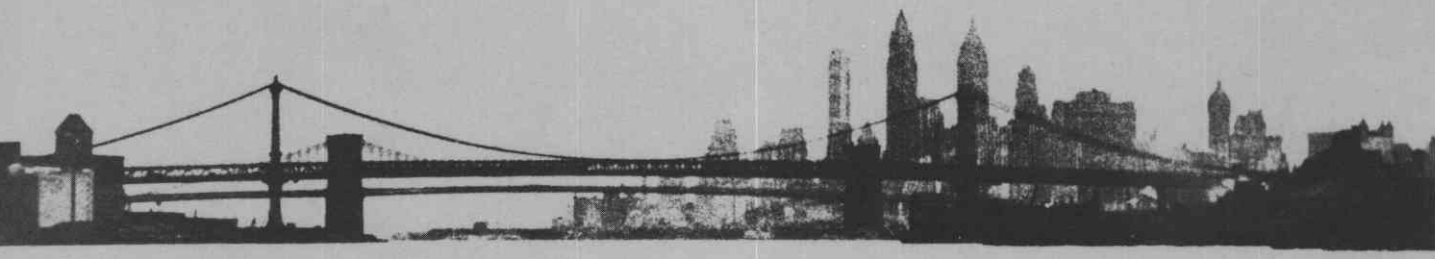

CHILDREN, NATURE, AND THE URBAN ENVIRONMENT:

Proceedings of a Symposium-Fair

USDA FOREST SERVICE GENERAL TECHNICAL REPORT NE-30
1977

FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
NORTHEASTERN FOREST EXPERIMENT STATION
6816 MARKET STREET, UPPER DARBY, PA. 19082

We all share
dreams and hopes
for children
and for children yet to be
and, caring, shall assemble
to recall the child within.

To gather for a symposium
on tender human growth,
in this alarming age
of nature's destruction
and nuclear peril,
is an act of faith.

Joined in common fate
let us together
affirm and nurture
life on earth.

—Karl Linn

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CHILDREN, NATURE, AND THE URBAN ENVIRONMENT:

Proceedings of a Symposium-Fair

Proceedings of the Symposium-Fair held 19-23 May 1975 at the C. H. Marvin Center of the George Washington University, Washington, D.C.

Planned and presented by:

Forest Service, USDA
Cook College, Rutgers,
the State University of New Jersey
School of Education,
George Washington University

In conjunction with:

The Pinchot Institute of
Environmental Forestry Research,
Consortium for Environmental
Forestry Studies

FOREWORD

Urban children of today have become increasingly divorced from the natural environment of forests and fields that was part of the surroundings in which children developed just a generation ago. Rather than understanding their place in the natural world through close association with nature, today's urban children often learn about nature secondhand. The effects that this separation may have on today's urban children, in terms of their psychological development, self-concept, and preparation for responsible citizenship, are not known.

It was with the specific purpose of gaining a better understanding of the role of nature in the urban child's development that a Symposium-Fair titled, "Children, Nature, and the Urban Environment" was held at the Claud Heck Marvin Center of the George Washington University in Washington, D. C., from May 19 to 23, 1975. Here, we cannot possibly reproduce the Symposium-Fair itself, and we have made no attempt to do so. No volume of proceedings can do more than coldly celebrate an occasion of intense interpersonal exchange.

A total of 113 presentations were made during the five days of the Symposium-Fair. This volume offers only a selection of papers presented at the meeting. Many excellent papers had to be omitted for lack of space. Presentations of visual materials could not be duplicated here. Interested readers are referred to the Symposium-Fair Program (Appendix A) for a complete list of presentations. Program participants can be contacted directly for additional information (Appendix B). Every presentation is also available tape recorded from the Broadcasting Foundation of America, 52 Vanderbilt Avenue, New York, N. Y. 10017. The papers presented here are arranged in an order that seems logical to us, but is quite unrelated to the presentations at the event.

A decent respect for the opinions of mankind does seem to require a bit of explanation of the genesis of the event.

Elwood Shafer, then coordinator of the USDA Forest Service's Pinchot Institute of Environmental Forestry Research, first called attention to this important area. He provided us with the opportunity to meet with other likeminded individuals from the groves of academe. In the summer of 1973, Calvin Stillman, of Rutgers University, wrote A. Laverne Dickerson of the U.S. Forest Service in Washington, D.C., to suggest that it was time to bring together a small group to compare notes on what is known, and what needs to be known, of what really happens when children are exposed to nature. Dr. Dickerson responded with the news that the Forest Service had authorized a meeting on the subject at Syracuse, N. Y. The 2-day meeting was held in November, 1973. A program committee was appointed to prepare a full-scale public meeting.

Our topic was emotionally appealing for two reasons: it involved children, and it involved nature. It also dealt with "The City", a topic that nags consciences. To wrap the city into an appealing package along with children and nature projected an aura of responsibility and of fun, too.

Early in the planning process, the program committee agreed not to hold a conference that was within the bailiwick of any single discipline. We were frankly exploring an area of interest, one that we deemed important, yet one without sideboards established by the conventional wisdom of an established profession. We hoped this would insure that the conference would not be taken over by persons with axes to grind. On the other hand, it provided no clear plan or procedure.

As the event approached, vast amounts of time, personal energy, and money were expended in planning and preparations. Requirements of deadlines, written plans, agendas, and commitments for arrangements have a way of bringing to the fore differences of opinion which up until that time had been hidden in polite reticence, or complacent incomprehension of others' points of view. Committee discussions were frequently heated. But the final form of the Symposium, its agenda, and the ancillary activities are elements for which the entire program committee must be held responsible.

In our intention to explore the esthetic dimensions of "nature", we received instant and steady support from Mayer Spivack of the Harvard Medical School. His strategic contribution to the planning of the event was fundamental. On Spivack's recommendation, Karl Linn was added to the planning committee. Linn took charge of staging the conference, and was responsible for its ultimate designation as a "Symposium-Fair". Except for the introductory poem on the first page of this Proceedings, Linn's efforts toward making the event a personal experience for every participant cannot be reproduced here.

The strategy of using George Washington University buildings was contributed by Donald Hawkins, and became fundamental to the structure of the Symposium-Fair.

Intellectual formulation was shared by all members of the program committee. Differences in opinion appeared when we moved from the level of talk to the level of implementation. We wanted to hear from people doing research as well as from people doing things. We wanted to learn of the dreams of designers. And above all, we wanted interested people—adults and children—to meet together in a pleasant environment, to exchange ideas, share accomplishments, and ask questions.

Many people came to our aid. Ruth Allen, of the Institute of Ecology, contributed names and ideas from the harder shores of social science research. Mary Kohler, Director of the National Commission on Resources for Youth, arranged to bring to Washington young persons from a variety of exciting programs. A. LaVerne Dickerson drew upon her Forest Service colleagues, and upon her intimate contact with urban Washington, to bring us both vigorous workers in the social sciences and the warm breath of reality.

The star of the program committee emerged after nine months of vague talk, tentative plans, and heated debates over priorities. He was Roger Hart of the Department of Geography at Clark University. His personal competence in every substantive field in which we were interested was overshadowed only by his vast acquaintance and his limitless powers of persuasion.

With all these ideas bound into the Symposium-Fair, the program came off without a hitch. Nearly 500 people from nine nations attended. After the affair, the program committee was reconvened by George Moeller, who had replaced Elwood Shafer as coordinator of the Forest Service's Pinchot Institute of Environmental Forestry Research. The committee worked for over a year to develop this proceedings. Selected papers are organized into the following sections:

Section I deals with the role of the natural environment in human development.

Section II deals in a fairly hard-nosed manner with theory and research on urban children and the natural environment.

Section III is devoted to doing things with children in natural en-

vironments; its title is "Community and Institutional Response".

It is the earnest hope of those who planned and participated in the Symposium-Fair that its completion will be a beginning rather than an end, and that it will be a forerunner of many such meetings.

Financial support for the Symposium-Fair was provided by the Northeastern Forest Experiment Station, Forest Service, U. S. Department of Agriculture, through its Pinchot Institute of Environmental Forestry Research.

Although the program was planned and executed through the collective efforts of many, Calvin Stillman, of the Department of Environmental Resources, Cook College of Rutgers, the State University of New Jersey, deserves special credit for his efforts as program chairman. The facilities and local coordination provided by the Department of Human Kinetics and Leisure Studies, School of Education, the George Washington University also merit a special credit.

Many, many others contributed to the success of the Symposium-Fair; from the supplementary program funds provided by Special Aid Funds, Incorporated, and by the National Commission on Resources for Youth, to the beautiful plant arrangements provided by the U. S. Botanic Gardens. Finally, appreciation is extended to Walter Blair for organizing the creation of the photographs that appear in this Volume.

—The Symposium-Fair Program Committee

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The Natural Environment and Human Development

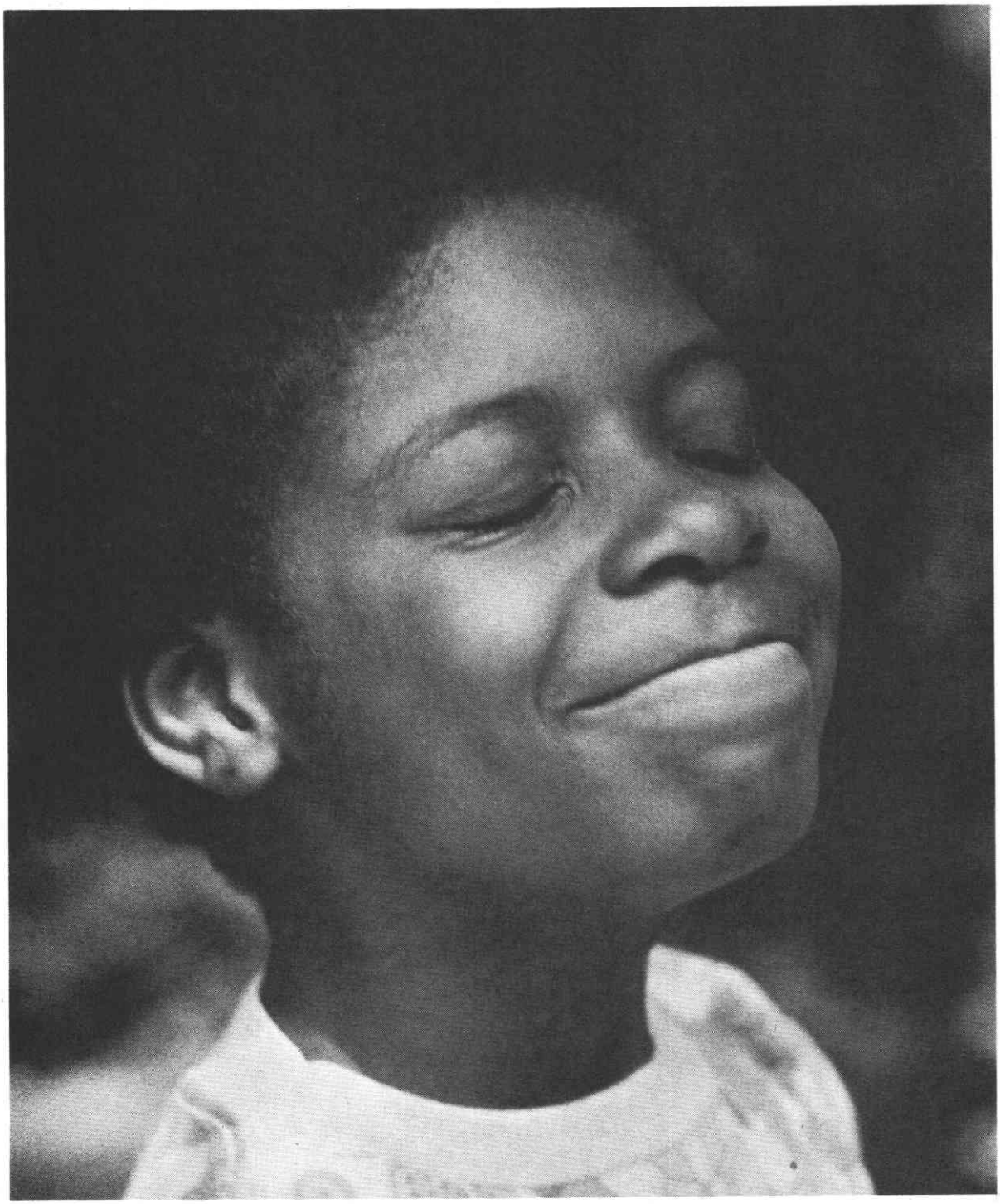

PHOTO BY WALT BLAIR

"Experience depends on sensory equipment. A child is finely equipped: his senses are sharp, undulled by age"
Yi-Fu Tuan

Experience and Appreciation

by YI-FU TUAN, *Professor of Geography, University of Minnesota.*

ABSTRACT. A young child has keen senses, but his world is not thereby more filled with sensory values than that of an adult. To enjoy the physical environment fully the mere capacity to experience stimuli is not enough; it must be complemented by appreciation, which is an intellectual activity. A young child's experiences of nature are often more intense than those of an adult. Among the reasons for this are synesthesia and the child's ability to isolate experience from its distracting social, theoretical, and practical contexts. However, the isolation also causes impoverishment. Remembrance, which broadens the context, is an important component of appreciation. In remembered pleasure the adult is far richer than the child.

IN "TINTERN ABBEY", Wordsworth wistfully expressed his lost childhood in these famous lines::

> For nature then
> (The coarser pleasures of my boyish days,
> And their glad animal movements all gone by)
> To me was all in all.—I cannot paint
> What then I was. The sounding cataract
> Haunted me like a passion: the tall rock,
> The mountain, and the deep and gloomy wood,
> Their colours and their forms, were then to me
> An appetite; a feeling and a love,
> That had no need of a remoter charm,
> By thought supplied, nor any interest
> Unborrowed from the eye.

The idea is that to the child nature is a feeling and an appetite. Once we reach the age of discernment thought places a veil, as it were, between nature and ourselves. Direct experience is edged aside by quiet appreciation. There is obvious truth in this belief. I should like to explore it further.

What is experience? We don't normally say of plants that they have experience. We do sometimes say of animals—particularly the higher animals—that they have experience. It is a term, however, used primarily of human beings. This suggests that experience is more than the passive registering of environmental stimuli. It is also an activity; an exploration of the environment; an attempt to order impressions. Seeing, we know, is a discriminating and creative act. But, to perhaps a lesser degree, this is also true of the more passive senses of touch and smell. We accept the term "visual thinking" *(Arnheim 1969).* Touch and smell are also permeated by thought, in the sense that these are discriminating activities capable of articulating tactile and olfactory worlds. We say of a cloth-feeler that he has an educated touch, and of a perfumer that he has an educated nose. The intelligence of touch may precede visual intelligence and the forming of concepts with the help of words. An infant may be aware of a difference between animate and inanimate objects through his sense of touch, but he will not know the difference by looking, or conceptually, till much later.

Experience depends on sensory equipment. A child is finely equipped: his senses are sharp, undulled by age. But the ability to make use of his senses is limited. Consider smell and the olfactory world: A child lives close to the sources of smell. When he walks along fruit stands or in a hay field he is flooded by odoriferous molecules that do not so readily reach the skyscraping adult. Does this mean that the child is aware of—and can appreciate—a greater range of odors than the adult? Isn't the ability to

smell also a matter of education? We do know that children have odor preferences that differ significantly from those of their elders. According to Moncrieff *(1966)*, children "are much less favourably impressed by flower scents, much more by fruity flavors." They show "a remarkable tolerance for substances with a fecal note in their odour; they do not like these substances but they are more or less indifferent to them, whereas the adults actively dislike them."

Why do adults like flower fragrances? Flower fragrance doesn't play any obvious role in biological survival. The child's preference for fruit odor is easier to understand. The ability to appreciate flower fragrances and make fine discriminations among them exhibits the strong human desire to extend the known world, whether the additional knowledge is useful or not. Children have a rather high tolerance for odors of decay; animals are even more tolerant. Even with their highly sensitive noses, animals seem undisturbed by the stench of putrefaction: trappers often smear traps for carnivores with a concoction of rotten fish in water left long in the sun. Herbivores show no particular reaction to foul but nonsignificant smell. Susanne Langer *(1972)* suggests that animals may tolerate charnel odors because for them such odors apparently do not have the *memento mori* associations that they often do for adult human beings. Classifying certain odors as bad is thus in part an intellectual judgment, beyond the ability of the young child despite his sensitive nose.

Superficially, experience and appreciation have quite different meanings. Examined more closely, they show large areas of overlap. Appreciation depends on experience, but experience itself is seldom naive; even the so-called passive senses of touch, taste, and smell have in them elements of appreciation. How does the child's world differ from that of the adult from the standpoint of experience and appreciation?

A sophisticated adult distinguishes a wide range of fragrances in his foods, wines, and cigars. These subtleties pass over the child because he has not yet learned to discriminate; he has yet to learn the enlarged world of finely graded sensations. On the other hand, this very lack of discrimination contributes to an inchoate richness in the child's world. The child benefits more from synesthesia than the adult. An adult frequently confuses taste with smell, but he easily distinguishes among the senses of hearing, seeing, and touch. This power to discriminate entails both a loss and a gain. The gain is subtlety. The loss is a certain inchoate richness. An adult speaks solemnly and a child punctures the solemnity with the remark, "What a crumbly, yellow voice you have." What the grown-up takes to be the child's nonsensical prattle may in fact be the child's report of his experience. Actually, I have a confession to make. The example just given of synesthesia does not come from a child but from the famous mnemonist, Shereshevskii, whom A.R. Luria *(1968)* described. Shereshevskii, however, is like a child is that he has retained the child's vividness of images and the child's tendency to confound one sensation with another.

It is difficult for an adult to envision the child's world. To Ernest Schachtel *(1959)* the difficulty lies in the fact that grown-ups structure their impressions far more elaborately than, and in different ways from, children. We have forgotten how our sensory responses to the world are biased by a culture's concepts that we have acquired in the process of maturation. In an advanced society, for example, the distinction between "natural" and "artificial" is often made. Is the distinction universally recognized? We are not sure. Children, at least, show little awareness of it. Piaget *(1969)* believes that to the small child Lake Geneva is as much an artifact as the city of Geneva. A small child can perhaps use the words "scenery" and "landscape," but they cannot mean the same thing to the child as to the adult. "Scenery" and "landscape" are rich and value-laden concepts which the child has yet to acquire. On an emotional level, for example, adults are easily able to see moods in a scene. A scene is gloomy, sad, or happy. The child is often puzzled by this kind of response. How can a scene without people be either happy or sad? Everyone knows how highly imaginative the child can be when he plays: a stick is a horse and an overturned chair is a fortress. Yet he can be very matter-of-fact, like a scientist, when he is asked to evaluate the aesthetics of nature *(Honkavaara 1961)*.

In childhood anything can happen. The world is full of miracles because there is no physical relationship between what a child does and what he receives in the way of toys, food, and

care. Wash one's hands and food automatically follows; say please and toys pop out of an inaccessible drawer. Because the child's world is so full of miracles, the word "miracle" can have no precise sense for him. Just as nature is not distinguished from artifice, so the natural is not distinguished from the supernatural *(Chartier 1974)*.

To the small child events and objects seem vivid and dramatic because their utilitarian, social, or scientific contexts are not perceived. Adults respond to objects in the context of use; they are simply "at hand." When an everyday use object is removed from its normal setting and put on a pedestal as in a museum it becomes vivid and almost qualifies for art. The child sees many things—commonplace to adults—as though they are framed or on a pedestal. Garbage collecting is not glamorous when perceived in its social context; but the child doesn't recognize the social context, only the excitement of the activity itself. This conceptual limitation is his innocence and it pays in many delights. Robert Coles *(1972)* reports a garbage collector as saying:

> You know, when kids are 6 or 7, they'll tell you they want to be garbage collectors. They're all excited because of the big truck and the big pails we have. They come and watch you and ask you questions and tell you that it won't be long before they're on with you, working up there on that truck. They think it's great, standing there on top of that garbage, pushing it and shoveling it. I've heard the same thing from white kids and colored kids, so long as they're only 5 or 6 or 7. But then the white kids get smart.

The child's time frame is narrow. When an adult contemplates a sweeping view he perceives time as well as space. The converging line of trees and the distant horizon suggest the future—or, on the contrary, remote objects, such as a church spire or a ruin, may suggest the distant past. This temporal dimension of landscape is not a part of the child's experience. The city, Lewis Mumford once said, is time made visible. A child, however, cannot perceive time in the city: ancient buildings are essentially dark, rather dirty, and perhaps haunted. Only when the child reaches the age of 8 to 10 does the idea of antiquity in buildings appear, and along with this awareness a sentiment for old things, the notion that old things should be preserved for what they tell of the past *(Jahoda 1961)*.

What are the happy experiences of childhood that adults look back upon with such yearning? The happy experiences of a child are, of course, enormously varied. Let me give three examples, which differ from each other in kind and in intensity, and then comment on them. The first is the most intense, and it is recalled by the distinguished physician Percival Bailey *(1967)*.

> I remember going fishing. I cannot have been more than 4 years old at the time. The whole setting is still a vivid picture in my mind—the creek which ran across my grandfather's farm, the big willow tree, my mother and my grandfather, who had prepared the hook and line and given the pole to me to hold. When the cork bobbed, I pulled as I had been told, and out came a little sliver of silver which danced in the sunshine at the end of the line. I ran around like one possessed, shrieking in a delirium of joy, and, for a long time, would allow no one to touch my treasure.
>
> I have no recollection of the rest of the day, but never since have I ever experienced such an undiluted ecstasy. Soon afterward we moved away, and I have never developed a liking for fishing. My favorite treatise on the art is not *The Compleat Angler* but a more modern one entitled *To Hell with Fishing!* Can it be possible that there is a subconscious wish to protect this ancient memory? At any rate, on that day I was completely happy, for I was too young to realize the tragic destiny of mankind, and no one to whom that realization has come can ever be completely happy again.

The second example is the recall of the Greek writer Nikos Kazantzakis *(1966)*. He was 4 years old and played with a girl a year younger. Kazantzakis reported:

> She rose then, took me by the hand, and brought me inside. Her mother was away the entire morning; she hired out as a charwoman. Without losing a moment, we took off our socks, lay down on our backs, and glued our bare soles together. We did not breathe a word. Closing my eyes, I felt Emine's warmth pass from her soles to mine, then ascend little by little to my knees, belly, breast, and fill me entirely. The delight I experienced was so profound that I thought I would faint... Even now, 70 years later, I close my eyes and feel Emine's warmth rise from my soles and branch out through my entire body, my entire soul.

The third example is not autobiographical. It is A.A. Milne's *(1925)* idea of the happy child:

> John had
> Great big
> Waterproof
> Boots on;
> John had a
> Great big
> Waterproof
> Hat;
> John had a
> Great big
> Waterproof
> Mackintosh—
> and that
> (said John)
> is
> that.

As we look at these examples it seems to me clear that such experiences of joy and happiness are far from being unique to the small child. The occasions that cause them may indeed change. A small child eating cake will not comprehend that as an adult he will find sex a greater pleasure. Habit dulls one's appetite and greater stimulus must be sought for the same kind of sensory reward. A small boy goes into ecstasy over a little sliver of a fish; the adult angler requires a bigger catch. A great big waterproof hat soon loses its magic, but adults seem to get no less satisfaction out of new toys and possessions than a child. The child does enjoy great advantages over the adult: he comes to his experience fresh. This does not only mean that every experience for him is likely to be new; it also means that the child comes to his experience out of context—out of the context of work, for instance. To the adult, pleasure requires work—that is preparation. A fishing trip is something that has to be planned, perhaps weeks ahead. The fisherman has to make sure that there is enough gas in the car and that the beer bottles in the trunk will not break as the car runs over the washboard road. The child has no such worries. He comes to the river miraculously. Grandfather prepares the hook for young Percival Bailey and the fishing rod is miraculously in his hands: there remains for him only the pure experience of fishing.

Another advantage that the child enjoys over the adult is his lack of social awareness. He is not aware that places have social meaning and can serve as status symbols. The local water hole and stream offer all kinds of opportunities for fun and the fun is not tainted by an awareness of social prestige or its lack *(Smith 1973)*. By contrast, the adult's motivation for visiting one place rather than another is seldom pure. Places are not only to be seen, but they are also to be seen in. It is curious how the child does not take to the camera. He doesn't care to stand still and pose for it, nor does he care to use a camera. The camera is very much a toy for adults, and perhaps one may go so far as to say that it is essentially a toy of middle-class and middle-aged adults. As Susan Sontag *(1973)* has reminded us, an early use of the camera was to make portraits of rather stuffy-looking people and, of course, to take wedding pictures. The cameraman is almost as necessary as the minister at a wedding. The wedding picture is a social document; it legitimizes an occasion. Can anyone imagine visiting the Grand Canyon without a camera? To the adult, it is as though an environmental experience is not real unless it is documented. The documents—the pictures taken—can then be presented to friends for their admiration. A child does not live exclusively in the visual world of the camera. He rarely pauses to admire a panoramic view. He prefers the accessible and the immediate, which he explores in action and through the sense of touch. The older child, like an adult, seeks for a social confirmation of his experience. But since his world is not so much visual and aesthetic as packed with action, the child *tells* his experience and boasts of his adventures. He has little use for static pictures.

What advantages does the adult enjoy over the child? A key word is appreciation. Experience, we have seen, is informed by thought. Appreciation is even more an intellectual activity. Growing older often means substituting appreciation for direct sensory pleasure. Wordsworth seems to have viewed the change with regret. Many adults mourn for their lost childhood. A hungry child wolfs down a hamburger; it is a passion, whereas the adult has to make do with whiffing the perfume of a rare wine. A child may be fascinated by small objects—a daisy, for instance. The adult? When Wordsworth was 64 years old and felt a dimming of his poetic vision, he wrote the following lines in a child's album in praise of service:

> Small service is true service while it lasts:
> Of humblest Friends, bright Creature! scorn not one:
> The Daisy, by the shadow that it casts,
> Protects the lingering dew-drop from the sun.

The child, who knows the daisy and the sun, will not appreciate the poem. To appreciate the poem and the experience it so deftly captures, one needs to have sensed the charm of the daisy and the warmth of the sun, but one needs far more: the poem's force rests on the further knowledge of the utmost contrast between the omnipotent and eternal sun on the one hand, and the ephemeral flower on the other. We do indeed recognize the wonder of the daisy as a child, but to know the flower in all its richness and poignancy we may have to wait until we are 64 years old.

Remembrance is an important component of appreciation. We tend to think of remembrance as warmed-over experience, forgetting that it

can itself be an exquisite pleasure. In remembered pleasure the adult is far richer than the child. Let a wise *hross* of the planet Mars or Malacandra explain the role of memory in happiness. In C. S. Lewis's *(1965)* novel, the human hero Ransom wants to know why a *hross,* native of Malacandra, finds no compulsion to repeat a delightful experience. On earth man wants to have his pleasure again and again like a greedy child; he is not content with mere remembrance. The *hross* says:

> A pleasure is full grown only when it is remembered. You are speaking, *Hman,* as if the pleasure were one thing and the memory another. It is all one thing... What you can remember is the last part of the pleasure, as the *crah* is the last part of a poem. When you and I met, the meeting was over very shortly, it was nothing. Now it is growing into something as we remember it. But still we know very little about it. What it will be when I remember it as I lie down to die, what it makes in me all my days till then—that is the real meeting. The other is only the beginning of it. You say you have poets in your world. Do they not teach you this?

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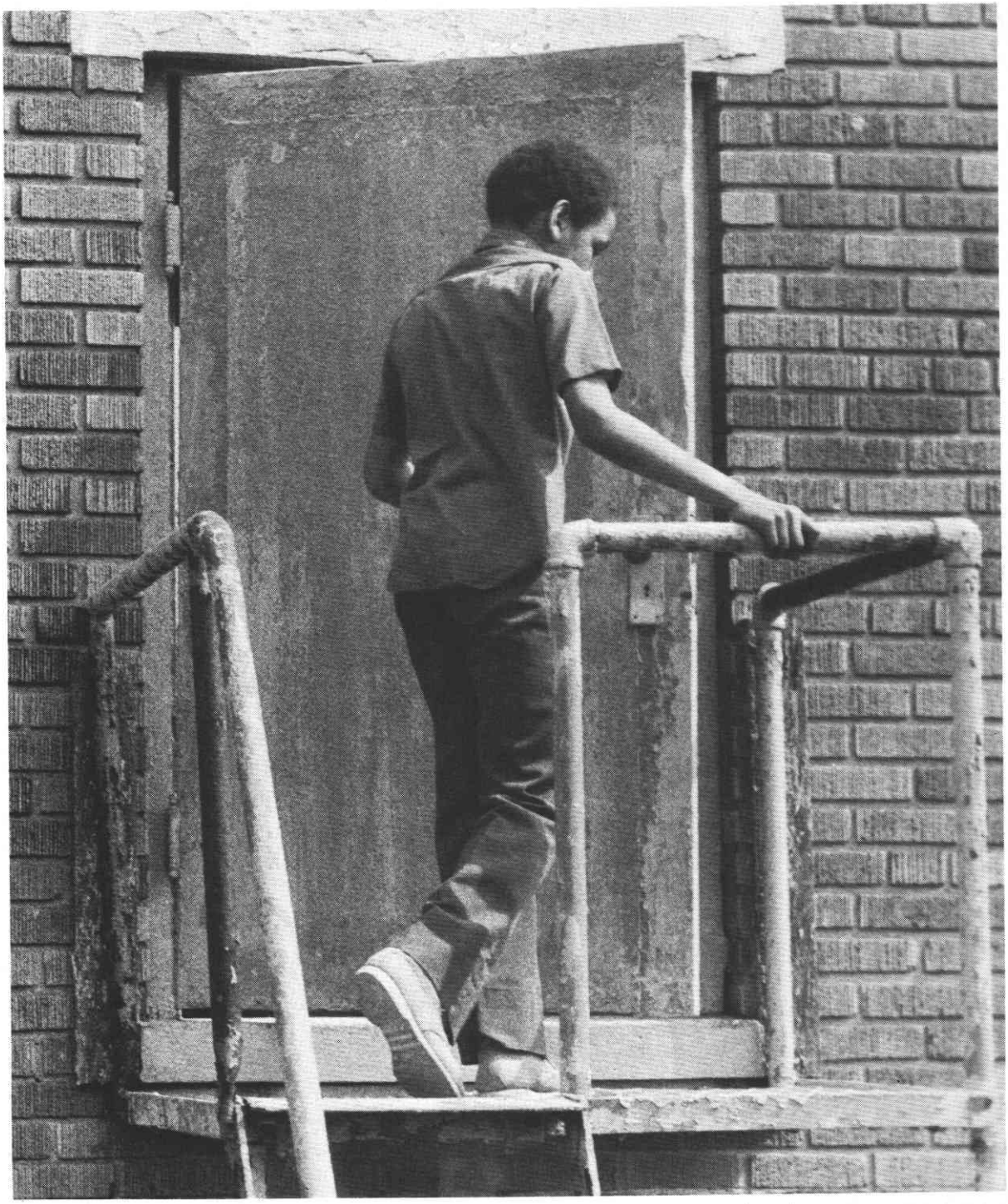

PHOTO BY WALT BLAIR

"It is a general and probably valid intuition that the destruction of the natural world somehow impairs our humanity" -Paul Shepard

Place and Human Development

by PAUL SHEPARD, *Avery Professor of Human Ecology, Pitzer College and The Claremont Graduate School.*

ABSTRACT. An attempt to identify stages or episodes in the first 20 years of life. Stages are briefly explained and discussed, arranged in age class sequence, and, where possible, are associated with environments related to urban life.

THE ARGUMENT

THE HUMAN REQUISITE of the natural environment has nothing to do with recreation in the sense of release from work, exercise, challenge as a conquest, esthetics, or scenery. It has little to do with "the outdoors" as a hobby or inspirational spectacle. It does have to do with ontogenesis, and is the respondent in events perhaps as essential to human health as good mothering. The exact nature of these feedback connections is still unclear, but some of the lineaments are visible. These are distinct in kind and timing and plug into the life cycle in specific ways. They are the outcome of phylogeny in the terminal phases of species evolution in the middle and upper Pleistocene.

What follows is an attempt to identify several of these episodes from the first 20 years of life. They are briefly explained and discussed, are arranged in age-class sequence, and, where possible, are associated with certain environments. In general they are examined in terms of urban life.

ONTOGENESIS AND NATURE

1. The importance of the natural environment is not an all-embracing surround, but varies in its meaning at different times in the life cycle. For example, the "natural environment" for crawling infants is experienced as the pathogen/antibiotic enterprise. The infant is programmed at this age to taste repeatedly the surroundings within reach, particularly the soil. Over sufficient time sufficient handfuls of dirt and objects are stuffed into the mouth to build an antibiotic repertoire appropriate to the precise pathogen taxonomy of that area. Place for the crawler is that special collection of indigenous germs that he needs while on mother's milk, as he begins to measure the environment for its demands on his antibody-producing system *(Neel 1970).*

The taste of the environment is a normal and ongoing experience for people who harvest their own food. The ionic circulation relates them to the earth in chains of connections which may be called the atomic foundations of all ecological relationships. The epiphanies of these relationships are minimal in our culture—but that may be a mark of deficiency which has detrimental psychological and philosophical consequences. What Mircea Eliade *(1959)* has called "the homogenization of space" is not only visual and mythological, but chemical in a society heavily committed to specialized regional agribusiness, massive transport, and eclectic consumption patterns.

2. A second ontogenetic enterprise in which the genome functions in an "average expected environment" is cognitive and taxonomic. A diversity of natural species is essential, as they become both an object and code of thought. The elementary operations of cognition are demonstrably related to the activities of taxonomic strategy: discrimination, comparison, sorting, grouping, categorization and hypercategorization in a linguistic nomenclature *(Lenneberg 1967).* Nor is there much doubt that

these are widespread and noneconomic. The language-acquisition schedule of young children is consistent with the theory that it is genetically programmed in such a way that the naive (not yet having metaphorical significance) taxonomies of species, anatomies, and kin are fully achieved by the halcyon acme of juvenile fulfillment—the idyllic and practical age of ten. That the strategy of mental operation coincides both with a linguistic and categorical enterprise in a world rich in fascinating different species is probably no coincidence *(Levi-Strauss 1966)*. (To deliberately disregard this functional role of species systems in the higher activities of the central nervous system requires an elaborate conscious and unconscious philosophy of Faustian man formulating a life of instant reality—the mythology of Fossilfuelman).

3. A third ontogenetic enterprise centers on a certain type of fantasy play which James Fernandez *(1974)* has called "animal predication." This is the mimicry of animals by children and juveniles—group histrionics placing extemporaneous drama in a game framework. These transient and successive imitations involve the subjective internalizing of commonly recognized traits, through turn-taking at performances and interactions by which certain qualities are assimilated into the inchoate self and others ejected. Running across as much as 5 years of such play, this resolution of self and Other, a direct and prosaic acknowledgement of qualities of which the self is a synthesis, paves the way for later abstraction and analytical operations by which we understand caricaturization and personality.

At first glance, animal predication seems to be largely independent of place, an impression that seems to be verified by the play of boys at being simultaneously man and horse or in games of "fox and goose" or "run, sheepie, run" on bare playgrounds. But the questions that an ecologist might raise about the context of this play do involve the environment. To what extent does the animal reference evoke appropriate habitat or the actual behaviors of the prototype? Granting the ethological destitution of domesticated forms, does it make any difference whether they are wild or barnyard forms? What range of choices does a modern urban child need from which to predicate an individual planetary human consciousness as opposed to children in folk societies? What happens to this internalizing process when machines are substituted for animals? Is this behavior itself a part of the broad dysfunctional syndrome that arose with the altered horizons of sedentary agriculture and is undertaken in cynegetic (hunting/gathering) societies in wholly different ways?

4. A fourth biological enterprise, contacting the ontogeny at several points, might be called the terrestrial anlage. Evidence for it is highly diverse. Children of hunters in the Aleutians learn anatomy at the same time they learn place names—and there is a lexicological connection *(Laughlin 1968)*. Psychologists separate children into "field dependent" and "field independent" groups, the latter "articulating" both internal anatomical and terrestrial detail more completely, which implies to me a reciprocal and interdependent resolution *(Witkin 1965)*. Edith Cobb *(1959)*, surveying the biographies of geniuses, finds repeated return in memory and actuality to places of childhood to renew order-giving intuition that was initially given by the textures and pattern of juvenile play space. Space is structured differently in juvenile life than at later ages; it is much more critically defined. It is intensely concerned with paths and boundaries, with hiding places and other special places for particular things. This whole home range (its radius measured by the range of the human voice) is, in effect, imprinted. Such a construct works imperceptibly on the memory and consciousness, and is especially important to creative adults, whose skills lead to introspection about the generation of their own ideas and who tend to be fascinated by the terrain of their own autobiography. In just that age when the sequences of movement follow a patterned environment, some ineffable claim on the future is made. The searching mind of the man of genius recontacts a world where there is both refuge and stalking in their brightest forms. The philosopher's quest is a metaphor on the hunt, but at the same time he understands the needs of the prey—retreat, solitude, and disengagment.

Nostalgic returns to places always contain the surprise of how small they are. The garden, the symbolic source and first home of all life, is translated by architecture in a language and style of its time, but is universally an unspoiled cosmos made small. In Newton's time it was mathematically precise and geometrically

pruned; in Wordsworth's it was grassy and pastoral. Gardens are but one example of the place as a kind of diminutive externalization of a mental set. The mental apparatus may be perceived, in turn, as a place and the landscape as a metaphor of it *(Shengold 1966)*.

Margaret Mead *(1970)* once proposed that all children spend some time on an island. Perhaps she meant only that the social forms convey a sense of finiteness, but I took her to mean that the physical and sensory experience as a whole did not simply convey or frame but constituted the limited nature of human habitat in a way that is imprinted on the juvenile as a prototype of reality. Within the confines of the island a universe operates; it is a natural miniature. The implications of this anlage are many; one of them is its contained livingness: the organic unfolding, growing, and dying. Even the desert oasis has this biotic insistence. What intellectual schemata does the no-longer-walled city with its paved and paneled surfaces offer? What are the consequences of its gestalt-making power? The nostalgic return of the adult to juvenile home ranges may have crucial bearing on transitional phases of later ontogeny. What do these demands require of the nature of such places? The peripatetic round of Pleistocene life involved for the juvenile a succession of hearth-centered ranges with constitutional similarity—receiving spatial order and taxonomic diversity and familiarity. The moves of nomadic peoples build across the years of latency a series of tightly constricted spaces, each related to the others in spatial and temporal order that eventually forms a mosaic of band or tribal range. In slightly different compositions of the same species, the juvenile rehearsed the creation of textured space again and again. All these places were in ecological climax (mature community development) or close to it. Thus there was habitat stability in spite of the movement and in spite of the passage of years, a stability that formed a perennial continuity of surround for individuals whose social relations were constantly changing. The returning adult in such societies does not come back to a single juvenile yard and fixed abode but to a world created by successive mastery of small spaces which he now sees as a whole.

Amos Rapoport *(1972)* has touchingly described the visits of middle-aged Australian aborigines from their church or government camps to tribal lands, where every yard is known from childhood and the terrain "is an archive of the ancestral past." For the middle-aged everywhere, past experience is a journey. How much is lost to the quality of life among those who have no such landscapes cannot easily be assessed, but one suspects that its possession is related to the maturity and strength that marks the endurance of those American Indian cultures that have retained a home land base *(Collier 1962)*.

5. Another ontogenetic moment with specific environmental dimensions is a kind of prepubertal exodus. In our society it appears as Boy and Girl Scouts following nonparental masters into "wild" terrain. It began in America as a woodcraft movement, which Ernest Thompson Seton designed after an English model; but Seton's real theme was the preinitiatory experience of preadolescent American Indians. The camping phenomenon for 11-year-olds sets the tone of the departure from childhood and the preamble to an adolescent ordeal in solitude. Skills and mastery are central to this experience just as they are to a young Eskimo learning to use a kayak. Group membership, symbolized by hypnotic orientation to a campfire and by group singing, is no arbitrary device of middle class life; it is an autogenic attempt to read out the genes by people in those societies affluent enough to escape the mire of agriculture or who have not yet felt its quaggy touch.

The camp exodus may seem to belong to a penumbral phase in the lee of latency and the windward of adolescence. But we need to have much more care than in the past in writing off age classes as "transitional." The 11 to 12-year group may be special in certain ontogenetic respects, rather than merely in-between. These are heroic years in which the hero has not yet been exalted beyond mortality, cliques are bound by unexamined spontaneity rather than ideology, the joys of escape from parental surveillance are unsullied by doubt, and the reality of nature is exquisitely explicit and tangible. In terms of place, it is indeed developmental, with its excursions out of juvenile home range, if only for a while. But the admiration of older adolescent or young adult leaders and attunement to limited exploration are not necessarily mere foreshadowings, but instead a unique whole with its own essential purposes.

Finally, we come to the karma of adolescence

and its ecological requirements. "Adolescence" is misleading, for the period of life is not unitary; the 13th is very different from the 18th year; a diverse series of events is involved. Three of those having a special relationship to the nonhuman are:

6. The adolescent is widely recognized as regressive; infantile behaviors are symptomatic of deep renewal, the excavation of what Joseph Campbell *(1959)* calls "infantile imprints of experience" which form the homological basis of mythical structures. The regression carries strong implications for the figure of the mother. The grand shower of poetic perception is biological adaptation which allows the maternal affiliation to be reexperienced in cosmic terms. This metaphor is the insight by which all later reproduction and generation will carry some of the love of one's own mother in infancy. "Back to nature" and "the love of nature" are the hackneyed expressions of this movement of adolescent feeling toward the "mother of the hunt," the "mother of herds" or the "mother of us all." For the initiated the earth is a body. An organic metaphor as the basis of geohuman relationships is the functional one. The nonliving is thereby silently understood never to be without life. Presumably this grows from a homologized movement of the infant with respect to its mother's body. For the most part our culture fails in the rituals and myths this powerful insight compels. The autogenous substitutes are a virtual catalogue of adolescent delinquency and neurosis. Another aspect of this renewal of the mother motif as a catalyst toward the nonhuman is that the individual has the opportunity to surmount (in part, at least) bad mothering as an infant, to straighten a crooked path by taking it again. It need hardly be said that the implications of this rebirth and its potential for shaping the attitudes of modern society toward nature are scarcely explored.

7. The second event or episode is extended from the taxonomic knowledge mastered by the juvenile and may be the ultimate purpose or function of that achievement. The species system and its ecological interconnections (especially food-chains)are perceived under the guidance of mythical drama, related and acted, as a model of human social relations. In its degenerate form, domestic animals are involved in social hierarchies with man. In urban thought there is some recovery insofar as the animal is perceived in poetic metaphor. In all cases the taxonomic system is exploited for intermediate or transformational forms which manifest or symbolize taboo relations *(Levi-Strauss 1963)*.

8. A third is connected more directly to the schedules of initiation. Among the series the ordeal by solitude is particularly environment-fixed. The testing of the prepared spirit, surrounded by the majestic and terrifying world of the nonhuman, though diverse in its precise settings, is very widespread. There are no equivalents in the city or sensory deprivation tank, despite their isolating effect. Indeed, sensory deprivation is more likely to be alienating than connecting to the concrete world. The autogenous and mythdepleted contemporary expression involves thousands of young people hiking in the wilderness and such programs as Outward Bound making bold but secular and therefore emasculated simulations. What many individuals feel about the wilderness is that they have personally *approached* a religious experience. Without a liturgy it is largely wasted, though there may be psychological benefits.

We all know that one effect of national and multinational corporations and bureaucracies is to distribute identical structures and forms and to modify the terrain into duplicable units. It is widely observed that the effect is disorienting and therefore injurious to processes of self-identity. Because of its repeatability, the abstract world of duplicated spaces is a non-place, a landscape without historical depth or definable named places. It is my contention that the initiatory process empowers the adolescent to make place by cosmocizing (or homologizing) the world known to him *(Douglas 1966)*. To make in the modern world means in fact to transform. The physical making follows the ideational. Fully mature humans—the product of adolescent religious initiation—will not make a world of repeatable segments. The antique test of the end of childhood is the ability to confront and to wear the Other; to enter it like a garment. The perceptual otherness of the visible cosmos, its explicit nonhuman concreteness, lies in true wilderness. If the individual's religious cosmology is adequate to his test of isolation it can be adequate to the whole arc of his life. Having faced the Other in its diversity, he may then face it in himself, one expression of which is the otherness of the city. Like the infant who must see love in action before he can discover it in

himself, the adolescent cannot discover his maturity in the city. We are surrounded by his ludicrous and pathetic efforts to create a universe in which to measure his own achievement.

As Erik Erikson and Harold Searles have demonstrated, these adolescent critical periods are in the service of identity resolutions through the establishment of a vast network of relations with the nonhuman as well as the human environment. Their language is overwhelmingly metaphoric. Their environment is the wilderness. If the landscape is fixated by juvenile perception as an extension of mental operations (as suggested earlier), then the wilderness may be the epigraph of the unconscious *(Drew 1973).* It is continuous with the stellar universe. If the earth's wildernesses are finally domesticated as part of the mythology of Fossilfuelman's "control of nature" the immediate loss to wild species and ecosystems may be calculable. But the earth wilderness is like some cosmic embassy, where the adolescent pilgrimage ends in the birth of maturity—the final test and shaping of sanity in confrontation with the Other. In this its loss to us may be incalculable, though I think we already see the signs of this deprivation.

Above I have suggested eight ontogenetic, critical-period episodes in which human development in the first 20 years of life may be related to the natural world in the context of place. I have suggested that this ontogeny and its environmental complement are the outcome of human phylogeny in the Pleistocene in Paleolithic cynegetic life *(Shepard 1973).* Our present distance from that setting seems enormous, and the cynegetic past is easily seen as a ludicrous model for ourselves. That distance, however, may only by projected by the myth of historical mankind, augmented by recent commitments to progress and humanism. On the contrary, one of the surprising consequences of cynegetic studies is the convergence of urban and hunting/gathering life. Throughout this paper I have alluded to the opportunity of urban peoples to recover elements of human ecology warped by millennia of immersion in domesticated landscapes. Paramount among these is the opportunity to be free of the domestic animal both as social partner and model of the nonhuman. The enormous human desire for animal figures is seen by their ubiquity in popular culture. "Pet therapy" notwithstanding, the psychology of this is poorly known. There is evidence for us in the impoverishment of peasant thought: a perception of nature as an extension or enemy of the animals (degraded monsters) of the barnyard *(Potter 1967.)*

That city life suffers from the lack of green in daily experience may be exaggeration—an irrelevant, sentimental fragment from an esthetic that aligns its vision on an urban-rural axis. Far more important are components of nature that have deep psychological import but not necessarily any scenic dimension. Chief among these is the system of food chains. Wherever our attention falls on the schemata of alimentation it becomes the very model of relatedness. The nearly universal reciprocity of food and marriage regulations signifies the two preoccupations of kinship—one connecting social ties, the other ecological. Reflection on the minimal family and absence of witness and participation in predation among urban children reveals an interrelated pathology. It is widely lamented that the child thinks that groceries come from the store and milk from a carton, but the problem is usually seen in terms of mere information and disregards the motor and participatory bases of learning in children and the way that kind of learning becomes scaffolding for seemingly unrelated data later in life. Picture-book explanations are no help, and help produce grownups who repudiate the very thesis of trophic centrality, whose denial of the life-giving nature of death is a prison for their own children. That we do not and cannot find it in ourselves to affirm as good and beautiful a world where creature eats creature, where butchering is a ritual act, and where decay is an affirmation of wholeness, is a measure of the improverishment of the urban mind. To treat this emptiness with better classroom materials or more open spaces is not only insufficient but misses the issue. Parks and pets are not the crucial points of contact with 'nature' but only therapeutic exercises and the treatment of symptoms.

The ontogenetic, critical-period approach to this subject is extremely hopeful and positive. It asks that prescriptive counsel from the social and psychological sciences for making childhood environments measure its plans against Pleistocene models, against cynegetic life, against the demands of ontogeny and its

critical-period phenomena. It implies that cities are as livable as the people in them are sane and mature—and that the journey into ecological maturity does not require continuous immersion in a garden. It is centered on focal experiences and episodes which do need special spaces, resources, and—most urgently—mentors who mediate fantasy in childhood as apprehension of the biotic world instead of a trick for avoiding it. It is a general and probably valid intuition that the destruction of the natural world somehow impairs our humanity. The amount of nature necessary may be surprisingly modest if we can recover the sense of timing and purpose in which it makes us human.

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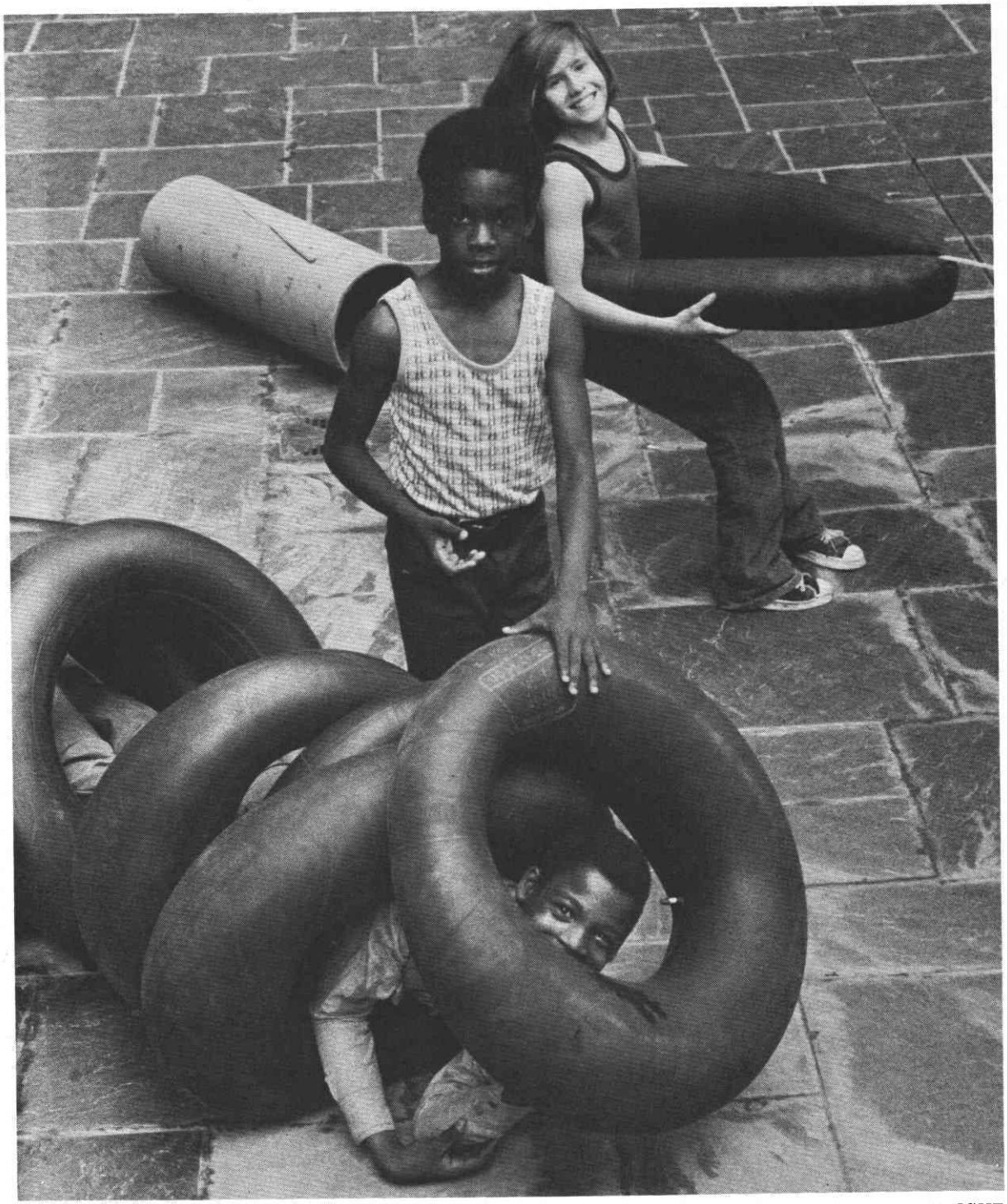

PHOTO BY ALAN KNIGHT

"Is it likely that children in the United States know more about nature in distant lands than they do about the natural features in their own cities, neighborhoods, and backyards" - Florence C. Ladd

Comments on "Place and Human Development" by Paul Shepard and Yi-Fu Tuan's "Experience and Appreciation"

by FLORENCE C. LADD, *Harvard University Graduate School of Design.*

PAUL SHEPARD presents a dazzling array of profound ideas about the nature of the relationship between early developmental stages and places experienced in a variety of cultures. Shepard's analysis is related to the schema presented in Spivack's *(1973)* paper, in which he identifies some basic requirements of the human species and the environmental conditions necessary to meet those requirements. Spivack lists human requirements such as eating, mating, and sleeping, along with the essential environmental forms for the activities. These analyses by Shepard and Spivack serve to remind us that Erikson's *(1968)* stages in the life cycle and the conflicts and crises associated with each stage have not been considered in an environmental context. A merger of these three compatible schemes might include the following:

1. The stages and associated age ranges of the human life cycle.
2. Relevant social and emotional developmental tasks.
3. The natural environments and the built environments needed at each stage to support the performance of those tasks.

Such a scheme for the individual life cycle and for the family life cycle might aid policy makers, planners, and designers in creating physical settings that would serve families and individuals well throughout the life cycle. Shepard attempts to make some essential connections between stages, ages, and environmental requirements in childhood and adolescence.

Tuan, in his beautiful prose and well-chosen poetry, tells his adult readers that we cannot return to childhood, alas. He characterizes the difference between the child's and the adult's expectations, experience, and appreciation; the difference between a child's point of view and an adult point of view. He implies that we ought not to reach into our childhood experiences in nature and expect to come forth with solutions that fit precisely the requirements of today's children or the children of the future. Our growing up has changed our perspectives on those places and experiences and our interpretation of them. Time and technology have changed our childhood landscapes, too. This is not to say that personal recollections of the meaning of nature in childhood are invalid. Rather, it is to point out that we must learn from children in many cultures and environmental contexts through careful observation and artful questions about where they experience nature and what natural places and experiences mean to them.

Both Shepard and Tuan have reaffirmed the following assumptions, which most of us undoubtedly share:

1. Early environmental experiences in both natural and built environments are of profound significance in determining future environmental requirements and environmental satisfactions.
2. Significant developmental tasks require experience in natural and built environments, and *the quality of environments influences the level at which the tasks can be carried out.*
3. Environmental requirements are relative. They depend on an individual's culture, personal history, and perceptions of the range of environments available.

Shepard and Tuan have implied some very interesting questions for debate and research. For example, is there an optimal balance of natural and built environmental elements? If there is, what is the optimal ratio in early childhood, late childhood, and adolescence? What types of natural settings, are most suitable at each age

level? Which natural settings should be recreated to meet the requirements of a more environmentally aware and more numerous young urban generation? Where are the existing "urban wilds" and pockets of nature that can be developed further? Might they give kids opportunities for exploration and places to play?

Shepard and Tuan raise the question of the meaning of play. What is play? What is play to the city and the city to play? We are led to consider new forms for playgrounds, indeed to think of the city as a playground—the city with its parks, rivers and streams, playing fields, and streets. We are reminded that anonymity, high density, antisocial incidents, and fear have caused parents to withdraw their children from city streets. What can be done to expand the opportunities for experiences in nature for children on their own streets and in their own neighborhoods?

It is likely that children in the United States know more about nature in distant lands than they do about the natural features in their own cities, neighborhoods, and backyards. Television has made vivid and familiar the forests, gazing land, and wildlife of faraway places. "Wild Kingdom" warns us that nature is threatened in East Africa. We should be reminded that in East Harlem, East Orange, and East St. Louis, the few remnants of nature are in grave danger, too. Conservation should begin at home.

Conferees came to Washington with nature, children, and U.S. cities in mind. They came with different agendas, different objectives. Some were interested primarily in environmental education, which should be defined more broadly. It is clear that environmental education must be extended to politicians, planners, developers, and mortgage bankers—education about the natural environmental requirements of children, especially, and of adults as well, to engage them in the process of protecting and developing natural life in cities. Those who presently control the future of urban environments and urban life should become advocates for urban children and their environmental interests.

Some conferees came with an interest in understanding environmental issues related to urban life and with research questions or proposals in mind. Some came with policy questions that pertain to nature in urban environments. Those conferees would like to know about opportunities for collaboration generated by the U.S. Forest Service, the Department of Agriculture, EPA, and HUD. What policy statements might be expected from these agencies about improving the quality and availability of natural environments in cities?

Some conferees came with action programs in mind. There must be more opportunities for city kids to participate in successful encounters with nature, such as those provided by the Youth Conservation Corps, Outward Bound, Scouting, the AMC, the Sierra Club, and many summer camps. It is not enough to bring more of nature into the city; we must also lead more city kids into nature and what remains of our North American wilderness.

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PHOTO BY WALT BLAIR

"When we engage in restoring childhood to some place in our thinking and recognize that childhood has significance in the development of the adult, it's all right to talk generally about 'childhood' and 'the child'. But as a theoretical concept, 'the child' is a fiction" - Margaret Mead

Children, Culture, and Edith Cobb

by MARGARET MEAD, *American Museum of Natural History, New York.*

ABSTRACT. When we engage in restoring childhood to some place in our thinking and recognize that childhood has significance in the development of the adult, its all right to talk generally about "childhood" and the "child." But as a theoretical concept, "the Child" is a fiction. We do not know enough about what children, as biologically given creatures, will do at different stages in development or under different cultural circumstances. Much of what is "known" is based on inadequate evidence from widely scattered sources. We can't take what we find out about children in one culture and combine it uncritically with what children do in another culture; the result is unadulterated nonsense. We will not develop a useful theory of child development until we recognize that "the Child" doesn't exist. Only children exist; children in a particular context; children who are different from each other; children with different senses.

Editor's Note

Margaret Mead was a member of a panel chaired by Roger Hart. The first panel member called upon to speak was Florence Ladd. She asked each person present to search his or her memory for the earliest possible recollection of an experiene with nature, and then to draw a picture of it. Dr. Mead had this to say:

> I'm very used to dealing with early memories; always had them; I've always worked with them; there's nothing new about them. In this context, I quite consciously picked the one place in the world that is able to evoke homesickness in me. This is a place called Lavallette, on the Atlantic Coast, where I spent the first summer of my life. I was born in December.
> I went back to Lavallette as a 17-year-old with an old teacher of mine. I had the most horrible attack of homesickness. I've never been so homesick before or since. I am not a homesick person, in general. My grandmother said I would go off with the ragman. So, this attack of homesickness was very odd. I decided that it was associated with the sound of the surf. I had never been anywhere, since that first summer, that had that same sound. I thought, well, I'll draw that surf, and I'll draw myself in a baby carriage on the boardwalk, totally safe as the surf came in.
> Then I remembered that we had been told by Florence to think about mixed sensory modalities. It suddenly occurred to me that a figure of speech I like very much is "to learn to nest in a gale". I thought that the roar of the surf, and the roar of the wind, was the same thing. Nesting in the gale was the same thing as being in a baby carriage on the boardwalk as the roar of the surf came in.

In calling upon Dr. Mead for her comments—just after Professor Tuan's presentation of the paper included in this volume—Roger Hart asked for news of Edith Cobb, and mentioned her article *(1959)*.

In this seminal article, highly relevant to the subject matter of this symposium—fair, Edith Cobb wrote: "...I became acutely aware that what a child wanted to do most of all was to make a world in which to find a place to discover a self".

Dr. Mead's comments were extemporaneous; they have been rearranged slightly for clarity.

—Calvin W. Stillman

I ENJOYED Professor Tuan's paper.

I was very struck by the similarities between his paper and many of the things that Edith Cobb worked on. She, of course, took off also from Wordsworth. Wordsworth has been a taking-off point for people who wanted to work on the effect of imagination in childhood.

Edith Cobb is still alive. She is almost blind. I hope she will live until her book, "The Ecology of Imagination in Childhood" is published by the Columbia University Press. If she hadn't become ill, perhaps the book would still be growing. It's only the accident that she can't work on it any longer, that makes her really want it to be published. It was something that she worked on, and worked on, and worked on. She would give us a manuscript to read, and before we had got it out of the post box we would get another letter, with another little piece that had to go in somewhere. This because she had read something that was even more exciting and important than anything she had read before. Her paper, "The Ecology of Imagination in Childhood" (1959)—it is reprinted in Paul Shepard's book (1969)—was an article for *Daedalus* that got rewritten three times in proof.

Edith Cobb suggests that we must think about a human capacity that is just as basic, and just as necessary to human well-being (though not to mere survival), as food and drink. She called this the "necessary relationship to the natural world—the satisfaction of a cosmic sense". When I first read this in her work, I found it an extraordinary useful figure of speech, and a very useful statement of the relationship of human beings—not just children—to the world around them. This relationship can be highly elaborated by culture, or it can be very much truncated, shrunken, and simplified.

Edith Cobb's work dealt with the discovery of the relationship between childhood experience and adult philosophy, scientific perceptions, and artistic perceptions. This was one of the subjects of Professor Tuan's paper today. But Edith Cobb went further: she identified the "cosmic sense" with breathing, which I think is an effective figure of speech. She suggested that it is necessary for human beings to take in the natural world, to do something with it, and then to "breathe" it out. She said that a relationship with the cosmos is a need of human beings that could be more or less developed in individuals, and in particular cultures. Interference with this relationship could have as dangerous a result as interference with breathing, or drinking water, or taking food, or getting rest. It involves a recognition that human beings share a great many of their basic needs with animals, but also have needs that animals don't have. These human needs may develop through life, as Professor Tuan's paper has suggested to us.

We have the task of identifying the records made by sensitive, highly introspective people of their own childhoods—Wordsworth, of course, was an outstanding example—and the role of those experiences in their later lives.

When we are engaged in restoring childhood to some place in our thinking; when we recognize that childhood has significance in the development of the scientist, or the poet, or the philosopher, it's all right to talk about "childhood" and "the child". But "The Child" is no good as a concept beyond just getting it in, any more than is "The Primitive" or "Paleolithic Man". We don't know anything about Paleolithic Man at all. There may have been a hundred kinds of men living at that time, and we look at a few things on a cave and make him up. "The Savage" is a fiction, and "The Child" is a fiction.

A great many of the things that we have identified as being associated with children are either associated with children in our society or they are associated with some other children, in some other place; both are cultural.

Children usually don't know anything about historical contexts, and there are lots of human beings who never learn them. There are whole societies who think that a fountain pen, a monkey wrench, a chisel, and an airplane were all invented at once. They saw them all at once, and they have no reason to impute different histories to them. So there's a continual need to discriminate between what we find characteristic of children in our society, of children in other societies, and of adults.

I have studied primitive people on an island in New Guinea (the Manus), who didn't know where the things they used came from, because they were all traded. They were just like urban children among ourselves who think that milk comes out of a can. Although they were still in the Stone Age, they became magnificent

mechanics the minute they were introduced to mechanical things; they understood them at once. When the Manus were faced with electronic equipment, they used numerals that are applied to living things, and so distinguished it from equipment that was activated by springs.

They got along with Americans like a house afire. Both Americans and Manus liked mechanical objects and handled them well. Both thought that doing something was more important than feeling or thinking. They got along magnificently. The only difference was they came from 10,000 years ago, and we came from now.

We do not know what children, as biologically given creatures, will do at different stages.

That we do know is a myth based on very, very, inadequate evidence; based in most cases, on a few Swiss children. It is true that Swiss children have to learn reversibility, because they live in an irreversible world. They had jolly well better find out that a lump of clay can be moved in two directions if they are to survive. But look at the work of Vygotsky, with children who all lived in a totally reversible world. Russian children were swaddled and unswaddled, and night and day were alike. What Russian children need to learn is something about irreversibility. So, Piaget finds children who have rigid notions, and can't tell that a lump of clay, and a piece of clay that looks like a snake, contain the same amount of clay. But Vygotsky identified opposite kinds of thinking in Russia. Taking Piaget's notions about a bunch of Swiss children and saying that this is Human Psychology gets us nowhere in terms of a general developmental theory. Taking what American children do and saying that is Human Psychology also gets us nowhere.

The things that many children do, neurologists tell us they cannot do. Neurologists are absolutely certain that they know about myelinization, so they know that a child of 6 weeks cannot appreciate that its mother didn't come. They cannot explain the fact that the child sheds real tears the first time its mother doesn't come.

Our physiology doesn't match our experience. Building up any developmental sequence that we happen to have noticed in a few children somewhere and putting that down as gospel truth doesn't get us anywhere. Neither does it get us anywhere to take children from here, there, and anywhere, and put them together into "Childhood".

We do that with animals, you know; all these people like Ardrey have been writing stuff on the "territorial instinct". They take a robin from here, a goose from there, a pigeon from somewhere else, a few fish, and a gorilla or so, and mix them; and get unadulterated nonsense. We do the same thing if we take what children do in one culture and combine it uncritically with what children do in another culture.

If we consider the childhoods of everybody here, and the enormous differences between periods in our own childhoods, and think what they meant to us, we see the enormous differences between what cities mean to city children and what country means to country children. The country is exciting to city children and the city is exciting to country children, for exactly opposite reasons. But they both enjoy excitement.

I particularly liked your point, Professor Tuan, that you can take a child's work of art (a child's drawing, that is) and put it on a pedestal in a museum and it looks almost like a work of art. *Almost* is the absolute point, because it is not a work of art at all. It is a work of freshness, and freshness is one characteristic of art.

We take a child's drawing, and put it up on the kitchen wall, and tell the child it is magnificent. If the child takes that as a model, he is very unlikely to become an artist. That is one of the things that has been forgotten when parents are encouraged to put up anything a child draws on the wall, and admire it.

Our appreciation is enormously mutilated.

You know those Balinese heads that you buy in airports—those carvings of men and women? The girls have headdresses and the men have headcloths, and they are all varnished. Everybody says, "Aren't they terrible!" I had one made by one of the best headmakers. I had him leave it unfinished; he left the marks of the chisel on and no varnish. I put it on a pedestal, and everyone says, "How beautiful!"

This is just because they haven't seen others like it, and because we know that if we see copies of something, it can't be very good. This is the opposite of your point about the rainbow, Professor Tuan, but in a sense it is related. We think that any time we see two of anything, any time anything recurs, it has lost its charm. Americans than can't do anything twice, or ap-

preciate anything twice, or go to the same opera a second time, or read the same poem over again. Mass production has been part of it; we've disqualified ourselves from appreciating anything twice. This is serious.

As I was listening to Professor Tuan's delicious paper (can I use an adjective that includes taste?), I suddenly realized the extent to which one of the things that is said about heroin addiction may be true. Nothing that is said about drugs at the present has much truth, but still there's a possibility that it's true. This is that the first experience of taking heroin is so overwhelming that no other experience of taking heroin ever equals it. One of the elements of addiction, therefore, is trying to get back to the original experience. A child who is overwhelmed by an enormous experience is not only empowered to do things he would never have done before, but also is condemned, if you like, to get back to the undifferentiated ecstasy which we call mysticism.

One of the roots of mysticism is that the individual wants always to get to a point of no discrimination. This is distinct from the roots of esthetic appreciation, where one is moving toward greater and greater discrimination.

We have a lot of difficulty, of course, with people who want to identify the basic thrill in sex, religion, and art as the same. These evidently are people who, as in Professor Tuan's marvelous story, put their toes together with a little girl when they were five, or something, and never got over it. Other people feel that sex, art, and religion are extraordinarily different; that it is totally impossible to equate the experience of one with another.

It's quite possible that the people who feel that sex, religion, and art are all the same had some extraordinarily overwhelming experience as children. Pierre de Chardin has a beautiful passage about the way he fell in love with iron. He had this magnificent ecstasy over iron! Well, he had a lot of ecstasies in his life, over the lithosphere. Falling in love with iron, and with metal, and with what was the original substance of this earth, probably never left him; it entered into his whole later religious position about evolution and man.

I think we should realize that these ecstasies may not be unmitigated delights; in a sense they disqualify people for the kind of discriminating appreciation that we have just heard about in Professor Tuan's paper. This may be a useful thing to think about.

I was up near Peterborough, which is a beautiful place in New Hampshire where a lot of sensitive, appreciative, highly educated people had gone outdoors to appreciate nature, on the first day of Spring. We had a lovely, expensive, simple meal of cheese and homemade bread of hand-ground grain. My hosts said, "Isn't it dreadful? All the natives are sitting indoors, looking at television, wishing they were in New York".

We have to think about this rather hard: the differences between the sensitivities of the people who are bored to death in the city and the people who are bored to death in the country. The country is not perceived by all people who live in it as something marvelous. You can choke off an appreciation of the cosmos, perhaps, more effectively in the country than you can in the city.

The next step we are going to have to talk about a good deal, I think, is how to discriminate between our own children. There are the children who grew up in the city with one set of rhythms and one set of understandings, and the children who grew up in the country. There are differences among our own children in their response to toys and their response to the living world.

The country child, who has only seen the garden as a place to weed, loses all its sense of wonder far more rapidly than a city child who only sees goldenrod through a window, once a year. We're not allowing for that, you know.

I think the reason that boredom is the principle affliction of school children in the United States—and it is the most serious thing that happens to them, really—is that they are bored with the artificial world. The artificial world *is* boring.

Think of the most imaginative toy in the world. You know what it can do. You can say that you are building a castle for a princess, but still you know what you can do with those infernal blocks. They aren't ever going to do anything different. They fall down if you overbalance them, and they will clutter the floor, and there are that many of them.

You take that same child out in the country, and just let it sit in the grass and watch an ant. Nobody knows what that ant is going to do. The child isn't bored.

I think we have to look very seriously at the enormous number of runaway girls in this country. The number is in the hundreds of thousands. Cincinnati alone has something like five thousand runaway girls going through the city. Boys are not running away in the same numbers. People who are thinking about the urban environment, about what happens in school, and what are the consequences of restrictions, should take a very good look at this.

What is happening to these girls, now? What is it that is so intolerable about their parents? Why is it so much better to run away across the country, and to take every conceivable risk, than it is to stay at home?

Something is happening. We think of farm children, and still lyrically and sentimentally talk about children living on the farm as if they were still harnessing horses. Actually, they are kept indoors till they are 9 or 10 because of those dangerous machines out there. Instead of being children that have some sense of freedom, they may be even *more* restricted today than urban children.

One of our real problems is to get those things back into perspective; to look at the things back into perspective; to look at the things that are happening all at once, rather than talk about what little girls did when they climbed trees, or didn't climb trees, 25 years ago. Let us not project the present sense of restriction of women who are scout leaders, on children who are actually experiencing something different. How are we going to make these differences part of our own experience, and deal with them?

It's a good thing to think about "the child", if you remember that "The Child" doesn't exist. Only *children* exist; children in a particular context; children who are different from each other; children with different senses.

The sense of smell is distributed very, very capriciously across the spectrum, and the sense of hearing, and sense of sight. We are beginning to recognize that these modalities change all through life.

It isn't only children who suffer from psychiatric disorder because they are left-handed. Dominance in the brain changes, all through life. Some people cease to be visual and become auditory. Some cease to be as auditory and become visual. Some cease to be right-handed and become left-handed. All these things happen in the course of their lives.

Partly because we haven't recognized that children differ, we haven't been able to see that these things happen in adulthood. The first step is to recognize the importance of childhood: to recognize what we can do with the freshness of the imagination; to recognize how valuable it is to keep these experiences accessible. The next step is to differentiate among children; differentiate among different parts of our society.

Take black Americans. Their whole stance in relation to life is different. First we discover that something is a little different; we discover that maybe black children see things a little differently from white children. Then we lump them all together again as black children. We lump all rural children. We lump all suburban children. And every time we lump them, we lose something.

An overdependence on the notion of "The Child" does something. It is true that children cannot talk before a certain age. But children at the Manchu court are said to have learned two complete sets of etiquette by the time they were four. We have no idea how complex are the things children can learn. Nor the things adults can learn later. We need to fit the two together.

I think that things must be relatively homemade in a given locality.

One of the great dangers of a symposium like this is that somebody has a bright idea in San Francisco, and before we know it we have it in the middle of New York, dumped down with no reference to what happens to be happening there; with no reference to the ethnic groups involved; with no reference to the difference between a Puerto Rican juvenile delinquent, a German juvenile delinquent, and an Italian juvenile delinquent—all of which are quite different.

One of the things we are going to have to do is to relate the things we set up for children to who they are and where they came from. We have found in New York City, for instance, that Puerto Rican parents are divided into two groups: the ones who keep their children upstairs and won't let them out, and the ones who let them out and give them up. There's nothing in between. These parents don't know any way of letting their children out just a little. They either lock them up or let them go completely. That has very different consequences from giving children a limited, but defined, range for exploration.

If we start making blanket solutions that are related to a theory that all the children of a given age want to pretend they are animals, or that all the children of a given age want to do something else, and then add to that someone's very imaginative solution that worked in one spot, we keep on imposing styles that don't fit.

May I make one final point.

I think it's terribly dangerous to talk about planned danger. What you are talking about is planned activities where children can test their bravery and their skill. You are planning for opportunities to be brave, and to be skillful. If you say you are talking about planned danger, that's like talking about divorce insurance. We don't say death insurance; we say life insurance.

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"Just as the anthropologists discovered Freud thirty years ago, now physicists, lawyers, and others with rigorously trained minds are discovering the beauties of nature as seen through romantic poetry, and finding transcendental uses of the notion of ecology"
-Calvin W. Stillman

On the Meanings of "Nature"

by CALVIN W. STILLMAN, *Professor of Environmental Resources Cook College, Rutgers - The State University, New Brunswick, N.J.*

ABSTRACT. All peoples known to science have a concept of "nature" which forms part of the world-view of the culture. The relative importance of "nature" differs among cultures. In our own Western culture, ideas of "nature" are mentioned from the earliest written records, and are related to concepts of the autonomous individual and of hierarachy and order. At certain times these concepts have had particular usefulness in achievement of personal emotional balance. These values should be explored and defined, that they may be made more widely available.

CONCERN WITH ALL that is around us is as old as man's humanity. Whether we call it "nature", or "City Hall", or "environment", or the system", or just "the way it is", each of us must make up our own mind first on the structure of all that is "out there", and second, on what each of us can do about it.

Robert Redfield *(1962)* pointed out that each culture has a world-view that deals with the proper relations of Man, Nature, and God. The world-view of his culture helps each individual comprehend the reality he sees, his potentials for action, and his liabilities to injury. Cultures differ widely in their emphasis upon Man, God, or Nature, as Redfield told us. This difference is between peoples, over time, and within social groupings such as that of the United States.

Many books have been published in the last decade that profess to explain Man-Environment relations. Fewer books have appeared that are as clearly devoted to Man-God relations, though a century or so ago this situation was reversed. Fewest books of all relate Nature to God, though this may be the strongest single affinity in the minds of men. Hidden here are the themes of hierarchy, propriety, and status.

Margaret Mead told our group that differences between peoples of the world are never qualitative; they are only quantitative. This is very true of ideas of nature. All peoples of the world have them, and have had them as far back as we can find records. For certain peoples at certain times, nature has been a major esthetic and emotional resource, under one name or another. For even longer periods this esthetic value has been hard to find. Right now the value is in the ascendant, and this paper is an attempt to take a good look at it.

Enthusiasm for the values to be found in nature underlies the existence of this symposium. The fact of contemporaneity will be discussed later; the enthusiasm among intellectuals I attribute to the discovery by disciplined minds of new areas for release and exploration. Just as the anthropoligists discovered Freud 30 years ago, now physicists, lawyers, and others with rigorously trained minds are discovering the beauties of nature as seen through romantic poetry, and finding transcendental uses of the notion of ecology. The anthropologists used their broadened perspectives to deepen their understandings of people; they incorporated their new tools into their major undertaking. All too few of the recent converts to the beauties of nature have internalized their new asset into a strengthened ability to get on with their jobs. These enthusiasts have called to us all to jump in and enjoy the water; they have not yet emerged from the experience, refreshed and ready to

proceed. Wordsworth did not stop in midstream. Neither did Emerson, nor Thoreau.

We can look for ideas of nature back through time, and around the world. Brian Sutton-Smith has told us that children's play in the contemporary world differs in character with latitude; that play in the tropics is consistently different from play in the temperate zones. I have found similarly a profound difference in attitude toward nature (as we usually define the term) between the tropics and the homelands of peoples who originated in northern temperate zones (this includes, of course, all lands in the southern temperate zone; all are controlled by Europeans).

I find attitudes toward nature in Buddhist, Taoist, and Hindu cultures associated with those of the tropics. I find North-South a far more useful dichotomy to explain such cultural differences than East-West. With the exception of a few residual arboreta and preserves left over from the days of colonialism, there are no evidences of concern with nature in South Asia, North or Central Africa, Indonesia, or Oceania.

NATURE IN THE WESTERN TRADITION

Nature is a matter of concern throughout our Western tradition. Nature appears also in the parallel tradition of Eastern Asia, but its lesser importance there I relate to the parallel lesser tradition of the individual.

Among the oldest uses of natural symbols are the notions of the tree, and of open space. Both of these are important in the Gilgamesh Epic of the Seventh Century B.C. *(Heidel 1949)*, a tale of intensely human problems. Events and situations from this epic turn up in the Hebrews' Pentateuch of some centuries later.

In the Old Testament generally the world-view presents a triad of Man, God, and Nature distorted severely in favor of God. The triangle is long and thin; God is by far the most important vector. Natural environment enters as harsh wilderness, punctuated by oases and by the agricultural virtues of the Promised Land. The early Hebrews led a harsh life; their survival depended upon their ability to wring sustenance from a comparitively barren land, and to defend themselves from hostile neighbors. From the Hebrews we inherit their concept of the individual, derived in part from their contact with the Egyptians of the XVIIIth Dynasty, and their concept of life under law, derived in part from their contacts with the Babylonians. From those days to this day, Western concepts of nature have been indissoluble from Western concepts of individual autonomy.

The Hebrews gave little thought to their environment as such, but they were very concerned about pollution. Here we see how an idea may seem to relate to one thing, for instance nature, but that on examination it relates far more powerfully to something else. Mary Douglas *(1966)* tells us that the dietary laws had nothing to do with sanitation or with public health, but everything to do with the Hebrew concern with order; with keeping everything in its proper place, according to the laws of God.

The Greeks saw things more cheerfully. They were relaxed enough to enjoy beauty, to talk about it, and to find it in natural situations. They enjoyed high places. As Mediterranean traders, the Greeks were very affected by the world's urbanization crisis of the fifth century B.C. *(McNeill 1963)*. Local folk societies were thrown together into larger comities. Peoples came into contact with peoples. Urban centers grew. New ways of life, new ethical systems, and new religions were called for. Greek writers of the day mentioned problems of exhaustible resources, of soil erosion, of the virtues of country life and the evils of city life. Greeks wrote of the general decline of affairs from a wonderful Golden Age of the recent past. *(Glacken 1967)*. In fact, the Greeks, 25 centuries ago touched every basic theme of the environmental movement of our time.

The Greeks did more: they celebrated beauty in nature. They wrote pastoral poetry. They struggled with pragmatic explanations of reality as they saw it; they laid the basis for empirical science. Their travelers' reports enabled their geographers to come up with environmental explanations of cultural differences, a notion that bobs up again in Montesquieu *(1966)* and in certain odd corners of American social science *(Klausner 1971)*.

Mainland wars have destroyed most of the East Asian record for these early years. There are traditions, many substantiated by recent archeological digs, but the major vector is the durable bronzes that bring us evidence of Asian

interest in animals in art *(Reischauer and Fairbank 1960; Bunker, Chatwin, and Farkas, 1970).*

The Romans are remembered for having constructed a political organization so powerful that its effects last to this day. Only the contemporary Han Empire of China has so affected subsequent history. Neither of these power groups showed much official interest in esthetic values, in nature or in anything else. In the East Asian tradition, culture flowered only in periods of dynastic decline. This is evident in China and in Japan. The great landscape traditions of Chinese paintings were related to the periods between effective tyrannies, when Taoist and Buddhist elements of the culture were allowed to surface.

Central Asian disturbances and the associated population movements led to the dissolution of the Roman Empire in the first centuries of the Christian era, but the imperial Church did its best to hold things together. It did very well indeed, for a millenium. The jealous God of the Hebrews was represented by the jealous hierarchy of the Church devoted to His son, in the parlous times of the Middle Ages. Worship in none but the approved manner was permissible. St. Anselem in the 12th century "rated it dangerous to sit in a garden where there are roses to satisfy the senses of sight and smell, and songs that stories to please the ears." *(Clark 1956)*

There were leaks in the capsule within which the Roman church attempted to confine all thought.

One leak was the folk tradition of peoples long since conquered by Roman legions, living on under the intellectual domination of the Roman church. People had a feeling for living things; they sought ways of expressing this in their lives. Artists sought to express these feelings within the strict constraints of the iconography of Church art. An analogy was the persistence of folksong, and its insertion into the entr'actes of medieval morality plays, the major text always sung in the classical meterless *organum* of sacerdotal music. This pressure is seen in the stories of Saint Francis of Assisi *(Armstrong 1973),* and the insertion of landscape into the backgrounds of paintings of the Madonna. Little leaves and even domestic animals appear in the carved stones of the later cathedrals, particularly too far up for easy inspection by episcopal authorities.

Another leak was the influence of Persian art-emphasizing the garden as nature made safe and beautiful for man. This came to Europe through the commercial contacts with the Islamic world facilitated by the Crusades, and through Jews who accompanied the Moors to Iberia, and who independently established trading posts up the Danube and down the Rhine.

Finally, and perhaps least explored by scholars, was the contribution of the fearsome Norsemen who ravaged Northern Europe till blocked in the ninth century. These invaders promptly turned from raiding to trading. Their area of impact is today's Protestant Europe. Rosalie and Murray Wax *(1965)* tell us that the Vikings were ever curious about things of the natural world. These they never confused with mysticism. The Vikings never knew feudalism, and accepted Christianity only very late, and then on their own terms.

The Roman Church provided its communicants with many essentials of a happy life. Among these were an understanding of one's personal place in the order of things. Living and non-living things of the perceived environment were seen to be in an order essentially supportive. God may have been terrible and distant as He was for the Hebrews, but He had many delegates on earth to provide solace and guidance.

The Reformation in Northern Europe ripped away many emotional supports; some of the effects became apparent only years later. In England, dissatisfaction with Christianity led to the worship of nature, *(Clark 1969).* Nature alone can never be functional as a religion, however, since it contains no ethical system. In Germany Goethe wrote in 1815, "The Protestants feel a void; they want to create a new mysticism." *(Schenk 1969)*

In the England of this time we have Wordsworth writing poetry; Constable painting. Goethe studied botany, made excellent drawings of his specimens, wrote his great essay "Nature", and poetry besides. The Age of Romanticism was largely one of a search for new meanings. The Industrial Revolution was upsetting many settled relationships, and nature became a rediscovered recourse. All this had happened before, and would happen again.

NATURE IN AMERICA

Early settlers in Massachusetts Bay Colony practiced an Old Testament christianity in which God was retributive, Manvile, and Nature a howling wilderness. Perry Miller *(1967)* has described the scene. Preservation of nature, so familiar in New England now, then implied preserving in his proper social place each member of the community.

The liberating forces of a cash economy, escape to the frontier, and the Enlightenment-however one wishes to rank them-made possible a Hellenic approach to nature in the 18th century. This is first visible among the aristocracies of Philadelphia and of northern Virginia.

The Bartrams established their arboretum on the Schuylkill *(Cruikshank 1961)*. Benjamin Franklin established the American Philosophical Society. Thomas Jefferson conducted experiments on his farm. All such leaders were in constant touch with their fellows in England and on the Continent. When Audubon had some prints ready for sale of his paintings of American birds and animals, he tried first in England, as the better market.

America shared with the Hebrews one natural feature that was important in the myths that help shape character: the frontier. The American transmontane West—largely considered desert—seemed just as forbidding as the wilderness of Paran or Zin. For Americans as for followers of the patriarchs, this wilderness was a challenge to brave men.

Henry Nash Smith *(1970)* has told us of the tremendous importance in American literature of the Leatherstocking theme: the proud, lonely, self-reliant hunter who strides through the forest and out upon the plains. Smith tells us also of the psychological context: of Cooper's oedipal conflicts, and of his search for a role that would be at once manly and nonconflicting with his father. The ghost of Leatherstocking marches through Western stories, cowboy tales, cops-and-robbers picaresque adventures, down to dime novels and TV serials. This natural setting is less important than the character development that takes place within it. Leo Marx *(1964)* brings the story down to recent times.

The effect of unfenced pace on American character was not lost on Thomas Jefferson, who wrote *(1955)* "Those who labor in the earth are the chosen people of God, if ever he had a chosen people, whose breasts he had made his peculiar deposit for substantial and genuine virtue." A Hebraic analogy again, but an estimate of their worth gladly accepted by American farmers ever since, and used to justify astonishing Federal solicitude for agrarian welfare.

The economic status of farmers in American society peaked with the Civil War. It was thereafter eroded by economic changes that followed industrialization and, less evidently, by the mechanization of the world's merchant marine. As steam replaced sail, Australian wheat could reach Europe, and Egyptian cotton could reach Liverpool, all more readily than before. American farmers found unexpected allies in their discontent in the silver miners of the Mountain States; their prices were dropping too. Prices must move freely in terms of laissez-faire economic doctrine, but when incomes are affected to the degree that status is shaken, then political repercussions occur. Such was the background of the Populist party late in the 19th century *(Hofstadter 1955)*.

The same rapid industrilization of America upset the stability of social order in the older East. First, the basically merchant and professional-oriented aristocracy was thrust aside by the new wealth and power of the manufacturers. These in turn were pressed by the financiers and operators of the end of the 19th century. Each elite clung to the symbols of its status, and each rising class sought to claim these symbols for its own. A bellwether of status was an association with the land: an estate, a farm. Here an aristocrat challenged could repair to sulk—as Jefferson did when out of power—and to complain about the bad manners and the worse ethics of those who had taken his place. Late in the century, some ruffled aristocrats even flirted with the idea of an alliance with the radical farmers—since they, also were attached to "the land" *(Hofstadter 1955, 1965)*. Mugwumps, they came to be called. In the process of asserting their interests, these persons first articulated the esthetic values in natural environment for their fellow Americans.

Hays *(1959)* has told us of the early history of the conservation movement. The term was invented by hydrologic engineers between the Rockies and the Sierras, concerned over the in-

applicability to these dry areas of the settlement limits of the Homestead Act of 1862. These technicians formed an early alliance with Eastern citizens concerned over preservation of natural beauty. Such a topic has always been dangerous in our achievement-oriented society. From the start, American nature-lovers have sought technical cover for their goals. This they found first from the water engineers.

Within a range of a decade or so were founded the Sierra Club, the American Forestry Association, and the Federation of Garden Clubs. Arbor day was instituted. Women's clubs, and the Daughters of the American Revolution, joined in the cause. A young scion of an eastern merchant family traveled to Europe to study scientific forestry. His name was Gifford Pinchot.

The alliance of technicians and esthetes could not long hold together. The split usually is dated back to the Hetch-Hetchy controversy in California, which rent the friendship of John Muir and Gifford Pinchot. For Muir the preservation of natural beauty was paramount; for Pinchot, more mundane uses of natural resources were to be included in any calculation of total public interest.

The proclivity to hide esthetic sensitivity in practical, if not scientistic, arguments has appeared recently in the arguments set forth by the Sierra Club against Forest Service policies on clearcutting.

Recourse to nature has been with us as an established value since the late 19th century. Its spokesmen have been the traditional groups-the Audubon Society, the American Forestry Association, the Sierra Club, the Wilderness Society. At least twice, in the years since, there have been upsurges of interest in this area of feeling. Each was associated with a period of social stress. each spawned its organizations, a few of which continue.

During the New Deal the United States faced unprecedented human problems, among them widespread rural distress. By a shift of emphasis perhaps facililtated by his own country-gentleman status, Franklin Roosevelt was able to transfer much of the attention from rural people to the land they struggled to live on. The Soil Conservation Service, the revitalized programs in the national forests and parks-underscored by the mission of the Civilian Conservation Corps—caught public imagination far less for what they did for people, than for what they did for "the land". This could have been one of Franklin Roosevelt's greatest strokes of political skill—but I suspect that it was never intentional. Roy Stryker, Dorothea Lange, Pare Lorentz, and Russell Lord have left beautiful documents of those years. They spread upon the national press many photographs of reclaimed strip-cropped land. The pictures and their asociations have lasted much longer than did strip-cropping itself.

The 10 years through which this country has just lived have been remarkable for evidences of concern over "environment". The period has been remarkable for two reasons: first, for the marked revival of interest in the esthetic values of nature, and second, for the absence of hard data to justify the claims of environmental degradation which have overlain the esthetic consciousness. The major thrust of policy urged upon us by the environmentalists has been, it seems to me, to halt change. We have been asked to preserve—in the name of "ecology", or history, or pollution—almost anything outside a city's limits and some things within.

These 10 years have been marked by unusually rapid social change. The Voting Rights Act of 1965 set off a major reconsideraton of the status of American Negroes; they became "Blacks", and proud of it. Change in the status of blacks threatened members of many other ethnic minorities. Across the land economic prosperity claims that had never before been actuated: entry to resort areas, expensive restaurants, suburbs, jobs, foreign vacation spots. The environmental movement, I submit, was in large part a reaction of the upper middle class to these social changes. As it subsides, I expect that its leading supporters will shift their allegiance to conservative political organizations.

The Greeks found words for it 25 centuries ago. The pattern seems to be the same throughout the world of Northern cultures: personalities under stress find solace in natural phenomena.

If this hypothesis is valid, I suggest that we refine the tonic and make it available through our schools and other public institutions to all of our citizens. If nature is good, it must offer something to all.

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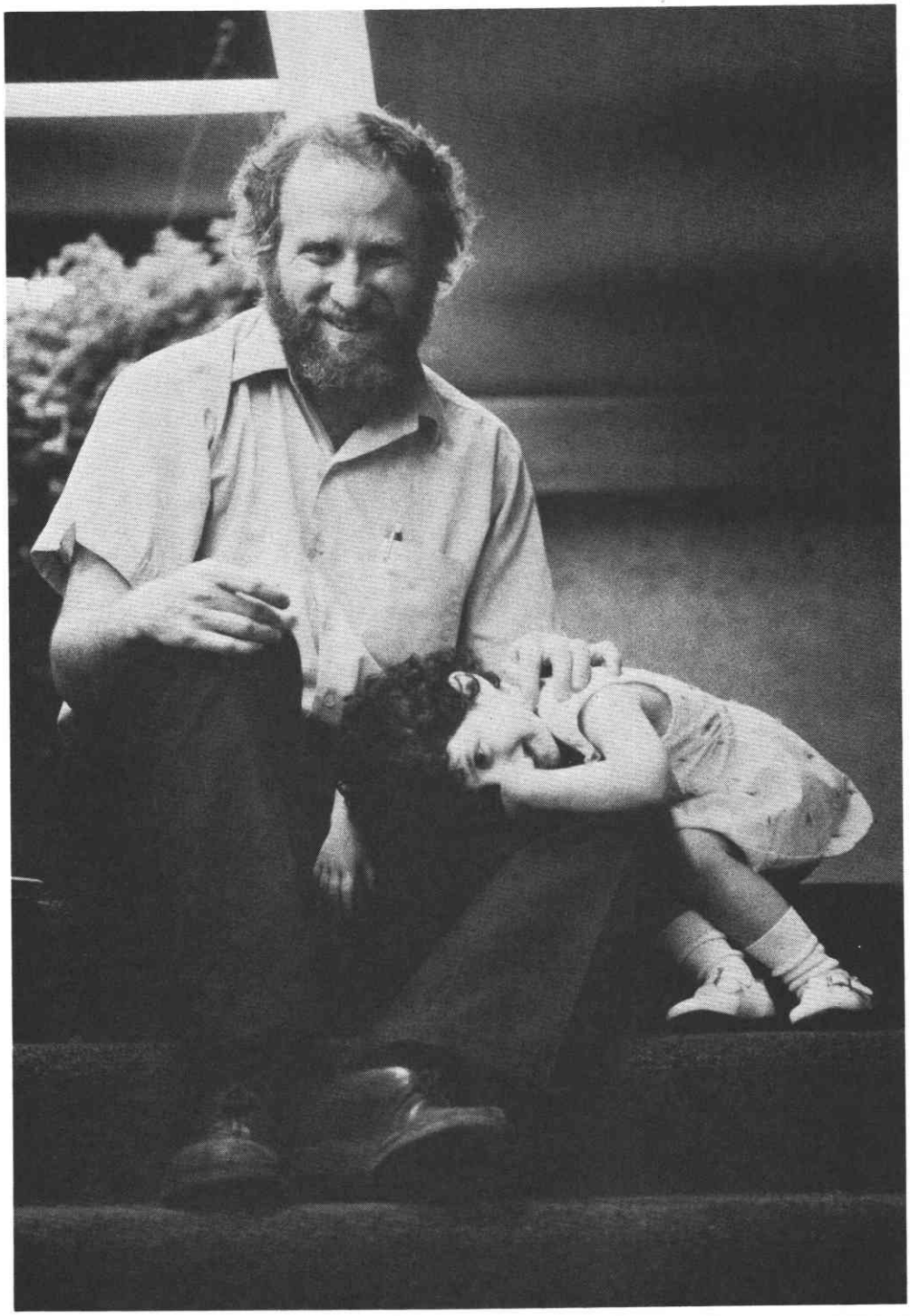

PHOTO BY WALT BLAIR

"Could it be that we adults are imposing our tastes and preferences on children, claiming that they need nature, trees, grass, flowers and other living things when in fact it is we who want them?" - Briavel Holcomb

The Perception of Natural vs. Built Environments By Young Children

by BRIAVEL HOLCOMB, *Assistant Professor of Community Development and Geography, Rutgers, The State University of New Jersey.*

ABSTRACT. This paper questions the assumption that young children need exposure to natural environments for healthy psychological development. Preliminary investigation of the environmental perceptions of 4-year-olds suggests that the distinction between natural and man-made milieux is insignificant to preschoolers, and that they find both kinds of environments similarly fascinating. Both offer rich potential for collecting treasures—an important preschool criterion of environmental satisfaction. The behavioral environments of parent and child are markedly different in the same physical setting.

IT IS COMMONLY assumed that children need nature in their environments for healthy growth and development. In cities, where nonhuman nature is diminishing, it is presumed crucial to preserve those pieces of nature which have survived the ravages of urbanization, and to reinject nature where feasible. This is not a new idea. That natural environments are important to healthy psyches has long been asserted, and it has been advanced with new vigor since "ecology" became popular. Detwyler states that "only two kinds of landscape are fully satisfying. One is primeval nature undisturbed by man. . ." *(Detwyler 1970:696).* Hart suggests that natural settings (earth banks, streams, woodland) best provide the manipulable environment which Piaget demonstrated was essential for the development of human intelligence *(Hart 1973a, 1973b).* Cobb goes further in asserting that the genesis of human genius requires exposure to natural milieux:

> The exploration includes tracing the relationship of this early psychophysical force in human development to those uncommon forms of genius which constitute the high point of achievement in human growth potential, with roots, as I believe, in the child's perceptual relations with the natural world. *(Cobb 1959:537).*

The purpose of this paper is to question whether natural settings are in fact so necessary to young children, and to further explore the environmental perceptions, preferences and needs of preschool children. Could it be that we adults are imposing our tastes and preferences on children, claiming that they need nature, trees, grass, flowers and other living things when in fact it is we who want them? While there is certainly nothing harmful, and probably some benefit, in exposing urban preschoolers to "doses" of nature, they may need them less than adults do. Among my beliefs is that it is quite possible for the urban child of lower Manhattan, of Chicago's East Side, Boston's West End, or even the South Bronx, to grow into a fully functioning, happy human without exposure to primeval, or even to tamed nature.

A subsidiary thesis of this paper is that the distinction between natural and man-made environments is unimportant to young children. Categorizing landscape elements by the degree of human involvement in their formation is a skill perhaps most finely developed by North Americans. I suggest that the ability to dichotomize environments on this basis is learn-

ed, rather than innate. Other cultures, especially those less technologically sophisticated, conceive of humans as part of, rather than apart from, nature. It can be argued that this outlook produces a higher degree of environmental responsibility and that to teach children to make fine distinctions on the basis of human involvement in creation is not particularly functional or even logical. No longer is there any part of the surface of spaceship earth that remains unaltered by human agency. Even the deep oceans and ice caps have higher concentrations of DDT than they did at the beginning of the century. Every environment we inhabit is, to a greater or lesser degree, "man-made." Yet contemporary American culture (and this symposium is no exception) imbues its young with the ethic of nature as virtue. Whether nature is seen as the manifestation of God's order, or nurturing the virtuous yeoman of Jeffersonian tradition, occasional lapses into mountain and wilderness paranoia are abberant in the longer tradition. Continued acceptance of nature as a (or *the*) source of good entails contradictions and ambivalence for the member of an urbanized society. What chance does one have of being virtuous while inhabiting the immoral urb?

The evidence presented here is far from conclusive. This paper is polemical and anecdotal, rather than objective, and the methods are exploratory. Though trained as a geographer, I chose to investigate these questions mainly as the mother of a 4-year-old daughter. The research was carried out at a nursery school in New Brunswick, New Jersey, an old, crumbling city ringed by more affluent suburbs. The children at the school come from both settings, but cannot be said to be representative of either since a high proportion of them are from geographically mobile families associated with Rutgers University.

The specific questions under investigation were:

1. To what extent do 4-year-olds distinguish between natural and man-made phenomena?
2. What qualities of natural environments (specifically woodlands) appear to young urban children? Are they found, or can they be replicated, in urban settings?
3. How does the behavioral environment of the 4-year-old differ from that of her mother in identical urban places?

To investigate whether 4-year-olds can and do make distinctions between natural and human landscapes, 15 children were presented individually with collections of photographs culled from periodicals, and asked to "put different pictures in different piles." Children at this age already know the concept of classification. They have learned to put blocks into categories based on size, shape, color, and other variables. This learning is reinforced by numerous games that require the child to select the odd item in a series.

The picture set consisted of four scenes that were predominantly "natural", with woods and mountains (care was taken to exclude bodies of water, which have been shown to be consistently appealing), and four that were urban. The pictures were not, however, of uniform size, and on the first test 12 out of 15 children categorized the pictures by size! The following week a new set, in which all the pictures were the same size, was presented. All the pictures showed distant scenes with no people in the foreground. Now the children had difficulty deciding on a criterion for classification. When asked to make two piles, some children asked which should go in each, others simply dealt the pictures into two equal piles like cards. When asked why the pictures in one pile were different from those in the other, the children replied "they just are," or "they are in different piles." Four children divided the pictures by general preference, so that the scenes they like best went into one pile, and those they liked least into the other. Their preferences, however, were not related to the degree of nature represented. Weather seemed a possible variable. For none of the 15 children did natural vs. manmade seem a significant criterion for categorization.

To further explore the children's understanding, I asked them whether they thought people had made some of the items shown in the pictures. "Did people make this building, that mountain, this tree...?" Although the teleological questions thus aroused proved difficult to respond to (if people didn't make that mountain, who did?), the children were quite sure they knew what people made. People make buildings, vehicles, roads, and Vesuvius. They do not make plants, animals, or asymetrical mountains. Neither do they make lawns or city trees, both of which just grow. It seems that

young children are able to distinguish between inorganic and organic more easily than between natural and man-made, and that the first distinction is more significant to them. The 4-year-old can easily distinguish a plastic from a real daffodil, but not a wild from a cultivated one. The croci which the children planted in the school yard are just as natural to them as the alpine gentian.

As a preliminary exploration of 4-year-olds environmental preferences, I "interviewed" 13 children, recording their answers on separate sheets and providing each with a Xerox copy. (The desire for a literary record of oneself for posterity seems to start at an early age). Each child was asked to name and describe his or her favorite places. Home and school ranked high on all lists. Almost all places mentioned were specific (Johnson Park, my Granny's house) rather than generic (parks, train stations), and were small in scale (the swings and slides) rather than large (New York City). Almost all were designed, or man-made places. Even the beach, which was mentioned twice, appealed because of its proximity to carnivals and ice cream. The topophilic tendencies of young childen seem strongly influenced by associations with pleasurable activities and friendly people. Aesthetic considerations are distinctly secondary.

The 4-year-old's environmental preferences are obviously constrained by his limited experience. The urban child's activity space is restricted, and limited mainly to designed environments. His brief experience of less tamed nature is carefully monitored by cautious parents ("don't go too near the edge; don't fall in; watch for ticks..."). The young child has more freedom of choice in activity and behavior in a setting designed for safety than in "natural" places. For the urban child, the designed environment is also more familiar, more secure, and less threatening. While Clay is undoubtedly correct that the places we, as adults, remember from our childhoods with the greatest affection are those natural places of grass, rocks, water and trees, we are perhaps remembering from our middle childhoods when our needs for adventure, privacy, and environmental manipulability are less well met in designed milieux *(Clay 1957-8)*.

What are, in fact, the environmental needs of the 4-year-old? Which of these provided in natural settings? Are any found exclusively in nature, or can all the qualities of natural environments be replicated in built environments? Previous research in this field has suggested that the quintessential qualities of, for example, natural woodlands, that are appreciated by humans are changeability, seasonality, spaciousness, unpredictability, secrecy and mystery, manipulability, irregularity, and variety. To these I would add one particularly vital to 4-year-olds—collectability. The woods are a storehouse of treasure. A half-hour walk through the woods near home with two 4-year-olds yielded a rich trove of flowers, goose grass for sticking to each other, leaf umbrellas, dandelion clocks, a feather, a caterpillar, moss for Japanese gardens, and various other items. But a similar walk along city streets produced a fascinating collection of lollipop sticks, silver paper, a plastic bubble wand, several tickets, a piece of tile mosaic, metal scraps, and so forth. Once parental instincts against collecting "dirty" items from streets, gutters and vacant lots are repressed, urban and sylvan treasure troves are fully equal in quantity, variety, and value at 4-year-old exchange rates.

Similarly, most of the desirable qualities of the woods can be found also in urban settings. The city has its seasons. Its coloration, decoration, and temperature, its sonic and activity levels, change with the months, just as the woods do. One can argue that there is as much or more variety in color, shape, texture, light, and sound in a square mile of urban land as there is in an equal area of woodland. The manipulability of natural areas, of earthworks, water, open lots and mud, is replicated in urban settings by young children who dig in sand boxes, tinker with gum-ball machines, trace letters in the dust, make wet footprints, jump in puddles and avoid assassinating fairies by negotiating cracks in the sidewalk. Does the city offer the young child a milieu that is any less mysterious, secretive, unpredictable, or awe-inspiring than nature?

Fiske and Maddi concluded from their investigations of experiential variety that "the more variable of two early environments produces an adult organism that is perceptually and behaviorally more alert, flexible, and able to cope with change." *(1961)*. Parr used this interpretation to deplore what he regards as the increasing monotony of modern architecture. "As

we make our cities more and more uniform by design and regulation, we rob exploration of its rewards, till we force the young to seek the stimulus of the unexpected in their own unpredictable behavior, rather than in a too-predictable milieu." *(Parr 1965).* Thus he suggests a causal relationship between modern architecture and juvenile delinquency.

Although it is debatable whether the city is so visually monotonous, for the young child the city streets offer many stimulations. There are variations in surface materials (paving stones, grates, dirt, cobbles), there is street furniture (hydrants, mail boxes, benches, litter baskets) to explore, store windows to be enticed by, people and dogs to evaluate, nooks and crannies to hide in, air vents to feel, steps and railings to climb, signs to read, and so forth. The 4-year-old, with fewer social constraints on her behavior, can explore, stare, pry, and satisfy curiosity more easily than an older child or an adult. The vantage point of the child, whose eyes are 2 feet closer to the ground than the adults', offers quite different perspectives. The foreground captures more attention than the middle distance. Not only does the child perceive the street differently, but her evaluation of its potentials differs from that of her mother. Age is a significant variable in urban resource evaluation!

This paper proposes that exposure to natural environments may be less necessary, at least to young children, than has previously been believed. To the preschool child the distinction between natural and man-made environments is unimportant. Although an infusion of nature into cities is pleasant and provides further stimulation, the human-designed and built habitat probably provides sufficient stimulation, variation, and excitement for the young child. As a data bank of culture, the built environment communicates to the young inhabitant the values, customs, and heritage of society. In the United States the contradiction between an ethos which values untamed nature and the visible concrete evidence of human manipulation of nature sends ambivalent messages to child and adult alike.

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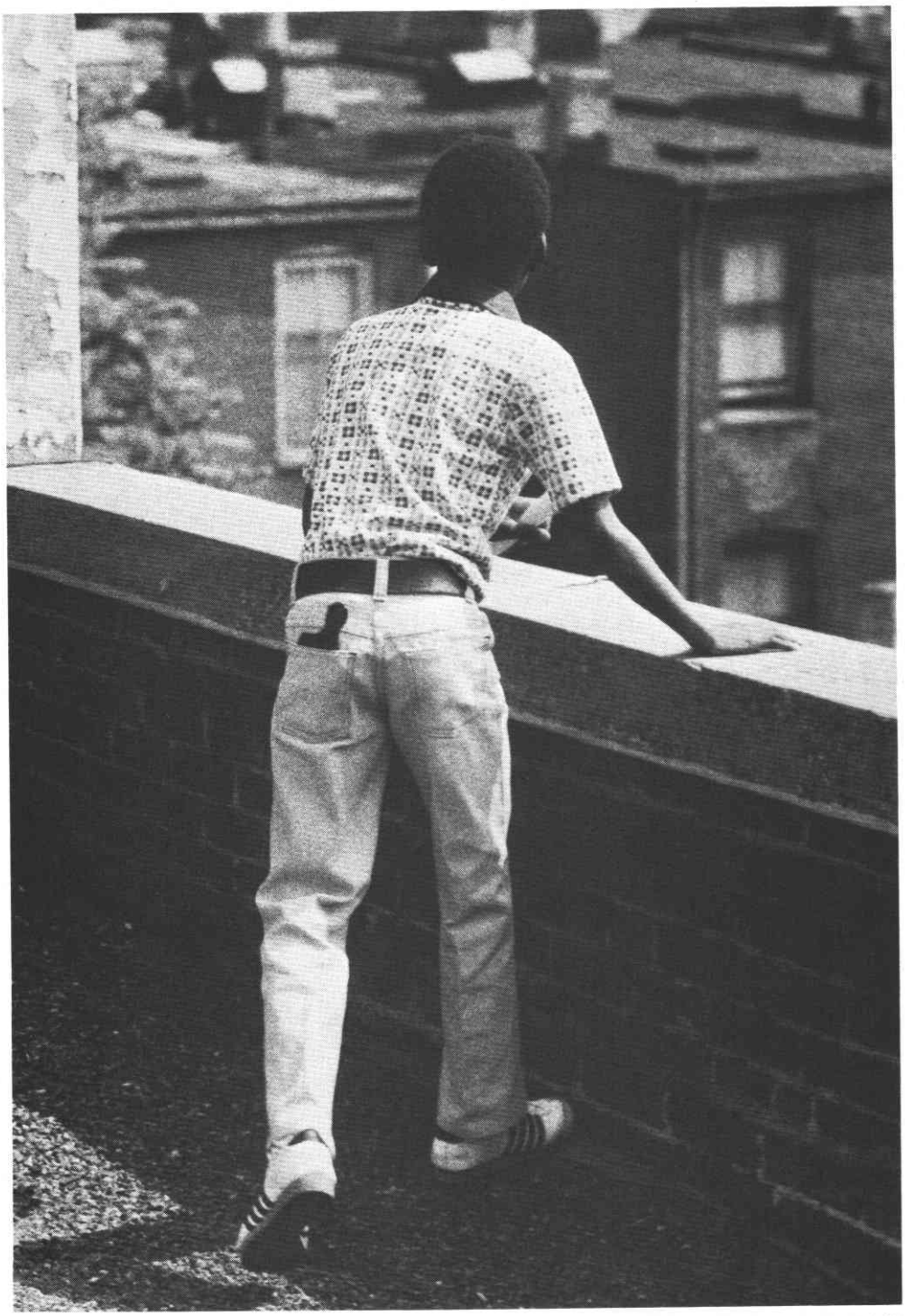

PHOTO BY WALT BLAIR

"To me, the typical urban child has little to look forward to. The parks, the museums, the libraries are not, he knows, for him" - Lois Mark Stalvey

The Urban Child: Getting Ready for Failure

by LOIS MARK STALVEY, *Writer, Philadelphia, Pennsylvania.*

ABSTRACT. This paper is the result of my personal experiences in Philadelphia's predominantly black public schools, both as a white parent of three children and as a volunteer teacher. It mentions the benefits to our white middle-class children from their 12 years in these schools, but also describes the far-different treatment of their black classmates—much of which is unsuspected by educators who could make necessary changes. This paper suggests a solution that could be implemeted in a matter of months with little effort and no financial cost.

MY GREATEST CONCERN about the environment of the urban child is that adults who could improve this environment are kept from knowing the urban child who needs change most. It was only through a series of accidents that I learned that the majority of urban children are not like my white middle-class WASP kids, but are children who see and *are seen* in an unconsciously different way.

My expertise is simply that of a mother who for the last 13 years has raised three children in the urban environment of Philadelphia's predominantly black public schools. My husband and I moved from an all-WASP Omaha suburb in 1962 because we felt our children would be handicapped in the suburban environment. We believed they should be getting ready to live in a multiethnic, multiclass world. When we chose an integrated neighborhood in Philadelphia, we had no idea that the schools would gradually turn black around our children—that indeed our oldest son would eventually be the only white boy in his classes in a 4,000-student senior high school. Had we known of the crises we would have to face, and of our own fears and unconscious racism that we would be forced to confront, I wonder if we would have proceeded. In the end, our children (and their parents) benefited greatly, but I will not attempt to describe the step-by-step process. Anyone interested in these details can find them in my books, *The Education of a WASP (Stalvey 1971)* and *Getting Ready - The Education of aWhite Family in Inner-City Schools (Stalvey 1975).*

More pertinent to the subject of this symposium is what I learned about my children's classmates and friends and of the environment in which they must live. In the interest of brevity, I will try to give you an accurate composite picture. If the picture seems too shocking to be true, again, I must refer you for documentation to the details in *Getting Ready.*

Our composite child (whom I will call George) is far different from my own children. To my children, the urban environment does indeed mean parks, museums, and histrical sites; it means also the respect of their public school teachers and administrators. It is for a small number of children like mine that urban institutions seem to be created and operated. It is black children like George, however, who constitute 62 percent of Philadelphia's public school population. He lives approximately 6 blocks away and attends the same school in the same classes with the same teachers as my children, yet George lives in a world it took me 6 years to understand.

George is about 14 years old. His parents probably graduated from a high school, but, as

we shall see, a high school diploma in many urban schools is about as useful and genuine as counterfeit money. George's mother must work, either to supplement her husband's income or because her husband is dead, has deserted, or is ill. She may also be working to help pay for a house in a "better" neighborhood with a "better" school than the last three schools that quickly decayed when white families fled. To George, "nature" consists of the rats and cockroaches his family fights constantly. George does not go to city parks; his older brother was killed in one by a rival gang.

And so George does not go out often, certainly not to hear music groups at Philadelphia's Spectrum. There are many other places George cannot go if they are on the "turf" of a gang not of his own neighborhood. George is not a gang member himself. He would like to join one for his own protection, but his mother has pleaded with him not to become involved. He is trying to keep his promise in spite of the constant recruiting threats and blandishments of his local gang. George has little choice but to stay in the house and watch television. George cannot read.

I got to know over a dozen children like George when I was a volunteer teacher for a so-called Disciplinary Problem Class of 8th-graders in the school my own children attended. We held discussions on everything from sex to black history. By the end of the year, I found that these children who had been labeled "bad" were, with me, friendly, cooperative, and quick-witted. One child had taught himself several foreign languages by practising with neighborhood merchants; another could do complex math problems in his head. Two weeks before "my" class was to graduate along with our son, I discovered a secret they had skillfully kept hidden from me. Most of these children were being graduated from our elementary school unable to read. They were going into our enormous (4000-student) high school with no possibility at all for further education.

It was my 13-year old son who answered my rhetorical question, "How *can* these kids go through the same classes with most of the same teachers as you and not be taught to read?" Spike, who had been in those classes when no supervisor, researcher, or other adult except the teacher was present, explained in detail why children like George could not read. Spike spoke as an insider; he had looked and listened for 8 years. He had watched the teachers ignore certain children or make fun of them if they tried to participate in class discussions; he had noticed which children were sent to help the janitor—not the white, light, bright children, but the kids who were slow. "Some of those kids", Spike said, "were never *in* class long enough to learn anything!" Spike reported that if *he* talked in class, he was gently reprimanded, but if a lower-income black child talked, he was sent to spend the day on the detention bench.

My son noted also that *no one* ever repeated a grade. "Even the really dumb kids were just passed along to the next grade", he told me.

I learned to become an outraged cynic about special programs for so-called "deprived" children. When teachers were asked to select children for a well-funded, well-designed program to encourage reading, my children and the children of the black professionals were chosen. When a state teachers' college invited "deprived" children for a weekend on campus so that the students could get to know their future pupils, again only the middle-class children were sent. Our children quickly learned to say no to special projects, hoping their places would be given to children who needed the benefits more.

Our school did offer one advantage that black children in the completely black ghettos did not have: Because of a handful of vocal white and not-easily-threatened black parents, we got fewer teachers fresh out of teachers' college. These inexperienced teachers are usually assigned to the lowest income areas where, in all logic, the *most* experienced teachers are needed. These young, idealistic new teachers often become disillusioned quickly when they are unable to cope. They leave in a few months. Many children I know have had five or more teachers in one school year.

After these experiences, I read the costly studies by experts with sadness and rage. My 13-year-old son had explained only too clearly why children fail.

George's future affects the future of all children. Children like George will make the world a lot more dangerous and unpleasant than it needs to be. Crime does not start in the streets; it starts in the classrooms, where teacher neglect precludes an honest way to earn

a living and where teacher brutality breeds rage.

"Teacher brutality" and "teacher neglect" are harsh, shocking phrases. Again, I must refer you to *Getting Ready* for documentation. Along with the brutal, there are certainly many diligent, caring teachers, but their jobs are made harder, if not impossible, by colleagues who provide, at best, custodial care for helpless urban children. Then, between the caring and the brutal teacher, there is another: the teacher whose unconscious racism convinces her she is doing a good job with basically worthless children. Her or his brutality produces only emotional bruises; his or her neglect is skillfully rationalized. Still, the outspoken racist and the unconscious racist are the teachers whose views of urban children threaten us all.

I say I have no sure-cure solutions, but I did stumble across a small news item that could help us begin. It reported a court case in Mississippi where teachers challenged (and lost their case against) a ruling that *all those holding jobs in public schools must send their own children to the public schools.* U.S. District Court Judge Alan C. Keady ruled that this policy was not only constitutional, but "based on logic". To those who protest that this policy in Mississippi restricts freedom of choice, may I suggest that this condition of employment is indeed as logical as preferring Catholic teachers in Catholic schools or expecting the president of General Motors *not* to drive a Ford. If the public schools are not good enough for the children of the teachers, then they are not good enough for anyone's children and must be changed.

Perhaps we have all been naive with our busing programs, which often only send children's bodies to teachers with segregating eyes. If a Mississippi Plan existed and was enforced in our northern cities, dedicated teachers could still go home to the suburbs each night, but they would at least have an investment in the city public schools. Their children would tell them what mine have told me; they would know *why* their colleagues are not teaching kids like George to read. Their adults' view of the urban child's environment would be real at last. And if *one* teacher's child is in a classroom, I can assure you that the quality of teaching would improve immediately for *all* the children in the class - out of professional pride if not out of professional protection.

Unfortunately for children like George, it seems unlikely that school systems will adopt a Mississippi Plan. Teachers' unions are too strong; Board of Education members are unlikely to demand of others what they shrink from doing themselves. More and more "liberal" whites who demonstrated for integration in the South are fleeing from integration in the North. People who express outrage over school riots send their own children to private schools. And so, people with knowledge of their own hypocrisy quietly protect each other.

To me, the typical urban child has little to look forward to. The parks, the museums, the libraries are not, he knows, for him. The success models in George's environment are the pimp, the pusher, and the professional mugger. We have given George no other way to succeed. Some dark night, any of us may meet George. Because we have never gotten to know what his life is really like, George is getting ready to show us what's true.

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PHOTO BY MICKEY SPENCER

"If we are to make use of the diversity of human resources which we possess as a nation, we must allow all voices to be heard in determining our eventual outcomes. This holds for recreational resources as much as for any others" - Martin M. Chemers and Irwin Altman

Use and Perception of the Environment: Cultural and Developmental Processes

by MARTIN M. CHEMERS, *Associate Professor of Psychology, and* IRWIN ALTMAN, *Professor and Chairman of Psychology, University of Utah, Salt Lake City, Utah.*

ABSTRACT: This paper presents a "social systems" orientation for integrating the diverse aspects of environment, culture, and individual behavior. It suggests that a wide range of variables, including the physical environment, cultural and social processes, environmental perceptions and cognitions, behavior, and products of behavior, are connected in a complex, interacting system.

Attention is paid to cultural factors that affect the way in which the environment is perceived, used, and modified. A broad variety of topics are touched upon, including ecological factors that affect the functional adaptation of a culture to its environment, how cultural world views shape and are shaped by that adaptation, and how environmentally oriented behavior processes like privacy regulation, territoriality, and personal space operate in this milieu.

The authors stress the need for scientists to provide useful information for environmental practitioners, be they architects, urban planners, or the Forest Service. Finally, discussion is given to the role that cultural diversity in the United States must play in our environmental planning for the future.

ONE OF THE defining features of the study of environmental behavior is its electicism of approach and the diversity of its sources of contribution. Geographers, architects, planners, psychologists, sociologists, anthropologists, and others have made and will continue to make contributions to our understanding of this subject. While such diversity may, at times, engender confusion, it is a vibrant and healthy aspect of this multifaceted discipline. Any student of the environment will quickly be struck by the complexity of the phenomenon he seeks to investigate. The very complexity of the subject demands a similarly complex system of study. In this paper, we will point to the diversity of elements in environmental behavior and the intricacy of their actions with and upon one another. Out of this complexity we hope to discern some consistent patterns that point to directions for future research and contemporary application.

A MODEL FOR THE STUDY OF CULTURE AND ENVIRONMENT

Recently we were invited to prepare a chapter on cultural aspects of man-environment relationships for a new *Handbook of Cross-Cultural Psychology.* That chapter was intended to be 35 to 50 pages long, but eventually ran to well over 100 pages, even though we made no attempt to provide an exhaustive review of the area. While we cannot share all of that information in the present paper, some of the insights we gained are especially relevant to the concerns of this symposium.

The study of cultural variables in environment and behavior relationships affords the investigator a special vantage point. While cultural differences and similarities are interesting and useful in their own right, they also serve as cues which help us to focus on especial-

ly relevant phenomena and to probe our assumptions. Many anthropologists agree that the relationship of a society to its environment is the first and most important challenge to a culture. The way in which a culture answers that challenge often determines the overall style of the culture, with ramifications in every aspect of psychological and social adaption. The last statement is not meant to imply that these effects travel in only one direction, i.e., environmental determinism. A culture's reaction to its physical environment will in turn affect that environment. To conceptualize this complex, interactive set of relationships, we propose an initial model to handle environment,and behavior relationships. It is not a formal theory, but only a framework of relevant variables and their approximate relatonships, but it serves to organize our thinking about this problem.

In general, we adopt a "social systems" orientation, which implies several things. First, it suggests that several classes of variables relate to the issue of culture and environment, such as those in the inner ring of Figure 1: physical environment, culture, environmental orientations and representations, environmental behaviors and processes, and outcomes—products of behavior. The *physical environment* refers to features of the natural and climate, terrain and geographic features, flora and fauna. The *cultural/social environment* refers to all aspects of culture such as socialization processes, norms, customs, values. *Environmental orientations and representation* refer to how people classify the environment—the perceptual and cognitive beliefs and differentiations they make about environments. *Environmental behavior and processes* include how people use the environment in the course of social relationships. *Outcomes/products* of behavior include the results of people's actions, such as the built environment of homes, communities, and cities, and modifications of the natural environment such as farms, dams, and climate changes.

The outer ring of Figure 1 contains extensions of the inner ring; the outer-ring variables are

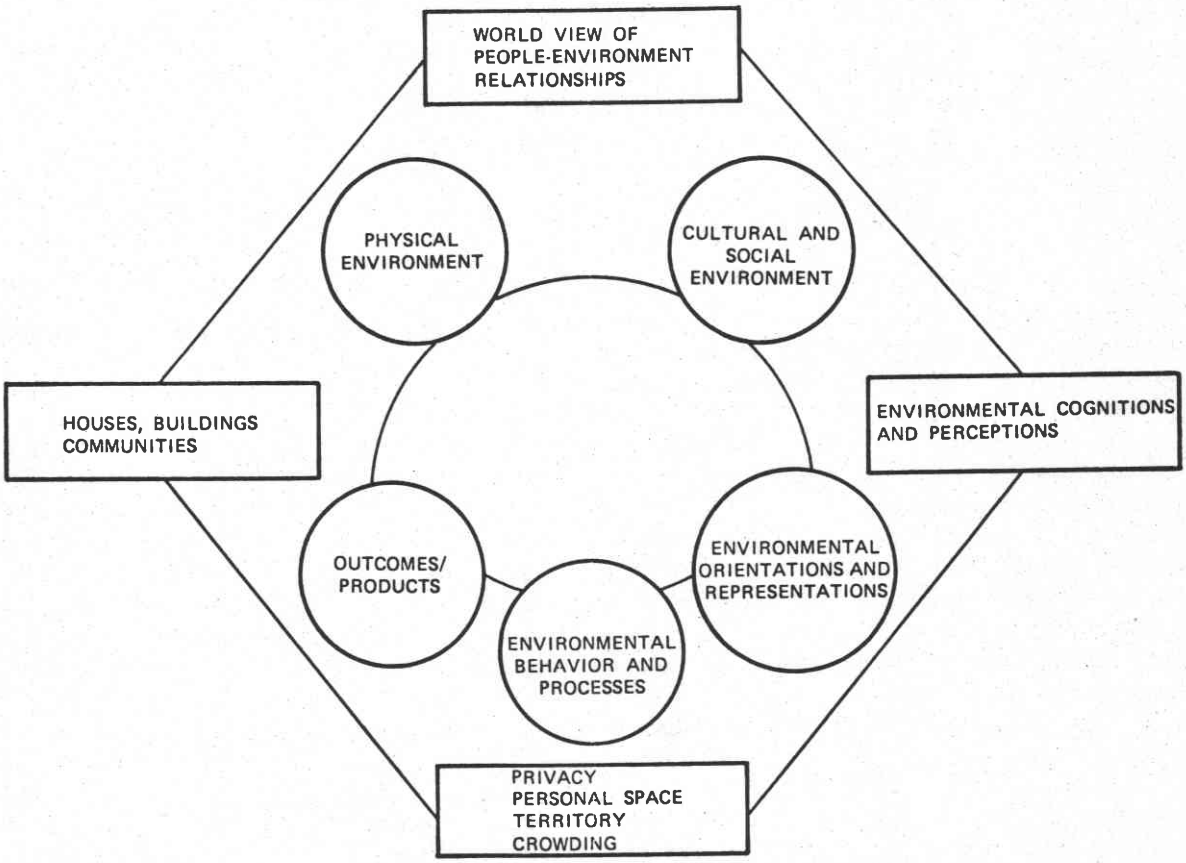


Figure 1.—A framework of culture-environment relationships.

assumed to result from the action of various combinations of inner-ring variables. Thus, physical environment, culture etc., can cumulate to affect differences in *world views* or general approaches to the physical environment. For example, several writers have contrasted philosophical and value orientations to the environment by different cultures, whcih derive from a complex set of variables. Another result of the operation of various combinations of inner-ring variables concerns *cognitions and perceptions about environments* in different cultures. Still another topic concerns ways in which privacy, territory, personal space, and *crowding* occur across cultures. In addition, cultures differ in *environmental products* — homes, cities, and communities — which result from complex combinations of inner- and outer-ring variables.

Another feature of a social systems approach is that simple linear cause-effect relatonships are not always clearly discernible, since every variable can theoretically serve in an independent or dependent role. For example, it is often implied that the physical environment is primarily an independent variable and affects culture or other variables in a one-way, linear fashion. While it is true that environmental factors such as terrain, climate, and temperature may play an important role, it is also the case that the reverse can occur, e.g., cultural practices, establishment of cities, etc., can alter the environment drastically. So it is with almost any part of the figure, resulting in multiple directions of causation. By presenting variables in a circular format, and without arrows of directionality, we wish to suggest that antecedents and consequents can occur almost anywhere. This does not rule out tracking specific relationships between variables; that is quite necessary. But, in formulating general principles it is easy to forget that a specific directional relationship is not the universe of all

A related feature of a systems orientation is that interventions in any part can reverberate throughout the system. Thus, cultural factors can affect any other set of variables, and vice versa. Also, any factor on the circle may be an accumulation of effects from other variables. Thus, environmental behaviors and processes may be a cumulative result of perceptions and cognitions, cultural factors, environmental factors, and outcomes of earlier behaviors.

While we cannot thoroughly discuss all research for the whole model, we can provide a conceptual smorgasbord of ideas which bear directly or indirectly on questions relating to the design of recreational environments. These ideas will, we hope, point toward important areas for consideration.

WORLD VIEWS

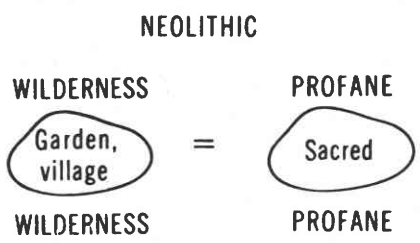
While our conceptual approach implies that one might usefully begin with any of the categories of Figure 1, an especially appropriate point of departure is *world views of the environment.* Throughout recorded history and earlier, people have been concerned with their relationship to the environment, sometimes viewing it as hostile, sometimes as nurturant, sometimes seeing it themselves as part of the environment, and sometimes believing themselves to be separate from and often above nature. These views of nature have been part and parcel of various cultures, woven directly into the fabric of the social structure, determining and being determined by the cultures' perception of and reaction to nature.

The anthropologist Kluckhohn *(1953)* noted that cultures can be characterized in terms of whether they see people as subjugated to nature, part of nature, or over nature, dominating the environment. Quite clearly, this basic orientation will affect the way a culture approaches its physical environment, and the ways in which members of the culture play as well as work in that environment.

Tuan *(1971, 1974),* a geographer and fellow participant in this symposium, has noted that people often have conflicting attitudes toward nature that exist side by side. One aspect of this phenomenon is that people often simultaneously wonder about and fear the powerful environment. A farmer might love the earth that nurtures and supports him, while at the same time fearing the powerful elements that jeopardize his well being. Tuan *(1971)* also pointed to the idea that at different periods in history and in different cultures people have held positive or negative attitudes toward the *wilderness,* or nature, and the city, or totally man-made part of the environment. Figure 2, (adapted from *Tuan, 1971)* illustrates six different sets of attitudes.

Figure 2.—Historical views of the environment (from *Tuan 1971*).

1. Edenic ideal



HISTORICAL EXAMPLES

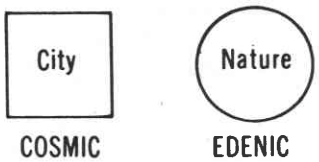
a. Eden and wilderness
b. Monastery and wilderness
c. The New England town and wilderness
d. The American seminary or college and wilderness
e. American utopian communities (First half of 19th century)

2. Urban revolution and cosmic ideal

UTOPIA

a. Plato's Republic
b. New Jerusalem

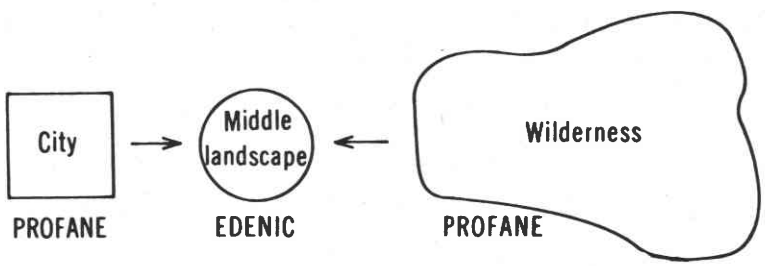
3. The two juxtaposed ideals



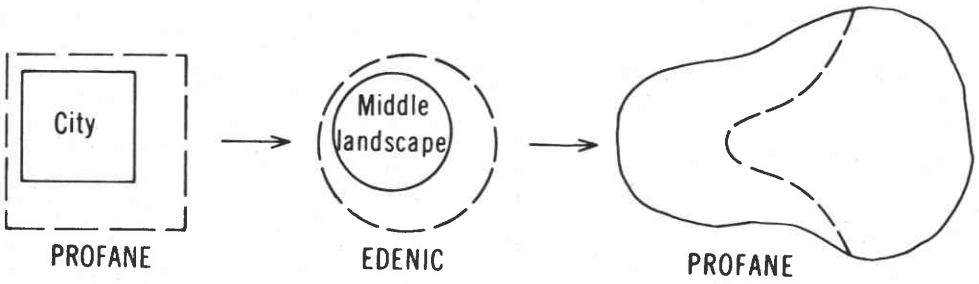
PASTORAL (bucolic)
- a. Alexandrian Greece
- b. Augustan Rome

GARDEN COUNTRYSIDE
- c. T'ang-Sung China
- d. Renaissance Europe
- e. 18th - 19th century England

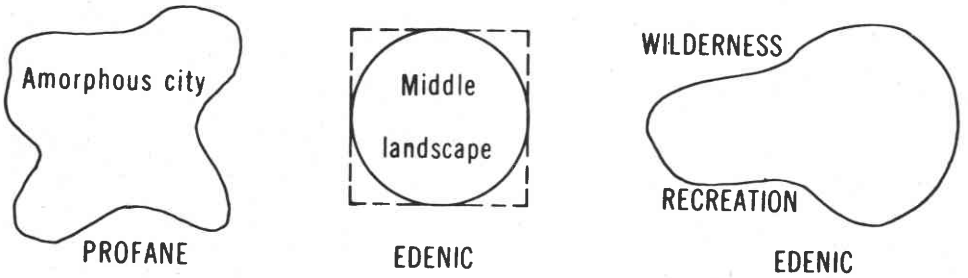
4. The ideal of the "Middle Landscape" (Jeffersonian ideal: late 18th to mid-19th century)



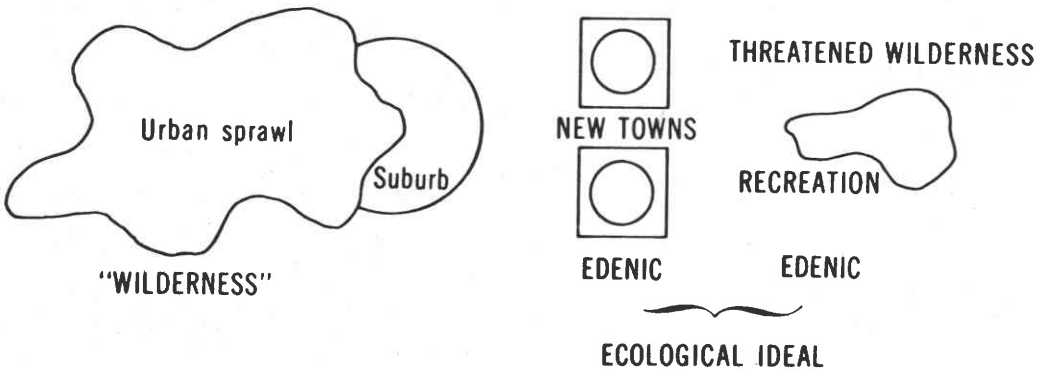
The "Middle landscape" of yeoman farmers is seen as threatened by the city on the one side and by wilderness on the other. In fact this was a time when both the city and the middle landscape were expanding at the expense of wilderness, thus:



5. Late nineteenth-century values



6. Middle and late twentieth-century values



In these different views the city is sometimes seen as sacred, and the dangerous, foreboding wilderness profane. In recent years, with our awakening concern for the preservation of the wilderness, the values are almost completely reversed. It is quite obvious that the world view a culture holds helps to determine which parts of the environment will be seen as attractive for work and play, how children will be socialized in their perception of the environment, and even what information and knowledge about the environment will be extant.

In Peter Gould's *(1974)* voluminous studies of geographical preferences, English secondary-school students held a generally negative impression of large urban areas, while Zambian college students were strongly attracted to urban areas in their country. For those concerned with recreation planning, specifically the placement and distribution of recreation facilities, such cultural preference patterns are of tremendous importance.

ENVIRONMENTAL PERCEPTION

How people perceive the environment is especially relevant to the discussion of children and their development. How does environmental perception develop? Must we be concerned with cultural differences in perception? Must we be concerned with cultural differences in perception when we design for people? These questions are of central importance both to the researcher who wished to generate knowledge about environmental behavior and to the practitioner who hopes to apply that knowledge.

The perception of the environment is somewhat unlike the perception of other objects. As Ittelson *(1973)* pointed out, the environment surrounds the perceiver. It is multimodal and extermely complex, and even its perception requires action and movement. To these we can add another unique aspect. The accurate perception of the environment has considerable significance to the organism's survival, both immediately and in terms of evolutionary process. Kaplan *(1973)* for example, has argued that our ability to form rapid and highly articulated cognitive representations (also our susceptibility to error) is a result of long-term evolutionary adaptation, when a survival premium was placed on speed and accuracy of reaction.

Other research indicates that children form utilitarian perceptions of the environment at an early age. Several researchers *(Hart and Moore 1973; Stea and Blaut 1973; Blaut, McCleary, and Blaut 1970)* have demonstrated that the ability to understand and use aerial photographs and map-like representations begins as early as 4 or 5 years of age and appears to be fully developed by about 7 or 8 years. Further, early studies indicated no great differences in this ability across cultural or social class groupings. While these findings are still extremely tentative, they point toward a conclusion that certain cognitive tendencies, determined either biologically or by early socialization, predispose the child toward early and effective environmental perception.

Does this mean that all cultures perceive the environment in the same way? The answer is probably no. While the development of the capacity for environmental perception and learning may be roughly uniform, what is attended to and learned clearly varies across cultures. Here again the notion of world views and preferences is relevant. Those portions of the environment that are seen as attractive and useful will be known and used, while less desirable areas are likely to be ignored.

From several studies of the perception of cities and neighborhoods, many of which involved youthful subjects, some patterns emerge. Several researchers (e.g., *Orleans 1971, Ladd 1970, Maurer and Baxter 1972;* and others) reported dramatic differences between groups. Orleans *(1971),* for example, found that Los Angeles Blacks, Whites, and Mexican-Americans differed in the extent and differentiation of their knowledge about the Los Angeles area. Many of these differences can be attributed to differences between groups in their opportunity and need to travel around the area. In the same study, for example, Orleans found patterns of environmental differentiation for Jewish senior citizens to be quite illluminating. These respondents had articulated and knowledgeable perception of two portions of the Los Angeles environment: the neighborhood where they lived, and the San Fernando Valley, where most of their children and grandchildren lived.

The kinds of errors people make in environmental perception are also often attributable to cultural conditioning. In a study of

a Venezuelan city, Appleyard *(1970)* found that, in drawn maps of the city, people often placed streets or railroad tracks where their experience said these entities should be, not where they actually were.

In a slightly different vein Briggs *(1973)*, using American college students as respondents, found that locations in the direction of an urban center were perceived as more distant than directions away from the city. These effects may be due to actual physical variables such as the relative traffic densities in and away from urban areas, or they may relate to more subjective forces associated with culturally influenced perceptions of urbanized locales, such as those discussed by Tuan *(1971)*.

It is safe to say that, whether cultures use similar perceptual processes or not, the content, categories, and specific features of the environment that are attended to, encoded, and remembered will be strongly influenced by culture, class, and other aspects which are part of social development. Thus, perceptually mediated cultural influences on the attractiveness, accessibility, and knowledge of environmental features should be integrated into our environmental planning. The usefulness of parks, playgrounds, and national forests will certainly be influenced by such factors.

Although perceptual phenomena probably represent the underpinnings of environmental processes, the individual actually interacts with the environment at the level of behavior. It is through behavior that the individual's perception of the physical environment, influenced by cultural world views and learned perceptual tendencies, is manifested and impacts back on the environment. Privacy regulation is one of the most central and pervasive phenomena of environmental behavior. It has important implications for any type of environmental design, and is an ideal place to look for cultural differences.

PRIVACY REGULATION

Our discussion of privacy-related processes will be keyed around three basic processes: privacy, personal space, and territory. Figure 3, from Altman *(1975)*, presents some relationships between these processes.

Privacy is the central organizing concept, and refers to selective control over access to the self *(Altman 1975)*. Thus, privacy is a process by which people and groups regulate social interaction, so that they sometimes open and sometimes close themselves to one another. We also distinguish between *desired* privacy (or what level of stimulation a person or group

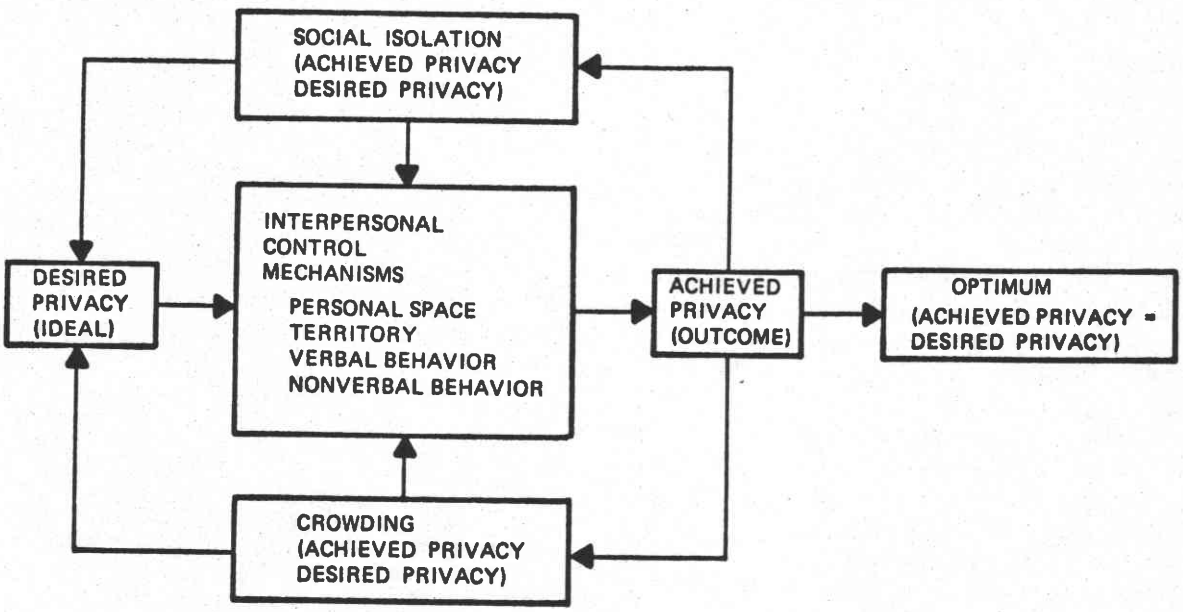


Figure 3.—Overview of relationships between privacy, personal space, territory, and crowding.

would like to have) and *achieved privacy* (the actual level of stimulation perceived). To the extent that achieved and desired privacy match one another we can speak of successful control over interaction. A privacy system is operating poorly when achieved and desired privacy do not match.

The framework also suggests that a series of mechanisms are used to help meet a mometarily desired level of privacy. These mechanisms include *verbal behavior* (telling someone to "keep out" or "come in"), *paraverbal behavior* (voice intonation, tone, interruptions and pauses etc.), *non-verbal behavior* (gestures, body postures, head positions and movements etc.) and *personal space, territorial behavior,* and *cultural styles* of responding. Emphasis will be placed on the latter behaviors since they bear most closely on environmental issues.

Personal Space refers to the "invisible boundary" surrounding a person or group, intrusion into which produces discomfort *(Hall 1966, Sommer 1969, Altman 1975).* It is commonly studied in terms of distance and/or angle of orientation between people. *Territorial behavior* refers to ownership and control of environmental areas and objects *(Altman 1975). Cultural styles* include norms, customs, and rules of interaction, such as visiting or not visiting neighbors, rules for using others' property and space, styles of probing others or avoiding intrusion. Thus, privacy is a regulatory process and various behavioral mechanisms operate in the service of a desired level of privacy. These mechanisms can function in different combinations within and between cultures, yielding a complex system of responses. That is, in one situation verbal and personal space behaviors may predominate, whereas in another situation people may rely more on territorial and nonverbal behavior. So it may be that one culture uses one set of mechanisms to regulate privacy and another may rely on a different behavioral mix.

The figure also suggests that privacy regulation may be successful and yield a good match between desired and achieved levels of privacy. Or the system may overshoot and produce more privacy than desired; i.e., a person or group may be more socially isolated than desired. Or the system may undershoot and yield less privacy than desired; i.e., a person may be crowded or intruded upon.

Psychological variables such as crowding, privacy, etc., have a heavy perceptual component. Thus, our earlier discussion of the impact of cultural variables on perception and cognition applies here as well. Within the framework we emphasize the concepts of *privacy, personal space,* and *territory,* in the context of cross-cultural processes.

In a sense, the notion of an optimal level of privacy makes the concept of privacy a cultural universal. It is quite probable that all people and groups regulate their accessibility to outsiders. Cultures, of course, vary in the designation of optimal privacy level as well as in the mechanisms used to regulate privacy. For example, Roberts and Gregor *(1971)* report that in the Mehinacu culture, a small tribal group in Central Brazil, homes are shared by several families, noises and conversations are not blocked by housing structure, dwellings and their occupants are clearly visible to outsiders, and people are clearly seen when entering or leaving the village. In short, there appears to be very little privacy among the Mehinacu. If, however, one looks past the physical mechanisms of privacy regulation to more social mechanisms, another pattern emerges. Certain areas, e.g. the men's building, have specific rules against intrusion. Furthermore, the child-rearing process fosters seclusion, specifying periods when children or young adults live in relative isolation and learn to speak softly, conceal strong emotions, and generally restrict access to the self through social-psychological mechanisms.

Another interesting example comes from the comparison of two Indonesian cultures by Geertz (cited in *Westin 1970).* In Java, privacy regulation through the use of territory or physical structures is practically nonexistent. People wander freely into and through other people's homes with no more warning than a greeting to announce one's presence. Geertz points out, however, that other control mechanisms are available.

> The result is that their defenses are mostly psychological. Relationships within the household are very restrained; people speak softly, hide their feelings, and even in the bosom of a Javanese family, you have the feeling that you are in the public square and must behave with appropriate decorum. Javanese shut people out with a wall of etiquette, emotional restraint, and with a general lack of candor in both speech and bahavior.

However, in the neighboring culture of Bali, within extended families, individuals have loose

and open interpersonal relations with high access to one another. These families, however, live in houses surrounded by high stone walls with very limited access, so that only kinsmen or close friends generally enter a person's houseyard.

Thus, while both cultures regulate privacy, they do it with different mechanisms (physical structures vs. interpersonal styles) and in relationship to different people (everyone including members of the immediate family vs. members of the outgroup or non-kinsmen).

Interpersonal and quasiphysical features are combined in the regulatory mechanisms of personal space. The pioneer work by Edward T. Hall *(1959)* alerted us to the fact that individuals have spatial zones around their persons which they regard as appropriate to different activities. For example, the space from 0 to 18 inches is *intimate* distance and is usually invaded only by intimate or close associates, and not generally in public. *Personal* distance, 1.5 to 4 feet, serves as a transitional distance between intimate and nonintimate activities. *Social* distance, from 4 to 12 feet, is the distance of general public contact. Finally, *public* distance, 12 to 25 feet, is used for formal occasions and for high-status figures.

People feel most comfortable when activities and personal distances are congruent. Thus, cultural differences in the use of space point to areas of possible conflict or concern in intercultural encounters. For example, people from Western and Northern European cultures, especially Germany and England, and their cultural descendants, Americans, maintain wider personal distances than do the so-called "contact cultures" e.g., Arabs, Latin Americans, and Mediterranean peoples. Such differences have important implications for the design of facilities that will be used by people of more than one culture. The distances chosen for interaction might be quite comfortable and natural to the designer, but subtly unnatural for the user.

Several studies have compared the spatial behavior of various ethnic groups in the U.S. *(Willis 1966, Baxter 1970).* In early studies, it appeared that Blacks, Mexican-Americans, and Whites differed in distances maintained from others. Recent research, however, indicates that social class may be more important than ethnic background, with middle-class youngsters maintaining greater distances than working-class youngsters *(Scherer 1974).* Whether culture or class is the crucial variable, the use of personal space is an important variable for consideration by designers. Evidence suggests that it is a learned process, and children demonstrate appropriate mechanisms early in life.

On a more collective level, territoriality is a widely used mechanism of privacy regulation. Altman *(1975)* discussed three types of territories: primary territory, which an individual or group holds for exclusive use and ownership; secondary territory, involving less central, pervasive and exclusive use; and public territory which is meant to be used by anyone. Cultures vary in the degree to which they acknowledge primary territories, but most societies have certain areas regarded as primary, either for the individual or for groups as a whole. Cultures may also vary in what areas they regard as appropriate for inclusion into the three categories of territory, which in turn may lead to conflict over their use.

Most recreational facilities, for example, are meant by designers to be public territories. We are all familiar, however, with the phenomenon of a street gang or club taking possession of a park or playground and regarding it as their primary territory. Perceptions of territoriality then, are likely to affect the use of certain areas and facilities.

Territory is an important enough regulatory mechanism that certain cultures have codified aspects of territorial usage. For example, Moslem building codes of North Africa prohibited the construction of any new opening in a wall between residences if it gave visual access to a neighbor *(Prussin 1974).*

Thus, there is a complex pattern by which physical structures, spacing, and psychological factors are combined to derive an optimal level of privacy. If an imbalance occurs between desired and achieved privacy levels, one can expect adjustment to occur throughout the system.

ENVIRONMENTAL OUTCOMES AND PRODUCTS

The psychological and social processes discussed thus far often contribute to environmental outcomes. Environmental outcomes or products refer to what people create in the form

of cities, communities, homes, and other modifications of the natural environment. A systems orientation reminds us that these products, themselves, can have an impact on perceptions, culture, and the environment.

Tuan *(1971, 1974)* and Rapoport *(1969)* observed how broad cultural views of nature are associated with the design of cities, communities, and individual dwellings. Cultural distinctions in orientation toward such features as earth and sky, and perceived zones of those features, will influence design. Cultures that value the concept of the center, like the Zuni Indians, or high ground, like the ancient Greeks, will design communities that reflect those values. One such interesting dimension relates to a square versus circular conception of nature. The emphasis on the circular or hoop-like qualities of nature shared by most American Indians is illustrated in a quote from *Black Elk Speaks*, a novel about Indian life.

> The sky is round. . .the wind. . .whirls. Birds make their nests in circles, for theirs is the same religion as ours. The sun comes forth and goes down again in a circle. The moon does the same. Even the seasons. . .always come back again to where they were. The life of a man is a circle from childhood to childhood, and so it is in everything where power moves. Our teepees were round like the nests of birds, and these were always set in a circle, the nation's hoop, a nest of many nests, where the great spirit meant for us to hatch our children. (Neihardt, cited in *Tuan 1971:24).*

Rapoport *(1969)* showed the compatibility between culture and home and community design. Some cultures emphasize privacy in the traditional sense of reducing stimulation, perhaps because of population density or for other reasons, and this value is often represented in community design. For example, homes in certain Eastern and Middle Eastern countries (Iran, India, Japan) are often surrounded by walls.

It is true that the physical environment, in terms of topography, climate, and building materials, must also be considered. Although adaptive responses to the physical environment are widespread, they are not universal, and cultural factor can play an overriding role. For example, in India, some homes are oriented to the east for religious reasons, yet entranceways often face uphill, even on steep hillsides.

The fact that cultural influences do play an important part in the design of communities and homes raises an interesting and important issue: What are the implications where a cultural group that is going to live, work, and play in the built environment is not responsible for or consulted in the construction of that built environment? That is, of course, the situation for many subcultural minority groups in the United States. The unsatisfactory nature of many urban low-income housing projects is, in part, attributable to this situation. It has been widely conjectured that such high-rise housing projects did not take into account the lifestyles of their predominantly black residents, especially the importance of a traditionally rich street life. Thus, the residents of these buildings, cut off from the street, unable to observe their children at play, unable to monitor or control the access of outsiders to a primary territory, may rightfully feel frustrated and alienated by an uncomfortable and unsatisfying environment.

Recreational environments, which often have man-made component, must deal with these same complex issues. How large should such facilities be? What level of density should be planned for? How much privacy? Should there be a man-made component at all? It is quite likely, for example, that a Teton Sioux Indian and an urban New Yorker might disagree on the utility and aesthetic impact of the man-made portions of Yellowstone National Park with its roads, lodges, and viewing platforms.

CONCLUSION AND IMPLICATIONS

This paper has attempted to show how the physical environment, cultural world views and perceptions, environmental behavior, and environmental outcomes are tied together in a web of reciprocal relationships. What, then, are the broad implications of our theorizing for research and application?

Cross-cultural research on environmental behavior is sparse and disconnected. More research is needed in many areas. Especially fruitful avenues seem to be in the study of environmental perception and especially in developmental processes associated with perceptions. The content and organization of environmental perception and cognition will help to highlight the ways in which different cultures approach the environment.

An examination of cultural differences and

similarities in aspects of privacy regulation will teach us not only a great deal about environment but about social behavior in general. Certainly further studies of preferences for different environments will provide us with some readily applicable information for design and placement of man-made features, as well as leading to a broader understanding of our relationships to our surroundings.

The practitioner in environmental design is in a difficult position. The research evidence on which he would base his actions is limited and often contradictory. He is alerted to the complexity of the problem, but given little information with which to solve it. We believe that our focus on cross-cultural factors does offer some tentative suggestions.

It is not new or unique to say that we should preserve what natural resources we have. However, we must add our voices to those already arguing this cause. With each new piece of research, especially in cultural differences, we find new evidence that supports the positive feature of diversity. The fact that the United States is one of the most culturally heterogeneous nations in the world offers a tremendous challenge, with the potential for tremendous rewards. If we are to make use of the diversity of human resources which we possess as a nation, we must allow all voices to be heard in determining our eventual outcomes. This holds for recreational resources as much as for any others. It would be a grave error to build a network of recreational facilities which appeal to only part of the population, while in the process destroying the possibility for future accommodation.

Research should be directed at discovering how the complex set of social, cultural, and individual variables relate to the perception and use of recreational facilities. Only then will we be able to design for all the people, for the present and the future.

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"Not only is seeing being, to repeat the phrase with which I began, but what we can help others to see must contribute greatly to what they can become." - Philip Merrifield

Seeing is Being

by PHILIP MERRIFIELD, *Professor of Educational Psychology, New York University.*

ABSTRACT. Aspects of perceptual development in children are reviewed, and implications drawn for nurturing spatial abilities in urban environments. Emphasis is placed on the visual complexities of man-made urban surroundings, and their utilization in training. Further, attention is drawn to the individual child's imagination as a resource in developing his perceptual capabilities and flexibility of thought.

THE PURPOSE of this paper is to bring together some recent—and some older—thoughts on the role of spatial abilities in the learning and personality development of children in the city. The general emphasis our culture places on language seems intensified in urban environments; there is much more to read; there are many more people to talk to; there are, in many aspects of daily living, more behavioral alternatives that need to be described in language for convenient and rapid communication. Also, even I must admit, there are some things in the urban environment which one would rather not look at, let alone explore visually.

Verbal and spatial abilities tend to be quite independent of each other. This does not mean that if one is verbal, he or she cannot be spatial. Rather, information about whether one is verbal does not help predict whether one is also spatial. By and large, about one-fourth of the general population would be above average on both kinds of abilities, and another fourth would be below average on both. The remaining half of people in general are split between those high in verbal and low in spatial, and the converse. Thus, as I have elaborated elsewhere *(Merrifield 1971),* although our schools operate in such a way as to select primarily children with high verbal ability for further education, the chance is only about 50 percent that a child so selected will also be high in spatial ability. Because it seems that most of our really high-level planning and producing jobs call for both kinds of abilities, we are missing the talents of many children by selecting too high on the verbal scale; it is quite possible that children not selected because of less than superior verbal skills could contribute greatly with verbal skills somewhat above average , combined with high spatial skills. But under our present system, they are seldom challenged to do what they can do best. Changing a system, however, often results in its veering toward the opposite extreme; selecting primarily on spatial abilities might well leave our society as impoverished in language as it is now in space. What is needed is a selection system that is at least two-dimensional or a substantial increase in the emphasis on spatial development within the existing system.

SPATIAL ABILITIES AND SURVIVAL

"Look out" is probably the most widely used expression of caution; its implication of spatial perception is obvious. But "looking" and "seeing" are different behaviors. To a large extent, it helps a great deal to know what one is looking for. As M. D. Vernon, a noted researcher and theorist in visual perception, puts it:

> It must be remembered also that observers are very prone to make inferences from such fragments which . . . are much influenced by what the observer expects to perceive . . . the focus of attention . . . expectation . . . give rise to the identification of stimuli which in other circumstances would be completely ignored. (*1970,* p. 99).

In the country

Some city dwellers, it is true, think of the country as a frightening place. They conceptualize a "nature red in tooth and claw" in which the life of natural man tends to be, as one philosopher puts it, "nasty, brutish, and short." For each of those who think thus, there are probably two or three country dwellers who think the same of the city. The point is that the developmental aspects of perception and personality are much more related to what one does with obtained information than to the content of the data themselves.

In a rural setting, one's perceptions can easily be validated. Things tend to be what they appear to be; there are relatively fixed and constant relations between time and space. One is concerned with topography, and maps are representative of distance, elevations, and boundaries. Not all is isomorphic, however: a sudden recollection reminds me that I accepted Kansas as yellow on my map, because I lived there and could associate that color to the wheat fields at harvest time; but because Missouri was maroon, my first trip to Kansas City was something of a disappointment.

Spatial ability, perhaps because of these almost-constancies all around, often seems to be better developed in those whose early life has been spent in a rural, or at least nonurban, setting. It has been noted for many years that an unusually high proportion of engineers and scientists come from the Midwest; currently, perhaps because many aspects of physics and chemistry are less spatial than they were a generation ago, the proportions in "pure science" seem closer to the population proportions, but the predominance persists in engineering. In my own field of psychology, more experimentalists than would be expected come from the Midwest, while more clinicians come from urban areas. This phenomenon, of course, may be related to the possibility that if one wishes to make changes in the Midwest, it's more convenient to manipulate—in a positive sense—the natural environment, while in the city it is often the interpersonal environment that is most in need of adjustment.

In the city

To me, a major aspect of urban living is time, and time-related events; although we value our landmarks, we tend to verbalize about them and to appreciate their historical and cultural significance as much as, and sometimes more than, their form or exact location. One is more concerned with topology than topography, and a desired street is "third stop on the A train" rather than a specified intersection. It was Gouverneur Morris, a dominant citizen early in our nation's history, who conceived the idea of smoothing off Manhattan Island; he did so, from the naturally flatter southern portion up to near what is now 34th Street. The impact of this ecological change on the development of the City was profound, as one can visualize by considering whether the current activity could take place on terrain like that in Central Park. Even quite recently, a submerged creek was discovered still running in the smooth-over area—unfortunately, it was precariously close to a computer installation in the basement of a new building.

A diagram of the subway and bus routes of a major city, particularly New York, brings home the meaning of "arterial". To speak of the anatomy of a city is not a far cry from reality, and surely the subways make a good analogy for the circulatory system; if I may be permitted a bit of figurative language, the train pulses from stop to stop, some of the bodies it carries leave full of energy for work, others leave tired from previous efforts, and bodies waiting—some tired, some energized—get on to ride elsewhere. Or, as Ezra Pound (1916) described the scene in the Paris Metro, ". . . these faces in the crowd, Petals on a wet, black bough."

It has been of great interest to me to become aware, over the past several years, of how much a city is a collection of neighborhoods, as well as an integrated whole. It may be another example of the limits to attention span which has been characterized as the "magic number 7, plus or minus 2." I have not counted up the significant boundary indicators for neighborhoods, but I would predict that whoever does will find their number between 5 and 9; I would make the same prediction whether the neighborhood were in a rural setting, where it might well cover substantial distance, or in a city, where it might be homogeneous and coherent over only a few blocks. Humans tend to limit the psychological size of the configurations they attend to, and simultaneously to explore in great detail within that configuration. Geertz *(1975)*, an anthropologist, tells us of the differing names

by which a man may be known, depending on where he is at a given time; Levi-Strauss has long emphasized the attention that "primitive" tribes give to vegetation used for food and medicine; most of us have heard of the many kinds of snow differentiated in functional ways by the Eskimo language. It is believable that a Manhattan urchin, when told by a tourist who was seeking directions to distant areas (Westchester, Nassau County, Staten Island) that "You sure don't know much," responded "But I ain't lost, mister!" One can be sure that the child was intimately familiar with most essential aspects of his neighborhood, including perhaps which side of the street to walk on at different times of day. On the other hand, one may wish to say a word for the visitor, as Leverett Saltonstall did in 1939, when he described, "The real New England Yankee" as "A person who takes the midnight train home from New York."

Summary

In either setting—and of course both have been described with some exaggeration, for emphasis on their differences—the key to maintaining one's self is attention to both configuration and detail, essentially to the innate complexity of living. Vernon *(1970)* puts it nicely:

> Nevertheless we have suggested that from infancy upwards the child builds up complex integrations, or schemata, by means of which what is perceived at any moment is related to memories and knowledge . . . immediate perception is modified and corrected to give rise to more veridical impressions of the environment . . . in all complex stimulus situations cognitive processes of inference, reasoning and judgment may be employed in coding incoming information. (p. 240)

PATTERN RECOGNITION

Among the more intriguing of the spatial abilities is that (or those) involved in what is usually called "pattern recognition." There may be but one aptitude that is mostly reponsible for this phenomenon, as some earlier theorists alleged; on the other hand, this behavior, like problem-solving and creativity, may be really the resultant of a complex of aptitudes *(Guilford 1967)*, each of which is necessary but none sufficient to the challenge of discovering the pattern in a series of events, a configuration of lines, a confluence of gully washes, a rolling roiling skyful of clouds. Smith *(1964 : 217)* quotes K. Lorenz, the Gestalt theorist, in support of the idea that the exercise of this complex of aptitudes is something awesome to behold and, at the same time, tremendously rewarding to the one who is able to "see the picture."

Most child psychologists and many teachers have heard of the relatively recent and still continuing work of Witkin and his colleagues *(Witkin, Dyk, Faterson, Goodenough and Karp 1962)* on psychological differentiation. In these studies, the phenomenon of interest is whether the child is able to discern figure from ground or, in less esoteric language, the object or meaningful pattern from its background or surrounding context. A major device in assessing children's aptitudes along this line has been the Embedded Figures Test, in which the child is asked to look at a number of different pictures and, in each one, find a familiar shape, e. g. a triangle (figure 1).

This task could serve as a test item for measuring the aptitude factor that Guilford

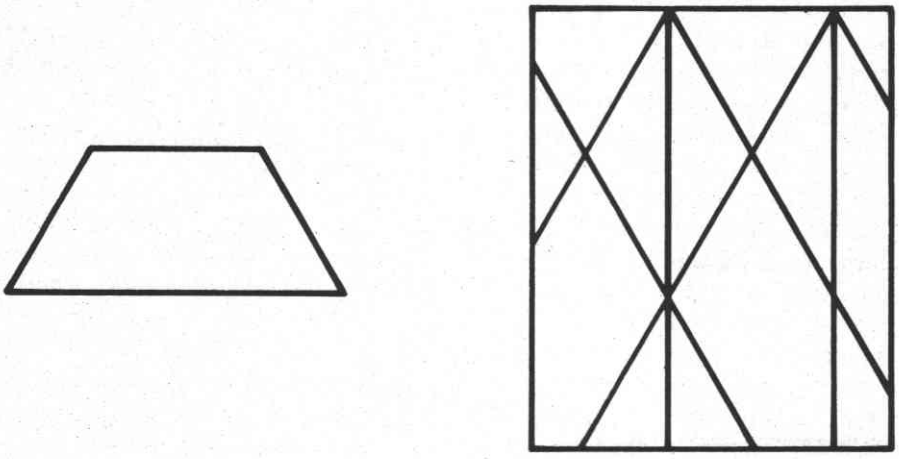

Figure 1. An example of an embedded figure.

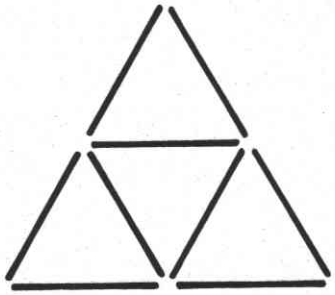

Figure 2. An exercise in spatial flexibility.

(1967) refers to as "convergent thinking about figural systems." His work on the definition and measurement of intelligence is a landmark in the field, but the categories of thinking processes, varieties of context, and types of format are too complicated to discuss further here. Those interested in techniques for developing spatial abilities in children should certainly consult Guilford's work. To return to figure 1, the trapezoid on the left is hidden in the rectangle on the right. It is the same size and shape in both. Its location in the rectangle is described in a note at the end of this paper, for those who prefer to look rather than see.[1] A similar task (figure 2) also involves figural material and the disembedding of a specific shape. In addition, however, it requires greater consideration of alternatives, and a somewhat looser approach to the definition of the task. In the figure, there are four small triangles. It should be easy for many to see how to remove two of the little sticks and have only three triangles, with no sticks left over dangling and no triangle incomplete. Taking off any corner will do the job. Now consider the possibility of removing two sticks and leaving only two triangles. The key to this problem is in the same note as that for figure 1. The study of illusions, such as the staircase which sometimes leads up and sometimes down, and the Necker cube, and others no doubt well remembered from introductory courses in psychology, is another part of this emphasis on transformations in space, on redefinitions in conceptual areas. Transformations and redefinitions, in turn, are central to problem-solving and creativity in any field.

Many psychologists have attempted to relate performance on spatial tasks such as the embedded figures to personality traits. The general run of the literature suggests that those who are poor at the task, whom Witkin would call field-dependent, are, more often than not, sensitive to their environment and adaptive, but in extreme cases overly conforming to the point of being self-destructive. In contrast, those who do well (field-independent) are believed to be more objective and assertive and to have strong ego boundaries; in the extreme they, too, become maladaptive, exhibiting such behaviors as aggressiveness, heedless insensitivity, and sometimes just plain stubborness *(Smith 1964 : 238)*.

Psychology has traditionally attempted to reduce its explanatory discourse about behavior to the neurological level wherever possible. Although a great deal of the research in spatial abilities is concerned with "softer" measures such as aptitudes and temperament traits, the Gestalt emphasis has always had a substantial concern for neurological analogs at least, if not full-fledged explanations. A recent article suggests that exposure to complex surroundings early in life can produce changes in neurological structures, changes that seem to be related to pattern perception. Greenough *(1975)* states:

> It seems clear that the brain's anatomy can be altered by a variety of experiences. Almost certainly, the new synaptic connections which we and others have found following various environmental manipulations do play some role in the functioning of the brain. (p. 46)

Greenough reports (table 1) that differences in the amount of neurological growth seemed to be related statistically to the environmental complexity to which young rats were exposed during the first weeks of their lives.

One should note, especially for our purposes here, the substantial proportions of variance attributable to differences between litters, and to the interaction effects of litter and environmental condition. These findings strongly suggest that there are major differences between individuals in this kind of neurological develop-

Table 1.—Estimated proportions of variance accounted for by treatment variables

Cell type	Environmental condition	Litter set	Interaction	Total
Layer 2 pyramidal	11.8	6.8	25.8	44.4
Layer 4 stellate	17.3	22.5	18.9	58.7
Layer 4 pyramidal	11.4	23.8	21.8	57.0
Layer 5 pyramidal	18.0	14.8	11.0	43.8

From Greenough 1975: 43.

ment. Still, the pattern is striking, and the import of the influence of experience on development at the neurological level turns much of the argument for innate capability around; caution must be taken, however, to differentiate between that argument and the hereditarian argument with which it is sometimes merged; the latter, of course, gains potential support from the large individual differences found. If individual differences persisted in strains from parent to litter, then of course the hereditarian position would be strengthened. At any rate, in humans, trainability (which may have hereditary components) has not yet, in my opinion, been matched with training sufficient to capitalize fully on the potential productivity of each individual in what is called the "normal" population.

At the other end of the continuum, one notes the studies of sensory deprivation, either purposeful in the laboratory or accidental, as in many large institutions. These findings suggest that children who are not frequently and appropriately stimulated through exposure to culturally relevant patterns fall rapidly behind their age peers who have lived in more complex environments. As we noted earlier, it seems to be the complexity rather than the subject matter per se that contributes to the development of such pervasive and necessary clusters of aptitudes as pattern recognition *(Vernon 1970).*

TRAINING

But, one may well ask, how can we begin to train children without substantial equipment? How can we mount and manage the field trips which would carry city children to complex natural environments? How can we create, in the city, sufficient complexity to be stimulating, such as different ecological complexes, different varieties of plant and animals and birds? As a partial answer, or at least a comment, let me recall that gentle lady, Emily Dickinson, "I thought that nature was enough, Till human nature came," and suggest that in the cities the human problems are sufficiently complex to challenge us all.

More directly to the point, there are two major sources of complexity available to the urban child. One is the urban environment itself, of which I have spoken briefly and to which I shall return. The second has been quite properly emphasized by Richard de Mille. He speaks forcefully of the development of human imagination, and has provided an imaginative guide for teachers, parents, and interested adults to use with children.

> Visualization enters into such disparate activities as painting, sculpture, choreography, architecture, astronautics, engineering, and photography. It is also helpful in playing baseball, moving furniture, and driving a car . . . Despite the wide range of differences, visualization is a common human ability. Furthermore, it is very unusual for anyone, especially a child, to say that he cannot *imagine* anything. A person who can *imagine*, or *pretend*, can play imagination games. In a group of children playing the games, we may be sure that some are experiencing more vivid, exact, and constant images than others. But each is imagining in his own way. That is all that is necessary. *(de Mille, 1973 : 23-24)*

In his book, he provides several intriguing exercises which are not inappropriate for adult participation. Here is a portion of one of them.

> When we walk around, we are walking through air. You can't see it, but if you swing your hand around, you can feel it. Air is easy to walk through . . . Trees or bricks or rocks are too hard to walk through, except in your imagination.
> This game is called HARD.
> Be outdoors, walking. / Walk through some tall grass. / Walk through some bushes. / Walk up to a thick hedge. / Walk right through it. / Walk up to a big tree trunk. / Walk right through it.
> Find a big rock. / Walk into the middle of it and look around inside it. / Have it look rocky in there. / Walk out on the other side of the rock. *(de Mille, 1973: 159-160)*

With regard to the urban environment itself, where would you find a beaver on the Lexington Avenue Subway? Perhaps in Van Cortlandt Park, just beyond the northern terminus, but definitely in a ceramic tile in Astor Place. The imagination drives on, with an assist from history, from Astor Place to Astoria, Oregon, where in 1811 a young man who would have to be called an "eager beaver" (if that slang is not completely old hat) established a trading post that led to a railroad empire. Where are there gargoyles, and lions, and other fancies in fabricated iron and stone? Almost everywhere, or at least within a short walk. The visual complexities abound, outside as well as inside museums. It is for those who wish, to see; it is for those who see, to teach others.

Shakespeare, in *As You Like It*, speaks through his favorite character of "books in running brooks." Our rivers—East, Harlem, and Hudson—are hardly brooks, but their tides have contributed much to the affairs of men. And as for "sermons in stones," see the glimmery

shadows contrasting with spears of brilliance as morning breaks behind St. Patrick's Cathedral, or as light pauses momentarily on the spires of St. John The Divine. Later in the day, the red blush of sunset on midtown Manhattan's western slope rivals the great displays in western canyons. And finally, on a clear night, the moon-silvered skeins supporting Verranzano's bridge seem almost too frail for their task, yet beautiful enough that one considers not caring about strength. These are the results of man's imagination, man's vision, man's application of his spatial aptitudes. Not only is seeing being, to repeat the phrase with which I began, but what we can help others to see must contribute greatly to what they can become.

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[1]The trapezoid in Figure 1 has its right arm on the top of the rectangle; it is tilted up and to the left about 50 degrees from its initial position. In Figure 2, no one said the triangles had to be the same size. Remove any two of the three inside sticks.

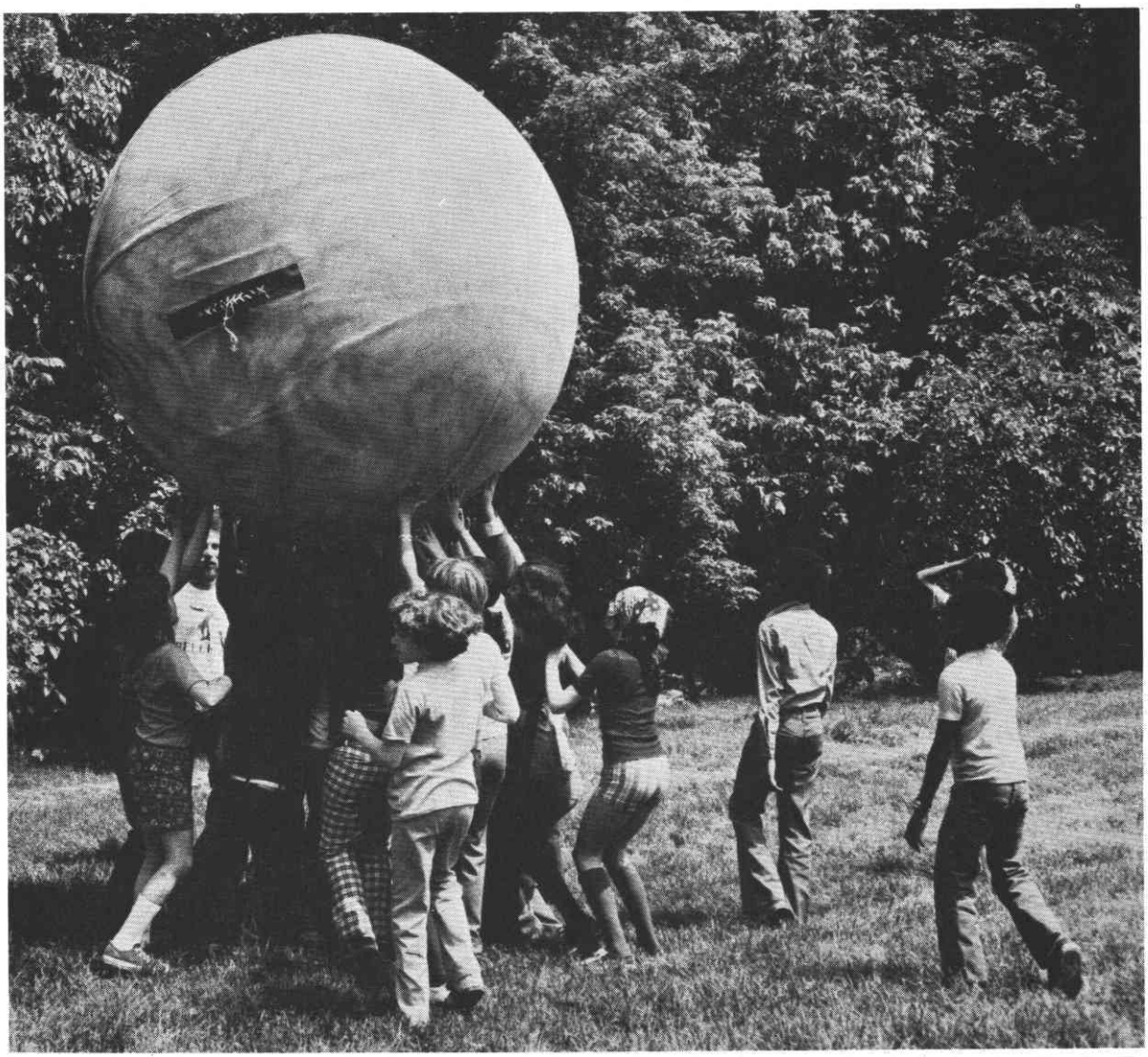

PHOTO BY MICKEY SPENCER

"Primitive man's response to biological cycles, his need to form cognitive maps and to explore the unknown, his need for perceiving patterns and making sense of his surroundings, his psychophysiological preference for elbow room, for natural ionized air, and for freedom from excessive noise—all are characteristic of modern man" -B. L. Driver and Peter Greene

Man's Nature: Innate Determinants of Response to Natural Environments

by B. L. DRIVER *and* PETER GREENE, *Recreation Research Project Leader, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, and graduate student, recreation resources, Colorado State University, Fort Collins, Colo., respectively.*

ABSTRACT. Man's sensory mechanisms evolved by natural selection in natural settings and humans survived as a species not so much by the "club in the hand" but by the "plan in the head." That plan or abililty enabled man to remember, interpret, and predict environmental events. Humans have an innate capacity (but not necessarily a developed ability) to find most natural stimuli compatible with their psychiological makeup. Many urban people do not have the familiarity and experiences necessary for them to be comfortable in natural environments, and therefore cannot enjoy fully one of their "human natures." Opportunities to discover and rediscover innate human natures should be encouraged.

The nighthawk sometimes speaks to me
Of nature's beauty and where I fit
He tells me of our place in time
Of his, and yours, and of course, of mine
And when he's done, just slips away,
To wait the coming of another day.

—from "Our Place in Time"
in People, Places and Spaces
by Arthur W. Magill, 1975.

BASIC PREMISES AND OVERVIEW

DOES THE ANIMAL *Homo sapiens* have a nature? The answer appears to be yes, he has several. It is his nature to walk erect, to rely primarily on his visual sense, to be influenced considerably by social learning, and so on.

Two basic premises underlie the central argument of this paper. The first is that humans have another nature which has developed during thousands, even millions, of years of evolution. This nature is man's capacity (but not necessarily a developed ability) to find most stimuli from temperate natural environments (such as those in which man evolved) compatible with his physiological makeup. To put it differently, the sensory mechanisms (eyes, ears, noses, taste buds, etc.) of humans developed while they lived in relatively natural surround-

ings. It makes sense, therefore, to propose that the process of natural selection has given human beings a sensory system that is well equipped to handle the normal range of stimuli encountered in natural settings.

The second premise is founded on a distinguishing charcteristic of man's evolution—his ability to think, remember, and predict what will happen to him. The premise is that man needs a certain amount of familiarity with, or knowledge about, his surroundings before he can function effectively in them. Therefore, before man can "enjoy" natural environments compatible with his nature, he must have a necessary level of familiarity with, or understanding of, these environments.

Readers will interpret these assumptions about man's evolution as reasonable conjectures, interesting hypotheses, or irreverencies according to their individual beliefs and values. Our view is that there is considerable evidence to support the propositions that (1) much human behavior is still mediated through man's evolutionary inheritance, and (2) modern man has a strong innate predisposition toward nature which is activated by famililarity with, or understanding of, natural settings.[1] It is the purpose of this paper to examine the evidence in support of these two propositions.

This paper is not a plea for a return to nature. We share most other people's desire *not* to live in caves, hunt for most of our food, fight off rodents and insects, engage in tribal wars, and do without many of the comforts, conveniences, and cultural endowments of modern society. We do feel, however, that much more can and should be done to maintain environments that offer the advantages of a technological civilization *and* the equilibrating values of natural areas described in this paper.

MAN'S BIOLOGICAL REMEMBRANCE

Cro-Magnon man, who lived as a hunter 30,000 years ago, is believed to have been almost identical to modern man mentally as well as physically. He stood upright as we do, had the same size body as ours, an cranium at least as large, and used tools that fit our hands *(Pfeiffer 1969)*. Within this evolutionary context, Iltis *(1966)* has stated that "man is a complex bundle of biological adaptations; his eyes and ears, his brain and heart, even his psyche are the evolutionary adaptations of the human organism to nature." Or, as Dubos *(1968)* put it, there are many examples in everyday life of man's "biological remembrance of things past." Past and current man's response to certain basic biological cycles will be mentioned as the first of several such examples.

Because primitive man lived in intimate contact with nature, his activities were greatly influenced by changes from light to darkness and by changes of the seasons. These diurnal, lunar, and seasonal cycles all had their effect on bodily and mental functions of man. Remarkably, these biological cycles still persist in modern man, even though such things as light and temperature in our homes and offices can be controlled. For example, after a rapid change of longitude from jet travel, we experience physical disturbances because the body can't adapt rapidly enough to the dislocation of its day/night rhythms. This is not a subjective reaction, but is caused by the secretion of hormones controlled by the biological clock *(Dubos 1968)*.

Another example of human behavior which has its roots in the distant past is the so-called "wisdom of the body" *(Cannon 1932)*, reflected in the fight-or-flight response. When prehistoric man was faced with something threatening or unknown, hormonal processes in his body would prepare him for combat or escape. This was a critical survival mechanism then. This mechanism survives in modern man, even though these metabolic changes do not necessarily serve survival purposes during a verbal conflict or while attempting a mental task.

Other human "quirks", difficult to comprehend, can perhaps be best understood within an evolutionary context. Examples include our "herd psychology" or gregariousness, our omnivorous eating habits, our apparent desire to climb to high places for surveillance and protection, and the play instinct. While man is capable of adapting to many conditions not present in

[1] For brevity, we will not attempt to explain our concept of a "natural" setting. To clarify somewhat, however, we view man as natural but also perceive most developed areas that are *highly* man-influenced as not very natural (at least as man generally tends to influence them). Also, we do not hold out wilderness as the only natural area. To us a potted plant is also natural, but it is less so than a similar plant growing in a wild area. So, we are referring to the *relative* degree of man's influence.

his original environment, he cannot stray too far from or disinherit his ancient lineage *(Dubos 1968).*

The East African savannahs, our ancestors were accustomed to, were no doubt quieter and more pleasant to the human ear than modern-day industrial districts. Primitive man had to rely more on his ears to pick up sounds of possible danger than we do today *(Berland 1970).* However, he didn't have to deal with the loudness of some of our technological inventions.

A tribe called the Mabaans, now living in the bush country of Sudan, are a case in point *(Rosen et al. 1962).* This band of peaceful people, who live in a manner resembling that of the late Stone Age, inhabit an environment that is dramatically quieter than those of most other human populations. After administering a battery of physiological tests to these people, Rosen found them to be extremely healthy, with a total lack of hypertension, coronary thrombosis, ulcerative colitis, acute appendicitis, and bronchial asthma. Also, unlike most Westerners, they had the same blood pressure at age 10 or 90, and suffered very little hearing loss in the higher frequencies with advancing age. In fact, the Mabaans had better hearing than any other group of humans ever tested. While variables such as diet, exercise, and heredity are influential in the Mabaans' excellent health and hearing, Rosen found that when the Mabaans moved north to noisier urban areas they became prone to high blood pressure and coronary thrombosis. A variety of environmental influences certainly caused these changes. Nevertheless, it seems that the Mabaans were better adapted to the familiar and natural environments in which they lived before they moved north.[2]

Another example of our biological inheritance is the influence of ions and electromagnetic fields on our behavior. As a result of evolution, our normal biological rhythms are established and controlled by natural electromagnetic and electrostatic fields *(Logan 1974).* Air ions, both negative and positive, have been shown to produce changes in body tissues that yield compounds necessary for body functions.[3] Negative ions have been used successfully in treating burn patients for pain, restlessness, and infection *(Krueger 1973).* Claims have also been made that negative ion generators cause rises in blood pH and carbon dioxide, which stimulate the adrenal and thyroid glands. This allows for lower blood pressure and promotes growth and energy *(Dubos 1965).*

On the other hand, ion imbalance might explain a wide range of human problems, including respiratory infections, enervation, and a loss of mental and physical efficiency, *(Krueger 1973).* Man often encounters ion imbalances, especially negative ion depletion, in modern city life because he spends so much time indoors; and when he is outdoors, artificial electric fields and air pollution interfere with the ion ratios. Researchers have proposed that air ion concentrations and ratios be maintained at levels approximating those existing in nature *(Krueger 1973).* Even though man, with his technological progress, has been able to escape somewhat from his original ecological niche (by living artificially), his body still requires many of the features of his nature-ordained background to function properly *(Logan® 1974).* Mountain air, for example, has been said to be so refreshing because of its relative concentration of negative ions *(Dubos 1965).*

Another basic characteristic of man is his requirement for living space. Common indications of our need for personal space are the erection of garden walls and "no trespassing" signs, the staking out of claims on beaches, and the resentment we show at intrusions *(Hall 1966).* Each kind of animal has evolved to exist in a certain amount of territory, and when this space is too severely curtailed the consequences can be serious. In commenting on the problems of humans living in densely populated areas, Leyhauser *(1965)* has stated, "the mental health of the individual is in danger and eventually will break down if adaptability is stretched too far beyond the limits set by evolutionary adaptation".

If we are each to have an amount of space equivalent to that each individual had when the human race evolved, our parks would have to

[2] Of course, an argument could be made that had the Mabaans lived in cities in excellent states of health, they might have developed high blood pressure and other disorders if they were moved to unfamilliar, less urbanized areas. But those data do not exist, and the literature on human stress tends to refute its plausibility.

[3] As an oversimplification, negative and positive air ions refer to the electrical charges associated with specific atoms or groups of atoms found in the atmosphere.

cover thousands of square miles *(Morris 1969:39)*. Instead, urban residents often battle bumper-to-bumper traffic on trips into the countryside which are taken, at least in part, to be less cramped up for awhile. In fact, desires to leave the city and its crowded conditions temporarily have been documented as important reasons for engaging in many outdoor recreation activities *(Driver and Knopf 1976)*.

THE EVOLUTIONARY NEED FOR FAMILIARITY WITH ONE'S SURROUNDINGS

One particularly distinguishing set of characteristics that man acquired from his evolutionary past is his ability to process information effectively. Stephen Kaplan *(1973a and b)* has done considerable work in exploring this topic. He has surmised that prehistoric man's capacity to identify the current situation rapidly, predict what might happen next, and then act appropriately where critical for survival. Without this ability to store information and see relationships, it's unlikely that the relatively physically weak human would have been able to withstand environmental dangers. He had to explore the unknown and mysterious, and constantly formulate cognitive maps or mental representations of his surroundings. Because man was surrounded by various kinds of natural stimuli such as forests, cliffs, flowing water, and wild animals for millions of years, he gradually grew accustomed to many of the features and relationships of that kind of existence. This is not to say that he was able to identify and predict under all circumstances, but after prolonged interacting and learning in a particular environment, those who survived attained a certain degree of competence or mastery *(White 1959)*. In circumstances that man could not comprehend, or where he could not form a cognitive map, he probably felt anxious and uncomfortable.

Kaplan suggests these same principles are quite evident today, and that man is "happiest" under those conditions where he can explore, predict, and generally expand his knowledge and skills as a complex information-processing organism. This claim is supported in a study by Kaplan and Wendt *(1972)*, in which subjects were asked to indicate their preferences for various slides of nature and urban scenes. Interestingly, the subjects were particlularly attracted to those scenes that had an identifiable nature content. In fact, the least preferred nature slide was still favored over the most preferred urban slide. After analyzing the preferred slides, Kaplan and Wendt drew the conclusion that people's preferences were based on three major aspects of the scene, one of which is particularly relevant to the theme of this paper. That dimension, called "legibility," was defined by the authors as the ability of the viewers to "make sense" out of the scenes.[4] The point is not only that there seems to be more ligibility and coherence in natural settings than in urban ones, but that we need to have some familiarity with and comprehension of an environment before we can feel comfortable or competent in it. This need to know what is happening to us is common to everyone. As complex problem-solving and information-processing organisms, we need reasonable understanding of, or familiarity with, our many surroundings (whether they be play, work, or other environments) before we can function effectively in them.

This discussion of our seeming preference for scenes which are coherent and identifiable does not mean that we are most content in a never-changing, sterile environment. Quite to the contrary, Kaplan and Wendt found that the students they studied had a preference for complexity and mystery, or novel elements, as well. One popular slide showed a path disappearing around a bend, leaving the observer unsure of the destination. That slide, in which there was promise of the observer solving the mystery with further exploration, seemed to delight the subjects. One can conjecture that this attraction is related to ancient man's need to investigate for survival purposes.

John Platt *(1961)* expands on this notion by saying that the mind's grasp and enjoyment of the external world rest on the neuropsychological necessity of perceiving novelty and pattern. Novel situations of every variety probably bombarded early man at an unprecedented rate. He constantly had to search for some kind of order in the flux of strangeness, if he were to survive. Our brains and sensory

[4] The findings of this earlier work have been supported and refined by Kaplan's later *(1975)* research.

mechanisms might have thus evolved to deal with a "continuous novelty of pattern." Not only do our minds "enjoy" patterns, they also seek change from conditions of stimulus-deprivation *(Platt 1961).*

In summary, humans need familiarity and predictability, but there is also a preference for novelty, optimal complexity, regularity, and pattern as well. Gestalts and patterns are particularly important because, with the astronomical number of input channels from all the senses, it would be impossible to perceive every element individually. "There's a fundamental axiom that any many-element receptor system is necessarily a pattern-selecting or pattern-perceiving system" *(Platt 1961).* In the biological, natural world there are a multitude of examples of symmetry and pattern. Man often finds these shapes and forms beautiful, but it is these patterns within larger patterns and the elements of tolerable surprise and uncertainty that distinguish this kind of pattern from that of a series of geometric homes. The saying that "nature abhors a straight line" is not totally without meaning.[5]

TRANQUILITY AND COMPETENCE

For many years our literary tradition, from Thoreau, Melville, and Twain, up to and beyond Hemingway and Frost, has been extolling the wilderness as "spiritual tonic" and at least a "momentary stay against confusion" *(Marx 1967).* The spiritual tonic values of nature, especially the normative concept of "living in harmony with all creation," are described in the religious writings of all cultures, both primitive and modern. Just as historically pervasive in the literature has been the theme that nature provides opportunities for emotional release and integration, and a chance to recover psychic equilibrium. This relates to William James' *(1892)* notion of involuntary attention, which essentially means that a person can perceive his surroundings without expending the sizable amounts of physical or psychic energy required when he is voluntarily absorbed in directed concentration. For example, a hiker might just let his mind and senses wander and involuntarily become enraptured with the rushing waterfall, the snow-capped mountains, the fragrant flowers, or the song of a bird. Nothing is forced, and as Rachel Kaplan *(1973)* suggests, we can thoroughly relax and temporarily forget about the worries or cares of the day under these conditions. Research findings reported by Driver and Knopf *(1976)* support Kaplan's suggestion, in that many outdoor recreation activities seem to help people cope temporarily with the strains of mental activity, role overload, and other stresses experienced in home and work environments.

These ideas about the soothing therapeutic values of natural environments are quite prevalent today. Perhaps many of these feelings are directly related to our genetic preferences. Major cities have been described as too frequently burdening individuals with a stimulus overload, monotony, and a lack of identity *(Lynch 1960, Milgram 1970),* whereas natural areas, especially wildlands, are generally associated with a low level of noise, few conflicting or ambiguous stimuli, a wide diversity of patterns, and a relatively high rate of predictability. This ability to feel mentally satisfied with one's environment is extremely important, because the failure to do so can be a cause of physical and psychological stress *(Howard and Scott 1965).* The critical question is: to what extent do we have to escape to distant natural areas to cope and avoid temporarily the stresses experienced in home environments?

In addition to finding natural areas relatively tranquil, humans might also find it relatively easy to learn certain skills in these environments. Along this line of thought, Bernstein *(1972)* has proposed that attaining competence might be easier in selected outdoor settings than in alternative urban ones, because people can be more concerned with mastering skills of their own choosing than with trying to conform to social constraints. With the lesser role expectations and a greater degree of behavioral flexibility, and with fewer confusing and traumatic stimuli, the selected natural area provides strong possibilities for positive reinforcement. In other words, a person might be more likely to be rewarded for his own actions in this kind of setting. Bernstein suggests that this

[5] Man's architecture can design visually attractive patterns and gestalts with optimal levels of complexity, novelty, and so on. The problem is that, frequently because of economic considerations, most of our designed environments tend to lack these attributes.

would lead to an enhanced sense of self-worth and would better prepare a person to cope under more formally structured situations that do not allow the same degree of personal discretion.

It is not surprising that Outward Bound Schools and therapeutic camp settings have claimed to be making headway in rehabilitating antisocial and mildly disturbed individuals. Also, the possible benefits are not limited to those who are viewed socially as unnormal. Marans et al. *(1972) and Scott et al. (1973)* found that participants in the Youth Conservation Corps felt they were better people for having participated, and not only because of enhanced outdoor skills and increased abilities to relate to their peers and to adults. Rachel Kaplans's *(1974)* evaluations of an Outdoor Challenge Program in Michigan's Upper Peninsula have led her to suggest that increased competence with respect to the skills required in the woods has a relationship to aspects of self-esteem, such as "a greater sense of concern for other people, a more realistic outlook on one's own strengths and weaknesses, a greater self-sufficiency in the uses of one's times and talents, and a rather positive view of oneself." Other natural areas less distant from the cities might offer similar advantages.

While there seems to be no clear-cut evidence or consensus in the playground literature as to what environment is best suited for children's play, a growing number of authors at least intuitively sense the value of natural areas *(Aiello et al. 1974, Marcus 1974).* Since a child's play is an important part of his cognitive development *(Piaget 1962),* it is possible that the area and objects of play are suitable for promoting growth and a healthy self-image. Natural areas seem to be valuable to children as places where they can explore and learn about themselves and natural systems *(Aiello et al. 1974).* They have good atmosphere for developing self-confidence *(Bernstein 1972),* and as mentioned throughout, are accommodating to the human organism.

NEED FOR FAMILIARIZING EXPERIENCES

Because many people now live in urban areas, techniques must be developed and applied to allow them the necessary familiarization with natural areas. It was Devlin's *(1973)* hypothesis that if children were provided with prior orientation, their uncertainties and fears would be lessened. Her thinking is supported by Zajonc *(1968, 1974),* who found that repeated exposure could overcome an initially negative stimulus effect and enhance an individual's positive evaluation of that stimulus. Devlin felt that an experimental group of children who were familiar with the area and had help in formulating cognitive maps would be more comfortable and competent in a chosen natural area than a control group. While her study did not demonstrate that point, subsequent studies do lend support to her hypothesis about the value of prior knowledge *(R. Kaplan 1975).*

It is also important that the familiarization begin at an early age. Growth and development is very rapid during these formative years, in contrast to later years when habits and environmental tastes tend to stabilize *(Bloom 1964).* Individuals become conditioned and are likely to select surroundings that are not threatening and harmonize with established interactional patterns. In this regard, the attitudes of parents and the environment that children are accustomed to have a great influence.

In a study of young people's outdoor activities in a suburban residential area, Aiello et al. *(1974)* found that neighboring families of similar economic and educational backgrounds had different feelings about the suitability of natural areas for their children's play. While some parents actively encouraged their children to play in the woods or around the pond, others, who expressed an unfamililarity with nearby natural areas, strongly discouraged their youngsters from visiting these places. Similarly, Marcus *(1974)* assumed that a child's preference for man-made play surfaces (asphalt) as opposed to natural ones (grass) may be related to the environment in which the child was raised. Urban children accustomed to playing on concrete school yards and alleys were much more comfortable and imaginative in the use of those areas than rural children, who felt a greater attraction for, and mastery-competence with, soil, grass, and trees. The role of exposure, learning, and conditioning, then, is critical in determining a child's habits and attitudes, and for that matter those of his parents. If the possible benefits of natural areas are to be sought, the child must develop habitual behaviors in those environments. Inner-city children, in particular,

often have little exposure to or opportunity to experience forests or other areas that are predominantly natural. Familiarizing experiences are especially needed by these youths who could be missing a very important dimension of being human.

CONCLUSIONS

We have discussed selected environmental conditions that have influenced man's evolution and some of the adaptations he has made to these conditions. At the same time, we have identified some of the characteristics of these adaptations that are evident in man today. Primitive man's response to biological cyclen, his need to form cognitive maps and to explore the unknown, his need for perceiving patterns and making sense of his surroundings, his psychophysiological preference for elbow room, for natural ionized air, and for freedom from excessive noise—all are characteristic of modern man. It has been suggested that these needs can be met today in natural surroundings, similar to those of our evolutionary forebears. *Hypotheses* have been offered about the calming effects of natural areas, as well as about the calming effects of natural areas, as well as about a greater opportunity for developing competence and for building self-confidence. But it has been emphasized that, even with these predispositions and these side benefits, adequate familiarizing and learning are necessary.

It is clear that man has adapted to an urban life without many natural stimuli, but we wonder how healthy this is for him. Is there a more optimal environment for human "being?" Iltis et al. *(1970)* has proposed that there should be a compromise between environments where humans have maximum contact with the natural conditions in which their ancestors evolved, and ones offering the comforts and conveniences of modern technological society. If one accepts this proposal, we should strive to redesign urban areas with more of an eye toward interspersing natural and man-made elements,[6] and we should educate adults and children about the potential values of the outdoors.

One reviewer of this paper pointed out appropriately that we have taken a rather "sanitized" view of nature, in that the unattractive things were not mentioned. These could include biting insects, both hot and freezing temperatures, subsistence living with hunger, the fears and stresses caused by natural catastrophies, and the possibility that man might have inherited his violence from the killer ape. He also suggested that good music and other art forms have their place, too.

We agree, and iterate that this paper *is not* a call for a return to nature. Instead, our feeling is that opportunities to discover and re-discover the many human natures should be nurtured. The provision and maintenance of opportunities to realize culturally learned, or conditioned, natures should not constrain learned, or conditioned, natures should not constrain too severely other opportunities to realize innate natures. As with many problems, the solution is one of balance in deciding how far we can go in either direction and still capture the desired benefits of each direction.

[6] Although costly, it can be done. An excellent example is the riverfront development in San Antonio, Texas.

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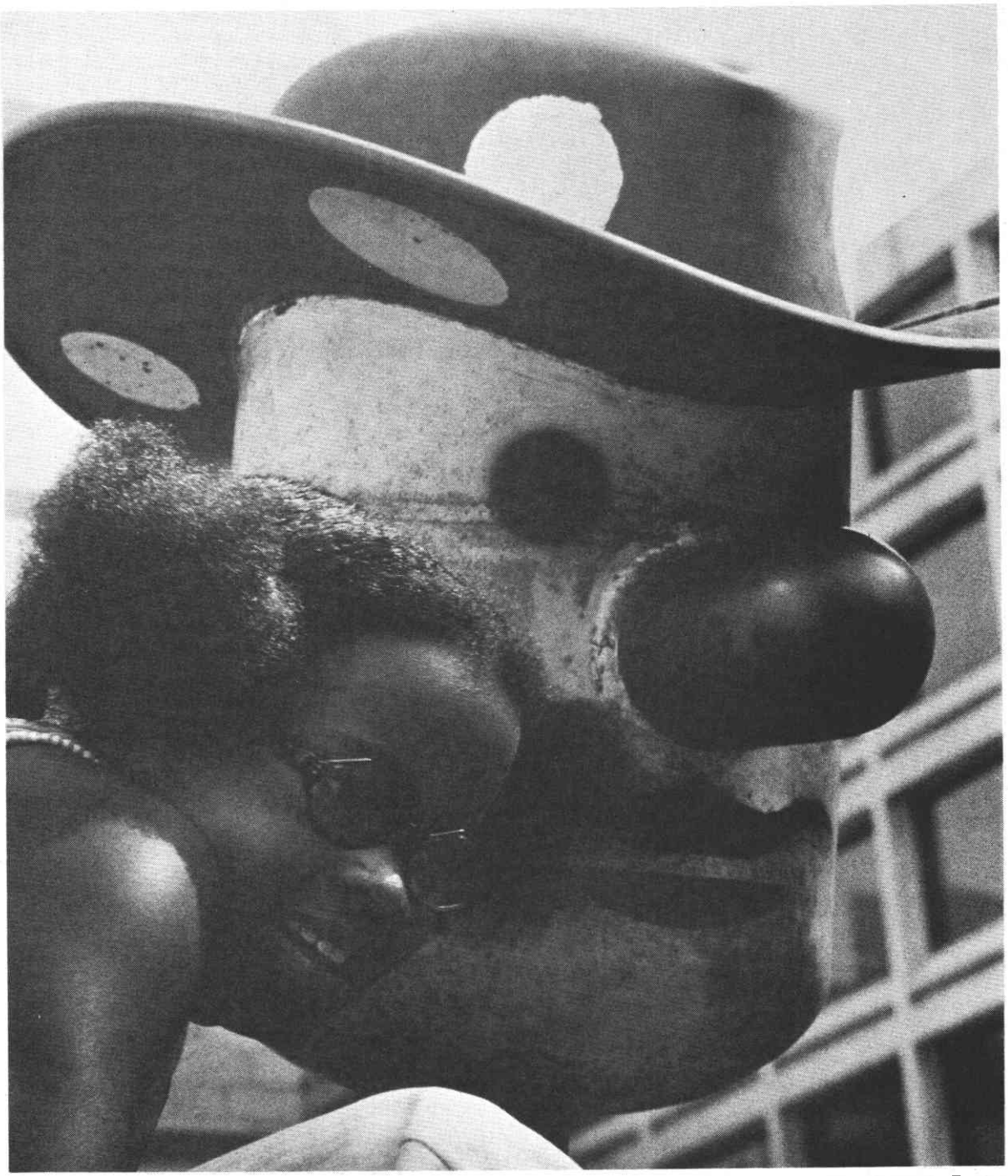

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"So I would argue that by focusing on the behavioral and institutional continuities—the real consistencies displayed by our species—we might be able to find a better way to understand childhood" - William R. Burch, Jr.

Learning from the Continuities in Humanity and Nature

by WILLIAM R. BURCH, JR., *Associate Professor of Forest Sociology, School of Forestry and Environmental Science, Yale University.*

ABSTRACT. Though the emphasis in American life is upon dramatic social change, the firmer reality is our great continuity in social behavior and institutions. For example, though many strategies of child rearing have cycled through human society, the basic problems and responsible social unit remain the same. Of necessity, children have an ordered and holistic view of nature and the urban places where they live. We, in the people-thinking trades, can learn much if we are willing to listen before we prescribe.

THE EMPHASIS ON CHANGE—new, now, the best, the latest, the earliest—has always been a characteristic of our society. But as we near the end of the American century that Time magazine used to tell us about, it might be wise to look at a less dramatic but no less important factor: stability. One of the things that we often fail to recognize is the great consistency within our social system—the great conservation—the many things that do not change.

I have experienced three generations of childhood and hope to experience four. I've experienced my own childhood, the childhood of my children, and the childhood of my grandchildren; I hope to experience the childhood of my great-grandchildren. When I was a child, breast feeding was not considered a very good way to raise children. During the Depression, having children was not considered a good idea. Children were things that we sat over in the corner; we hoped that they would stay quiet. My children were raised on Dr. Spock and we were big on natural childbirth. In having their children, my daughters followed something called the Lamaze program, and their attitude toward raising children seems to be somewhere between Summerhill and "hit them occasionally". The interesting thing about these changing approaches to raising children is that the basic rearing unit has remained the same; the needs of both the child and parent have remained the same; and the kinds of things that parents and children end up doing to each other have not changed very much. These relationships have been relatively stable over time and display a degree of universality across cultures.

So I would argue that by focusing on the behavioral and institutional continuities—the real consistencies displayed by our species—we might be able to find a better way to understand childhood.

In the first session of this symposium, we discussed many views about *Homo sapiens*. I think one of the great issues that emerged out of these discussions was that we will no longer dichotomize man and nature, country and city, mind and body, individual and society. We need to adopt a holistic point of view that recognizes, for example, that urban places are as natural as rural places; that views the mind and the body as flowing together; that focuses on the close relationship between individuals and societies. Separating these things for either academic or managerial purposes is being false to ecological reality.

Most of us are in the management business — the people-tinkering trade. We are adults in our middle years, which stretch from around 20 to around 60. Those of us in this age group have a

great concern about youth and about the aged. We feel that because we work and they do not, they are not living very productive lives. Consequently, we make an occupation out of managing the lives of the young and the aged. And we have a certain stake in casting our own theoretical views upon the young and the aged.

For example, some students and I conducted a review of the literature on children's camping and found a remarkable similarity in each decade between the prevailing theories in business and commerce and the prevailing dogmas about how children should be "managed" in camp situations. In the early days, we had a kind of moral imperative to take children out and make them learn how to endure on their own so that they would develop an inner-directed attitude. Then, during the 1920s, the scientific management literature told us that children should make effective and efficient use of their time. This literature told us a lot about scheduling—what and where to do things. Then in the 30s we had the Human Relations Era, most of which was based on the Western Electric studies. This old moo-cow sociology told us how you keep them happy down at the old factory. During the 50s and the early 60s, camp programs involved a lot of group dynamics and T-group sessions that had started in industry and were transported to the camp situation. Children were supposed to have long debates on whether they should go over here or over there. The sessions I heard during this symposium involved a lot of talk about "target populations" and I found a strange resurgence of concepts dealing with self-testing in the wilderness and inner-direction—about how we must take delinquents to the wilds so that they can learn how to make plans and organize and accomplish goals and how this process does all kinds of good things for their heads. So maybe we have come full circle.

Ethics, for those of us in the people-tinkering trades, requires that we recognize that we are all involved in maintaining a particular kind of social system and involved in furthering a particular view of how children, nature, and the urban domain should be ordered. In spite of the wide variety in dress, talk, and lifestyle of participants in this symposium, all remain firmly a part of the established social order.

Those who speak most strongly about liberating the child are often those who really mean they want the child to accept their particular frame of values and to reject the frame of others. Few persons at this gathering want a child so liberated that she or he may freely adopt the racist or sexist stereotypes of an Archie Bunker. We do not liberate ourselves or the child by playing at revolution or cynicism. We only do so through attempting to understand how children actually use the entire natural world, from the city street to the depths of a National Forest. We must start to listen, to look, and to learn systematically from children. Our programs, policies, and management practices must be as fluid and growing as this learning process. And most radical of all; under such a scheme our clients may even begin to think of us as real persons.

Research on Urban Children and the Natural Environment

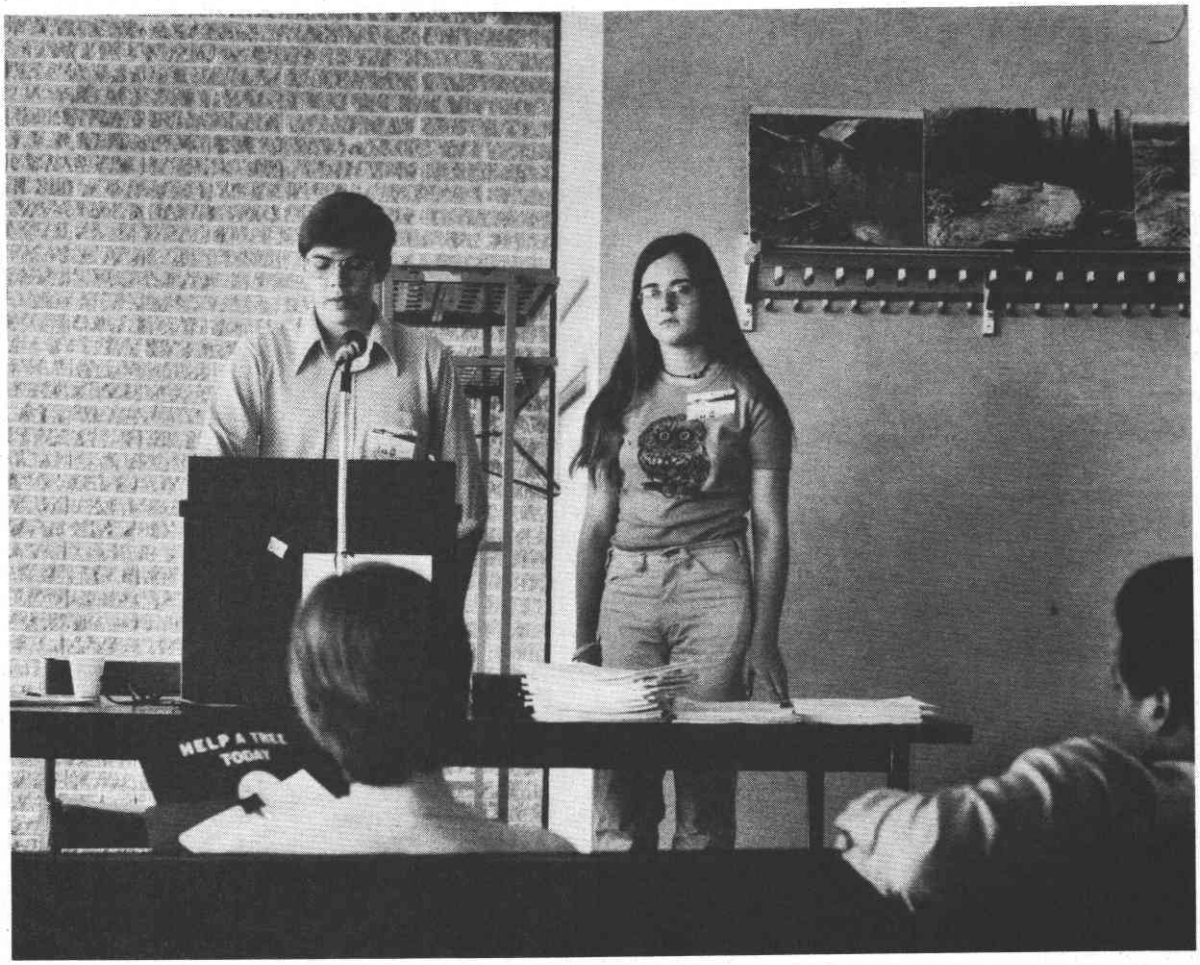

PHOTO BY MICKEY SPENCER

"We should begin by learning from adolescents what they regard as adventurous activity. With their assistance, settings and projects might be developed in which some of their own proposals for legitimate adventure might be tried" - Florence C. Ladd

City Kids in the Absence of....

by FLORENCE C. LADD, *Associate Professor in City Planning, Graduate School of Design, Harvard University*

ABSTRACT. Environmental requirements for adolescents are rarely met in urban settings. There are few opportunites and facilities for legitimate adventure. Public amenities and public places for private moments are inadequate. Programs and facilities that would enhance the "personhood" of the urban adolescent and increase the comfort and dignity adolescents experience in public places are needed.

LEGITIMATE ADVENTURE

I SPENT THE LATTER part of the 1960's engaged in a study of black adolescent boys, ranging in age from 12 to 17 years, who lived in the poorer sections of Boston's Roxbury and North Dorchester. They were the subjects of a study of identity formation in black youth. While others engaged in research focused on the impact of their families, school, and peers on their lives and their destinies, I explored what their neighborhoods and housing meant to them, where their Boston lay, and what they found in the Boston area to interest them, amuse them, depress them, excite them; what places they enjoyed, wanted to destroy, to cherish, to avoid. I soon realized that they found very few places that were interesting and safe to explore and enjoy, few places that offered them opportunities for challenging experiences and adventures that were *legitimate.*

What might they do for excitement, adventure? Steal a car and go for a ride at breakneck speed through Franklin Park or along Blue Hill Avenue. Do a little shoplifting in a downtown department store and *just* escape getting caught, getting busted. Rob the poor boxes of churches. Or grab a few pocketbooks after the first of the month, buy some grass or hash or heroin and get high. Pull a fire alarm or maybe even start a fire. Break into somebody's "pad" and "rip off" a radio or TV set which might be sold traded or simply discarded.

Such incidents are not exclusively in the domain of the black and the poor who are young. They touch the lives of our entire adolescent population. For some, they are the critical episodes that divert them from troublefree paths in directions that lead to more disruptive, trouble-making events. Still, the prospect of finding legitimate opportunities for adventure is a greater problem for poorer kids than for richer ones who, from time to time, have occasions for travel and vacations which afford them adventure through the stimulation of new settings, foreign languages, personal discovery, meeting people who are different, and so forth. Even for them, the opportunity to visit faraway places is only occasional; they, like their poorer peers, have routines and restrictions that limit the risks and the excitement they might enjoy.

Why do some kids choose to seek adventures that lead to trouble? Why don't they find fun in legitimate activities? Certainly some kids find stimulation and pleasure in museums, art galleries, and zoos. They play tennis, baseball, football, or soccer; go for a boat ride or a swim; discover new worlds in old libraries; take the elevator to the top of a skyscraper, and on a clear day are turned on by a panoramic view of their city and what lies beyond. Don't such activities afford kids experience that is sufficiently exciting and adventurous?

What is exciting and adventurous in the realm of adolescent experience in the 70s? To experience adventure, some kids, particularly in

urban settings, must test the legal and moral boundaries of society and, in the eyes of some break the law. Situations that allow them opportunities for risk-taking and exploration often are situations in which they are violating a law or the rights of property of other people, or both. An element of adventure lies, in part, in the knowledge that one is challenging or violating the legal and moral structure of his society. In urban settings, it is as if kids are forced or compelled to find adventure and excitement in activities that involve legal and moral risks. During the years when boys and girls need external challenges against which they can test their own daring and endurance, there are few legitimate opportunities available to them in their daily routines and environments for them to test themselves. There are few legitimate adventurous situations that allow them to explore the range of their physical and intellectual skills and abilities.

When we consider where young people of previous generations in the United States sought and found adventure, our thoughts turn to natural settings, wildlife, and open spaces. Vanishing are the natural areas, especially the wooded areas, in and around cities where, only a few decades ago, kids explored, charted, roamed, hid, were lost, and (the lucky ones) found safe and unhurt. Dirt roads on the edge of the city that once seemingly lead nowhere are now paved and lead into the orderly geometry of suburban developments. The pockets of wilderness, those undeveloped areas that once were found near what clearly were the city limits, have been leveled and covered with residential developments or industrial parks. There are few natural environments left where the urban adolescent may explore and experience adventure in.

There are parks, with much that is natural, of course. Most urban parks in the U.S., especially those with wooded areas where some kids might experience adventure, are regarded as unsafe. Adolescents are apprehensive about being mugged or maimed in city parks. To be sure, adolescents are users of parks. Going to a park and running the risk of being robbed or assaulted involves an element of adventure. For those who go innocently into a park, the element of adventure is incalculable; the odds may well be against them. They are not comparable to the calculable risks presented by trails through woods or the face of a mountain or a river's rapids.

Except for the courts and playing fields for sports, playgrounds include few facilities that attract adolescents. There are a few playgrounds in the U.S. that offer adolescents the possibility of invention and the opportunity for supervising younger kids, but relatively few adolescents are to be found on those playgrounds; their clientele are largely preadolescent.

There are city-based programs such as scouting that generate adventures with the urban context. Scouting and other similar programs, such as Outward Bound and the Youth Conservation Corps, have provided wilderness experience or at least camping opportunities and environmental education for the few urban youngsters who have had a chance to participate in them. For many reasons, such programs are available and attractive to only a few. First of all, the programs are limited and they are not highly visible. They are, generally speaking, expensive to operate, and consequently, prohibitively expensive for kids from low-income families. The style of adult supervision renders the programs unappealing to some kids, who resent or resist adult authority figures. Such programs, however, have brought legitimate adventure into the lives of a few city kids.

How might the positive features of programs with adventure elements be developed as models for new situations which might appeal to a larger number of urban adolescents? What would city kids like to do to experience legitimate adventure? Under whose auspices should adventure programs be developed? (If there are "sponsors" and "programs" would the events have the quality of adventure at all?) To what extent should schools be responsible for encouraging the direct participation of students in adventurous experiences? How might features of urban environments be designed or transformed to provide settings for adventures? Can wilderness within cities be simulated and maintained for safe use by kids?

We should begin by learning from adolescents what they regard as adventurous activity. With their assistance, settings and projects might be developed in which some of their own proposals for legitimate adventure might be tried. In a city, the adventurous aspects of the work of the

fire department, city hospitals, newsgathering agencies and the police department might be made more visible to adolescents. Museums might organize clubs for would-be explorers who, through film and other media, might experience the thrills other explorers have sought and found. Scouting could be revitalized and expanded to offer more kids opportunities for the physical and intellectual tests they need. The collaboration of schools and private organizations such as the Appalachian Mountain Club, the Sierra Club, and other conservationist groups might broaden opportunities for adventure for some adolescents.

From a design viewpoint, the possibility of simulating wilderness or creating within cities environments with risk-presenting elements could be a challenge to the planner and landscape architect to go beyond the conventional playground and design places with adventurous possibilities for adolescents.

Finally, adults might reflect on what they do to experience adventure. Of course the needs of adults for adventurous experiences are quite different from those of adolescents. Nonetheless, it seems that a large segment of the adult population in the U.S. are passive, vicarious adventurers. Through the mass media, news of the adventures of others comes to us swiftly and in vivid detail. The small band of active adult adventurers who challenge time, space, mountains, seas, climatic conditions, and world records are far outnumbered by the spectators who sit at home and watch the action on television. To improve the quality and increase the number of adventure opportunities for young people in a society, we must reexamine what adventure means to its adults, its standard makers. Consider what *you*, as an adult, do for adventure and what a 14-year-old city girl or boy may do. Then consider with her or him, with teachers, parents, mayors, recreation directors, scout leaders, coaches, active adventurers, architects, and planners what legitimate adventures might be generated for city kids.

PUBLIC AMENITIES

A means of communicating to an individual that he is a nonperson, that is, someone whose existence does not matter, or that he is less than human in some respects, is to deprive him of some basic amenities that others, more privileged, have available to them for their routine use. In public places, the absence or denial of the use of such simple amenities as places to sit, drinking fountains, and toilet facilities, is a very effective way of depriving people of their personhood, and, indirectly, a means of controlling their behavior. Until the civil rights movement of the late 50s and early 60s brought change to policies governing public facilities, blacks in the U.S., particularly in Southern States, were denied access to certain public amenities as an expression of the denial of their personhood. Other groups in history, of course, have been treated similarly in sociopolitical contexts in which they have been regarded as the outcasts or the enemy.

In contemporary American society, we now see adolescents being treated that way. Many public places that serve a predominantly adolescent clientele do not provide the simple comforts such places typical provide (or used to provide) for adults. For example, playgrounds and playing fields are developed with no toilet facilities for the young users. Restaurants (if they really can be called restaurants) that cater to adolescents frequently provide only food and formica counters; napkins, catsup, mustard, and flatware must be requested by the consumer. In recently built eating facilities, seating may not have been included in the plan; older facilities may have been stripped of their seats.

There are more extreme examples of statements by designers and managers of public places that say to young people that they are not wanted. Their money will be accepted, but they themselves are unacceptable. In and around drugstores, grocery stores, ice cream shops, and variety stores that are frequented by young people (often situated near other facilities used by them primarily, such as schools, cinemas, skating rinks, etc.) there are signs and signals that ask them not to linger. There are "authorities" who are present to make them feel uncomfortable, to let them know that they are not wanted. "No loitering", some places say figuratively as well as literally. "Move along", policemen order a line of young people leaning against a store front on a major urban thoroughfare.

The posture of adolescents in public places often is a leaning one. Kids may be seen leading against a store front, leaning against parked cars, leaning because there is no place to sit. In

the U.S., we live in a "cafe-less society". The public or semipublic chairs and tables that afford a dignified vantage point for those who wish to linger along the boulevards and plazas of European cities and towns are not available on a large (or economically accessible) scale for the use of those who would enjoy the living theater an active street scene offers. Such places need not be exclusively for adolescents; they could be inviting to all ages as are Europe's most successful cafes.

In facilities expressly for adolescents, such as schools, amenities that would enhance the comfort and dignity of students should have highest priority. Student lounges in public high schools are often an afterthought. A classroom or corner of a corridor is belatedly converted into a "lounge" by furnishing it with a sign, "Student Lounge". Elsewhere, in and around junior high and high schools, there is ample space for milling around but there are a few places to sit except in the classroom. There are rarely benches in or around the open space and playgrounds adjacent to public schools. When students use the steps or walls of the schools for seating, they often are asked by teachers, custodians, or the principal to move, to sit elsewhere - as if there were somewhere else to sit! And so they mill around again like a discontented herd.

Inside schools, there is a good deal of milling around, too. There are expanses of ill-defined space (and time, when there is little or nothing to do) where youngsters linger while they wait for class to begin or wait to see a teacher or wait during recess or simply wait.

The arguments against providing attractive settings for young people are well known: they will misuse them, abuse them, vandalize them, deface them with grafitti. In truth, adolescents have rarely been offered attractive settings expressly for their use. They are rarely offered amenities that speak to their personhood and invite their participation in adult social forms and behaviors.

A change in cultural attitude toward adolescents may be required before we get around to improving facilities intended for adolescent users. That need not be the order of events, however, Environmental changes are simpler to implement than are attitudinal changes. Designing public environments for adolescents (and other age groups as well) with amenities that are addressed to their needs and to their personhood might be a step toward eliciting from them more socially acceptable public behavior, and, at the same time, encouraging their adult critics to view them differently; indeed, those critics might be encouraged to acknowledge and appreciate the personhood of adolescence. Providing tables and benches along the perimeters of school yards and playing fields, small amphitheaters in parks for impromptu bongo or guitar recitals, benches along streets or at intersections where there is action to observe, adequate public toilet facilities, and comfortable student lounges in public schools are just a few environmental changes that might enhance the public lives of adolescents and increase their status on the streets of cities and towns.

PLACES FOR INTIMACY

Adolescent boys and girls require times and places where they can enjoy each other's company in small groups or simply experience being alone. Those intimate moments, those private times, are rather special. The experience of these unique and important events is enhanced when they occur in unusual settings or in settings with special effects. What adolescents need for intimate occasions is probably very similar to what adults require for their intimate or private moments. Examine the types of settings an adult selects for an intimate meeting with a friend, a relative, a spouse—a secluded bench in the park, a grassy grove near a river bank, a corner table in a dimly lit restaurant with unobtrusive music or conversation, a booth in a bar that has a certain appeal. There are, no doubt, secluded park benches to which some adolescents retreat for some of their private moments. However, safe secluded spots in natural urban environments are harder and harder to find. Built environments that adolescents use rarely convey a feeling of privacy or seclusion. There are few settings in which they can enjoy a confidential chat or begin to explore the avenues to intimacy.

To be sure, for several decades the automobile as living room has served kids (and others) in the U.S. as a place for private experiences. The automobile as a place to sit and converse, eat, and drink is less than satisfactory, especially if the occasion is prolonged. The automobile as a setting for social occasions is pervasive in

acolescent culture in the U.S. It is not only poor and working class kids who may be found socializing in cars on Friday and Saturday nights; a tour of shopping centers or parking lots in the affluent suburbs after the stores have closed will reveal a number of parked cars occupied by kids listening to car radios or taped music while they talk, smoke, and drink beer. The automobile is a less than adequate environment for such occasions.

Kids ought to have more environmental and social options, more satisfactory settings for their special occasions. They ought to be able to experience some of their special moments in places that enhance their dignity and delight. In planning facilities for adolescent users, their needs for places for intimacy and privacy should be taken into account. At the same time, the values, standards, and expectations of society must be taken into account, too. Reconciling these different needs is not easy; reports and suggestions from many quarters are needed to determine how far the culture is ready to move toward improving this aspect of the lives of its less privileged adolescents.

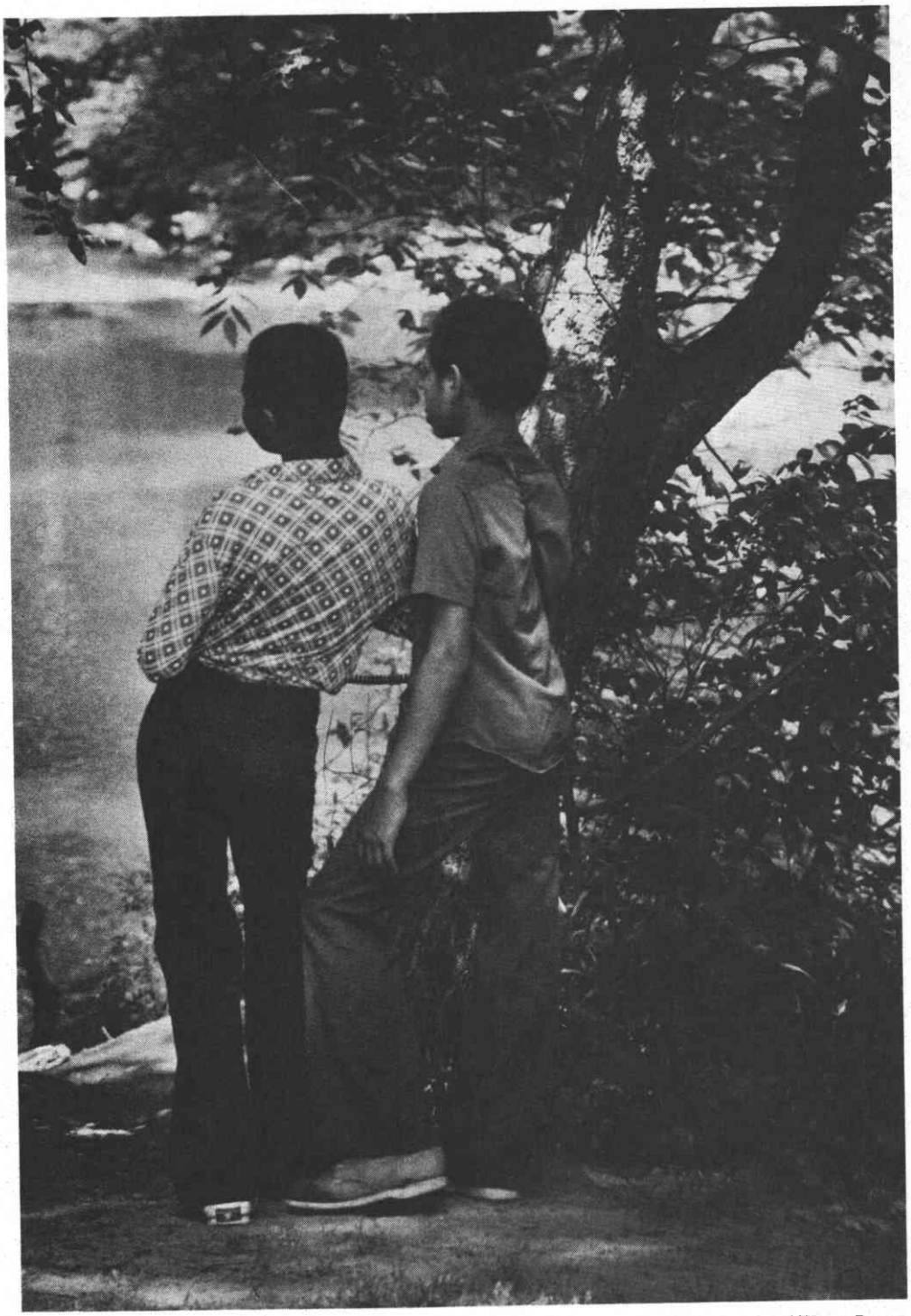

PHOTO BY WALT BLAIR

"Once man hunted wild animals and gathered wild roots and berries in the wilderness to survive. Now we must hunt for the wilderness itself" - Leonard S. Marcus

Within City Limits: Nature and Children's Books About Nature in the City

by LEONARD S. MARCUS, *Writer, Dover Books, New York, New York.*

ABSTRACT. Many children's books give the impression that we must leave the city to be "in nature." This is a review of children's books about nature found within city limits. The books include a natural history of New York City; a guide to city wildflowers and other weeds; a book about city trees; a delightful inquiry into the true nature of the roach; a book of experiments and collecting methods for amateur naturalists; and a story about a family of ducks in Boston. Readers of these books may not only learn to identify many urban forms of nature, but may also see some of the ways these join in our experience of city life.

FOR AS LONG AS cities have had a major place in American life, most American writers writing on "nature" and the "city" have taken the two terms as opposites, and from at least two points of view.

First, the city has been considered an unhealthful environment and nature, to be found mainly elsewhere, a healthful one. Advocates of the plan to build Central Park compared the park to a lung that would help purify the urban industrial air.

Then also writers have expressed the more debatable, and debated, idea that the purification nature affords is spiritual as well, that nature serves as a cure for some artificial quality of urban life.

Accounts of city life pointed to the bad influence of the "crowd" on individual behavior, interpreting the cause and effect in various ways, and ending with the seemingly obligatory conclusion, as in the carefully constructed argument of Frederick Law Olmsted:

> . . .whenever we walk through the denser part of town, to merely avoid collision with those we meet and pass upon the sidewalks, we have constantly to watch, to foresee, and to guard against their movements. This involves a consideration of their intentions, a calculation of their strength and weakness, which is not so much for their benefit as our own. Our minds are thus brought into close dealings with other minds without any friendly flowing toward them, but rather a drawing from them. Much of the intercourse between men when engaged in the pursuits of commerce has the same tendency . . .People from the country are over conscious of the effect on their nerves and minds of the street contact—often complaining they feel confused by it; and if we had no relief from it at all during our waking hours, we should all be conscious of suffering from it. It is upon our opportunity of relief from it, therefore, that not only our comfort in town life, but our ability to maintain a temperate, good-natured and healthy state of mind, depends. . .

There. Olmsted, the builder of urban parks, saw the solution to the problem within city limits as a problem of design. While the American park movement rapidly spread, and to a remarkable extent under Olmstead's personal supervision, the urban parks apparently did not satisfy the city peoples' desire for contact with nature. By the turn of the century, as Peter Schmitt in *Back to Nature: The Arcadian Myth in Urban America (Oxford, 1969)* describes, American urbanites had devised many recreations as ways of communing with nature: some acting vicariously, reading essays and popular fiction and looking at postcards and stereoscopic views; some actually taking to the wilds. A striking feature of the latter group of Arcadian travellers was their tendency to take certain

conveniences of the city along wherever they went, and to plant these in such a way as to make the wilderness seem more like home.

The very roads which made the countryside more accessible altered the nature of the destination, bringing out such crowds as city people had hoped to escape, then also demanding the facilities (hotels, refreshment stands, etc.) to support them. Under these and other pressures, "wild" nature was modulated to urban proprieties and interests. The city parks spread as expressions of cultivated nature. The suburbs developed as an ambiguous case. Gradually, playgrounds and other facilities appropriated more space in the city parks from the landscape, adding another layer of human design.

Once man hunted wild animals and gathered wild roots and berries in the wilderness to survive. Now we must hunt for the wilderness itself. Recently, a number of writers of children's books, apparently departing from the traditional view that the city and nature are opposite places, have looked in the city itself for evidence of wild nature.

John Kieran's *A Natural History of New York City (Natural History/Doubleday, 1971)* is a fairly large book, including chapters on every major group of plants and animals found, or once found, in New York City; it implies a great deal for readers in other cities interested in finding out about such things.

Four species of bats have been found in New York City, four types of gulls . . . Kieran does not want a systematic inventory here; he goes out of his way to leave certain matters to the "scientists." Kieran has found Arcadia in the city. In writing about nature, Kieran makes good fellowship count for as much as sharp observation, of which there is plenty, and both seem necessary to his seeing of the natural world:

> So much for the Crowfoot Family . . . though there are many other representatives of the Crowfoot clan hereabout for those who have the time and the desire to seek them out. We have to move on to . . . the Bloodroot *(Sanguinaria canadensis)*. The ghastly name is due of course, to the thick orange-crimson juice that oozes from a break in any part of the plant . . . Bloodroot survives in only a few favored localities within the city limits. We who share the knowledge of this particular patch feel like fellow conspirators as we keep watch in early April . . . on a certain tree-studded bank that we pass regularly on our morning walks . . .
> Good fellowship, the exact touch of the scientific name, flashes of sensuous detail beside the author's good-natured piques, an evident interest in nature lore, a touch of romance and of the absurd—all mark the Arcadian, the city dweller who turns to nature occasionally for spiritual relief, at times traveling to great lengths for the experience, though Mr. Kieran makes his gesture at the artifact itself, taking wonder, as he does, that wild nature continues to exist in and around the city.

In much the same spirit, Anne Ophelia Dowden has provided an account of one group of wildlife found in the cities: weeds *(Wild Green Things in the City, Thomas Y. Crowell, 1972)*. Weeds are defined as plants unwanted by man: where they grow they grow despite human efforts to destroy them or to ignore their presence. Most city weeds are found in "vacant" lots.

Other weeds grow in cracks in office buildings, in railroad yards, in parks. They take part in the collage effect of city life in contrast to the still life of the pastoral landscape. In parks weeds point to the degree of human control imposed on nature. On a "well-appointed" lawn a weed is taken as a flaw.

Miss Dowden observes:

> Whenever man ceases to be watchful—if he fails to repair a crack in the sidewalk or remove a pile of dust in a corner—plants will appear. And if large areas are opened up—as in bombed-out London during World War II—they will soon become gardens of wild flowers. Within two years after the big air raids of 1940-41, dozens of species of wild plants had moved into the London cellar holes and piles of rubble. In the normal times of the 1970's, over 90 species have been found in New York, over 60 in Denver, over 130 in Los Angeles.

This book includes the author's excellent color illustrations of several species of weeds, with details of leaves, roots, flowers, and seeds; a month-by-month account of what changes to look for; a discussion of how plants reproduce and how they manage to do so in the city; and definitions of basic terms where these come up in the life cycle as it is described.

We do not realize all our relations to the rest of the natural world: this is a source of the wonder Miss Dowden expresses. She takes pleasure in noting that people are often the unknowing carriers of seeds which spread the plants they consider not worth noticing. The book concludes with a list of all species of wild plants known to grow in New York City, Denver, and Los Angeles.

Among human beings, great shame is attached to being without a name. Prisoners learn this. People speak of defending their good name and of making a name for themselves. We share

a corresponding desire to name the objects of experience.

Most city people come to nature with an exceptionally limited knowledge of the names for what they find. It may be that part of the uneasiness, blankness, or wonder we feel in the presence of nature—if we feel these things—comes from the lack of particularity in our means of speaking and thinking about what we see as compared, say, to that provided in abundance and broadcast in the cities and in the media.

Many nature lovers, some marvelously geared, have taken to the fields to learn the names of the wild things they find there. Many school children, remaining indoors, have had to learn the names of many things, wildflowers included, as punishment or as what seemed like punishment. It would seem foolish to use these books in the latter way. Still who can say whether knowing the names of the natural objects we actually do see brings us any "closer" to them. Wallace Stevens remarked:

> Words add to the senses. The word for the dazzle
> Of mica, the dithering of grass,
> The Arachne integument of dead trees,
> Are the eye grown larger, more intense.
> ("Variations on a Summer Day")

City Leaves City Trees by Edward Gallob *(Scribners, 1972)* furnishes a means of identifying trees likely to be found in American cities. Mr. Gallob begins with a series of drawings of general leaf types, followed by sets of facing pages each of which treats a species with photographs, short descriptions and photograms (negative images) of the leaves. The author ends by telling how to make photograms and how to go about collecting tree leaves, twigs, flowers, fruit and seeds. The text is mainy factual; the illustrations are large and striking and likely to appeal to anyone curious to find these trees.

Curiosity is not always encouraged by children's books. Many early Calvinists considered the child's inquiring nature, where it surfaced, as evidence of depravity, and a large proportion of the first American children's books, and many after, had little to do with nature or curiosity but instead earnestly instructed the child on how to prepare for a pious death.

Early in the nineteenth century, European fairy tales appeared in America but there was strong opposition to their distribution. Adults of many persuasions argued that the talking animals and other unnatural phenomena endangered the child's soul with their false picture of creation:

> Dialogue between wolves and sheep, cats and mice . . . is as destructive of truth and morality as it is contrary to the principles of nature and philosophy.
> (Lyman Cobb)

> As spiritual people we look down with much contempt upon the man who would in anything compare us with the lower animals. His mind is mean and quite beneath our indignation.
> (Harriet Martineau)

As antidotes to these unnatural tales, dozens of little books appeared in the early nineteenth century that sought to guide youth "from the open book of nature to the duty of God." Most of these works proposed a novel laboratory technique which must have fascinated young naturalists at first, although the repeated experience of turning over a rock only to find a moral lesson revealed there probably dulled the interest of the normal child. While the dog slept at the child's feet, for example, the mother was to remark on its fidelity and enduring gratitude. The mother instructing her children was to teach their little feet to turn aside from the worm and to spare trampling the nest of the toiling ant . . . and so on.

A book that, on the other hand, takes a subject virtually everyone in the city has some preconceptions about and holds these up to question, notes:

> . . . There is a city insect that is not hard to find. People everywhere know it well. They spend a lot of time thinking of ways to get rid of it, and the rest of the time they prefer not to think of it at all. If they see one in their house, they may screech with horror and try to kill it before it scurries into a crack and disappears. The lowly cockroach is not loved by man.

(*Cockroaches*, by Joanna Cole; *Morrow, 1971).* The author proceeds to describe the cockroach's history, habits, and chances for survival. This is all very well, though it would seem that people who deal with cockroaches on a day-to-day basis know at least as much about their habits as they care to as it is, while a knowledge of the cockroach's future prospects would seem gratuitous; an unwanted luxury, in a sense.

Moreover, in the countryside a pest comes as God's punishment or bad luck or as a failure to prepare; in the city which has landlords and housing authorities cockroaches also have a political side, standing for poor conditions. As much as dandelions on the most dignified lawn,

cockroaches have come to involve human dignity.

The author here entertains the idea there may be more to know about cockroaches than that. Her method is to gather more facts, mainly around the question of how cockroaches have survived despite all efforts to destroy them; often, as the author notes, by exterminators who arrive in unmarked trucks. Like the author of Wild Green Things in the City, she takes adaptation, a process all city wildlife has apparently mastered, as a center of discussion. It turns out that roaches are "living fossils," having lived in the same form for the last 300 million years; that they not only eat almost anything but can eat nothing and survive for some time; that they carry no germs harmful to man, are actually less harmful than the common housefly; and that in any event they can withstand 100 times more radiation than man and seem likely to survive at least as long as man will.

In the city, nature tends to be associated with the city museums. There are first of all the natural history museums, the botanical gardens, zoos, and aquariums, which house many of the rarest and most carefully tended examples of nature the city has to offer. Then also the city parks, a remarkable number of which, the work of Olmsted and his associates, reflect principles of landscape design learned from English landscape paintings found in the art museums that are often placed along the parks' edge. Along the city streets many trees are enclosed by tiny fences and controlled as to growth, giving them a manned as well as a treelike appearance; several trees in Central Park have been furnished with cards that tell their names, plant histories, and something about their physical characteristics.

A book about the city's various nature collections is *Collecting for the City Naturalist*, by Lois J. Hussey and Catherine Pessino (Crowell, *1975*), in which the authors outline several ways to gather specimens and records of both wild and planted city nature.

They point out, for example, one naturalist's collection in the city that is usually ignored: the rock collection that consists of the city's stone buildings. The authors cautiously advise the reader to choose a demolished building, of which every city has many, for collecting specimens, and explain a safe and easy way of going about this.

They also explain methods for collecting leaves, preserving bird tracks, keeping ants, and so on, with nice illustrations by Barbara Neill, and some notes on what original research any careful observer can do. These are projects that appeal to the reader's curiosity; aimed particularly at those interested in thinking of themselves as "scientists," an attitude not overinsisted upon but clearly admired by the authors.

A naturalist observing nature regards himself as an observer; as a constant in the situation he observes; as a professional. John Kieran, we know, preferred the amateur's pose, describing nature largely in "personal" terms, by association, so that his book, although it contains a great many facts, is probably about as interesting as he himself seems to a reader. Certain associations with nature are widely held: the cockroach's usual reputation and the low status of weeds are examples of popular associations that Miss Dowden and the other authors mentioned here have found it interesting to explore, as evidence of how nature, as part of the variousness of the world, both alters and is altered by our moods, feelings, and view of the world.

Still another way of looking at nature is that of the story teller. In *Make Way for Ducklings (Viking, 1969)*, Robert McCloskey tells the story of a family of ducks looking for a place to live. They fly past the wilderness, where they notice predators likely to make life uneasy for them, and eventually settle on a tiny island in the Charles River in the heart of Boston, from which they fly all over exploring the city.

These ducks are neither completely animals acting like people nor people dressed up like animals, and seem enough like both for us to half-identify with them and so half-see the city from an other-than-human perspective. Mrs. Mallard, having trained her children, takes them around:

> When at last she felt perfectly satisfied with them, she said one morning: "Come along, children. Follow me," Before you could wink an eyelash, Jack, Kack, Lack, Mack, Nack, Ouack, Pack and Quack fell into line, just as they had been taught . . . Mrs. Mallard stepped out to cross the road. "Honk, honk!" went the horns on the speeding cars. "Qua-a-ack!" went Mrs. Mallard as she tumbled back again. "Quack! Quack! Quack! Quack!" went Jack, Kack, Lack, Mack, Nack, Ouack, Pack, and Quack . . ."

Readers of this book do not automatically acquire much scientific knowledge about ducks. Any explanation spoils the story, which is short enough for anyone to read or have read to him. I include it here with books about "real" nature, as it is often called, because the story is a wonderful one to have imagined, and because the more nature comes under human planning, the more it becomes what we imagine it to be.

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"The attitudes, beliefs, and values acquired by children through literature will exert tremendous influence over their adult behavior" — Thomas A. More.

An Analysis of Wildlife in Children's Stories

by THOMAS A. MORE, *Research Forester, USDA Forest Service, Northeastern Forest Experiment Station, Amherst, Massachusetts.*

ABSTRACT. Urban people encounter wildlife in various ways. One of the most important is the vicarious encounter with animals in children's stories. The surprising number of children's animal stories can be divided into three categories, each of which affects children's beliefs, attitudes, and preferences for wildlife. Because children's stories may have such a lasting effect, we need to consider the ways in which animals are portrayed in them.

URBAN CHILDREN come into contact with wildlife in a variety of ways. My purpose in this paper is to discuss some of these types of encounters, and the effects on children, with particular emphasis on children's stories.

In a world of concrete and pavement, animals once common have long since disappeared, and have been replaced by pigeons, rats, and squirrels. An occasional raccoon's visit becomes a major event in a suburban neighborhood, and the appearance of a deer provides a topic of family conversation for days.

To a child growing up in such an environment, the opportunity to experience some types of wildlife is severely limited. Yet childhood is the very time when we are subject to the formation of attitudes, preferences, beliefs and values that will govern our behavior for our remaining adult life. Research has indicated that preferences for recreational activities acquired in childhood are major determinants of adult recreational preferences *(Sofrenko and Nolan 1972, Yeosting and Burkhead 1973, Strong 1951).* The main factor in generating these preferences is frequency of participation as a child. I believe a similar process occurs in the formation of preferences for, or aversions to, different species of wildlife. The more frequently a child is exposed to a species, the more familiar he or she will become with it, and the greater his or her preference for it will become.

At first glance, this implies that only pigeons, rats, squirrels, and similar city-dwelling animals will be preferred in the future. Not true. Some people like pigeons; others only tolerate them; and still others vilify them. Certainly no one would consider the rat to be one of the animal kingdom's heroes. At the same time, there is every indication that people value contacts with bears, deer, and other animals that occur infrequently in urban environments. The basic reason for this is that people—and especially children—encounter animals in other ways than by simple direct observation.

TYPES OF LEARNING ENCOUNTERS WITH WILDLIFE

When children learn about a specific animal, the learning will be the result of one of three basic types of encounters with wildlife: direct natural experiences, direct artificial experiences, and vicarious experiences. Direct natural experiences occur when a child encounters an animal directly in its natural habitat. These encounters give the child an opportunity to observe the animal and its behavior in a natural setting. Learning in this kind of encounter comes from simple observation associated with curiosity. This sort of learning

has generally been considered inferior to learning with reward, but is quite potent nonetheless. In fact, in learning about animals commonly found near a child's home, observational learning may well be the most important sort of learning because it occurs with greater frequency than other kinds of learning.

Using the behavior of the animal in its natural habitat as a referent, then the informational accuracy of direct natural experiences is 100 percent. Through these encounters the child learns that a flock of pigeons can be attracted by popcorn, but that a sudden movement will startle them. Or that squirrels are agile in jumping from tree to tree, and that they fear dogs. Or that rabbits will first freeze and then run away if frightened.

But, while this type of learning may be factually accurate, its overall importance is severely limited by the urbanization trends mentioned above. Animals, of course, are not distributed evenly over the landscape, and the probability of having direct natural experiences with many species is quite low. Moreover, though cities do support a variety of animal species, many of these animals are nocturnal and thus are active at a time when most children are unable to observe them.

The second type of encounter with wildlife is the direct artificial experience. In this case, the child can observe the animal directly, but in a situation where the animal is removed from its natural habitat. Examples include zoos, museums, circuses, and nature study programs in schools. Though the informational accuracy of such encounters may be fairly high thanks to many of the interpretive signs found in these institutions, it is substantially less than in direct encounters because the animal's environment is not natural, and because the animal's behavior will have been altered in some way. For example, bears in the wild do not sit up and beg for marshmallows as do bears in zoos; birds do not live in sterile glass cases surrounded by other birds of different species as they are found in museums; and certainly no one would claim that the behavior of circus animals even comes close to that of animals in the wild. Thus, though the informational accuracy of this type of encounter is fairy high, there still may be a fair amount of misinformation in this kind of encounter.

The primary type of learning associated with these encounters is still the observation-curiosity kind, but in some cases learning with reward is possible. For instance, many zoos and nature centers provide quizboards with perceptual rewards like flashing lights for correct responses. Thus, the child is rewarded for learning about the animal.

Generally, the direct artifical contact with wildlife is the least important of the three. Though a tremendous demand exists for these kinds of facilities, I doubt that the average child spends a great deal of time in them over the course of a year. In addition, these are perceptually rich environments with so large a number of animals competing for a child's attention that the child may not learn a great deal about any specific one.

The third type of encounter with wildlife is the vicarious experience. Here, the child never comes in contact with the animal at all, but learns about it indirectly through some alternative source. Sources of this type of experience include television, newspapers, movies, peers, adults, and, of course, children's literature.

It is with this vicarious type of wildlife contact that the factual content may reach a low ebb. To be sure, there are many factually accurate television shows and movies about animals, but even these reach the child only through an editor who may choose to emphasize such things as the playfulness of immature members of a species, or the like. It is hard not to view the main subject of an animal show as a hero.

It is, however, in children's literature where the greatest misinformation occurs: bears in pants, crows with hats, ducks mowing lawns, squirrels living in houses, etc. A major kind of learning involved in this type of encounter with wildlife is paired-associate learning *(Stevenson 1972)*. In this type of learning, words that appear together frequently become associated. Thus, children come to learn about the *sly* fox, the *big bad* wolf, the *slow* turtle, or the *friendly* bunny. In fact, these adjectives may represent the very foundations of anthropomorphism. It would be interesting to investigate the frequencies with which certain adjectives are associated with different species.

Vicarious contacts with wildlife may well be the child's single most important source of contact. A child who grows up in the city may have limited opportunities for the other types of wildlife experiences, but opportunities for

vicarious contacts are virtually unlimited. Moreover, though much of the children's literature dealing with animals is nonfiction, some research has indicated that children prefer fantasy to fact in their stories. This could certainly be expected to compound the problem of informational accuracy.

ANIMAL CHARACTERS IN CHILDREN'S STORIES

Children's books can be placed in relatively few categories, including adventure, history, sports, biography, what to do when you grow up, etc. And, of course, animal stories.

To estimate the importance of animal themes as a topic, I used the title index of *Children's Books in Print 1972 (Xerox 1972),* to make a list of titles that included either "animal", "wildlife", or the name of a particular type of animal. Stories about zoos and farms were also included because they so often are about animals. In some cases, this resulted in the inclusion of books with little or nothing to do with animals. For instance, a story about Sitting Bull, which has to do with Indians, not animals, would be included. On the other hand, this criterion excluded other stories containing wildlife characters because no mention of them was made in the title. It was frustrating to have to pass up such obvious contenders as *Little Red Riding Hood* and *Bambi* because no mention of wildlife occurred in their titles.

In 1972, out of about 40,250 children's books in print, 5,473—13.6 percent—had one or more animals mentioned in the title. I suspect this figure is somewhat low because of the problems with the criterion mentioned above, but I have no empirical justification for this belief. Moreover, while books were not coded into the other categories, I would not be surprised to hear that animal books were the single most frequent type of book in all children's literature.

EFFECTS OF ANIMAL TALES

Children's responses to and preferences for animal themes in literature vary with age and story content. Arbuthnot *(1957, 1969)* suggests that there are three categories of animal stories: ourselves in fur, animals as animals but talking, and animals as animals. "Ourselves in fur" is the oldest type of talking-beast folk tale. In these stories, represented by *Aesop's Fables, The Wind in the Willows,* and *Peter Rabbit,* the animals talk to one another and are subject to the same follies, foibles, and virtues as humans. These stories are preferred by the youngest children, perhaps because they can recognize characteristics of us adults in the characters. The outraged and outrageous malevolence of an infuriated Donald Duck strikes a chord within all of us. Jan *(1969)* has condemned this type of tale as being a cornerstone of anthropomorphism.

As children age, however, their tastes change and they come to prefer the more complex tales of animals as animals—but talking. In these stories, represented by Kipling's *Jungle Books* or Hans Christian Anderson's *Ugly Duckling,* the animals lack all human attributes except the powers of thought and speech.

The third type of animal tale—animals as animals—is more realistic because the animals lack all human attributes: they behave only as animals. Examples include such books as Margurite Henry's horse stories and *The Yearling* by Marjorie Rawlings. Arbuthnot believes that in this type of children's fiction animals are portrayed with the greatest objectivity and realism. She is probably correct. Yet it is important to remember that what is objective and realistic to a specialist in children's literature may seem somewhat less so to a biologist. Statistically, the number of children who manage to befriend bobcats or who have the opportunity to nurture a wounded fawn must be quite limited, yet city children may come to believe that this is a standard part of rural life because it happens all the time in books.

Despite the claims for realism and objectivity in the third type of story, I believe that it is these stories that contribute most to popular misconceptions about wildlife. In Freudian terms, these stories are read during the identification and latent stages of development—the stages where children acquire the beliefs and values that will govern their behavior for the remainder of their lives.

Some people have argued that even young children can differentiate between fantasy and reality. When they read the first type of story (ourselves in fur), they know that the rabbit in their yard will not be wearing a jacket like the

rabbit in the book. Similarly, they may be aware that their pets or the animals at the zoo do not talk as do the animals in the second type of story. But, in the third type of story, fact and fantasy become virtually inseparable. True, the animals do not talk or think and they must struggle for survival, but they are just as often given human emotional characteristics such as loneliness, sadness, joy, and so forth. Consider the powerful effect that a story like *The Yearling* must have on a susceptible child. In this story the pet fawn must eventually be shot because it has been eating the garden. What effects might this type of story have on children's attitudes toward deer?

The attitudes, beliefs, and values acquired by children through literature will exert tremendous influence over their adult behavior. The preferences for and aversions to different species obtained in childhood stick with us for a long time. And these preferences may well be the cause of significant problems for wildlife management.

Proverbial among such problems is, of course, the sad case of "the big bad wolf". The image of the wolf in children's media is thought to have been a major factor in its almost complete elimination throughout most of the United States. Fortunately, the wolf now seems to be getting some better press *(Erickson 1970)*.

But other management problems persist. The rapid growth of anti-hunting sentiment in the United States *(Klein 1973)* is probably at least partially attributable to such children's stories as *Bambi* and *The Yearling*. Whatever one thinks of hunting, wildlife managers feel that it is one of their most important management tools for controlling wildlife populations. In many areas, deer herds have proliferated to a point where they may do irreparable damage to their habitat. Yet the sentiment against hunting them may be so strong as to force a court decision on the issue.

Yet another important problem in many National Forests and National Parks comes from people-bear interaction. Rangers in Shenadoah National Park *(Wissinger 1974, personal communication)* have told me that much of their time is spent protecting people from bears (or perhaps visa versa). Not only do children want to see bear cubs, but frequently they will fight one another to get close enough to pet one. These are dangerous tactics if the adult female bear should be nearby.

Why this extreme desire to touch a bear? Bears are one of the most popular subjects in children's books. Consider the image they present. Occasionally they play the villian, as in the Uncle Remus stories; but more often they are portrayed as being slightly dull and rather comic, as in the story of *Goldilocks and the Three Bears*. Movies and television shows often focus on bear cubs enjoying romps through field and forest. Is it any wonder that children love bears?

We could examine other wildlife people problems in the same light, but the key point is that the image of animals created in childhood tends to persist. The content of this image will be dependent on the information the child receives about the animal. With successive generations growing up in large cities, a prime source of such information is children's literature. Just as the women's liberation movement is concerned with how women are portrayed in this literature, so we must be concerned with the image of the natural environment it presents.

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PHOTO BY WALTER BLAIR

"Attitudes most difficult to transfer through elementary school environmental education programs are those that concern natural ecological processes such as the life-death cycle of living organisms" - John C. Benjamin, George H. Moeller, and Douglas A. Morrison

Measuring Environmental Attitudes of Elementary School Students

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ABSTRACT. A modified semantic differential was developed to measure environmental attitudes of sixth-graders. Classes were selected to represent different socioeconomic and residence backgrounds and degrees of previous exposure to structured environmental programs. Results indicate that: exposure to environmental education fosters favorable environmental attitudes; socioeconomic background and exposure to environmental education do not influence attitudes toward familiar, nonwater natural elements; urban students from low socioeconomic neighborhoods are unfamiliar with natural processes involving water resources; attitudes most easily transferred identify man as a contributor to environmental problems; and attitudes most difficult to transfer deal with ecological processes. Results provide a way to measure children's environmental attitudes and suggest a way to develop environmental programs for specific student groups.

THE INCREASED EMPHASIS placed on environmental education in public schools is an important development of the contemporary ecology movement. The transfer of knowledge about environmental systems is basic to successful environmental education programs. But an equally important result of environmental education is the extent to which the students' attitudes are changed by their exposure to such programs *(Caldwell 1970)*. Studies have been carried out to test retention and cognitions, but the effect on attitudes of exposure to environmental education has gone largely unexplored.

A device for measuring attitudes toward the environment would be of value for identifying students' attitudes before they embark on an environmental education program. With this information, the instructor could put additional effort into areas where the students' environmental attitudes are poor, and spend less time on topics toward which they already have favorable attitudes. The same measuring device could be used to determine change in environmental attitude after the program has been completed.

The purpose of this study was to develop and test a method of detecting differences in elementary school children's environmental attitudes, and to use the method to find possible reasons for differences between children exposed to structured environmental education programs and those not exposed.

THE STUDY GROUPS

Three study groups were drawn from sixth-grade public school students—one school within the city of Syracuse, New York, and two schools in a nearby suburban community. A fourth study group consisted of graduate students and faculty at the State University of New York College of Environmental Science and Forestry.

The first study group consisted of 35 sixth-grade students from a school in an aging residential neighborhood in Syracuse, New York. The median family incomes for the two census tracts from which the students were drawn were $7,241 and $7,600 and the median housing values were $12,500 and $15,200 *(U.S. Bureau of Census 1970)*. This group had not been exposed to a structured environmental education program.

The second group consisted of 37 students from a sixth-grade class at a school 2 miles from the center of a suburban community. The newly constructed building is in a rural setting, with a woods bordering on the school playground. The median family income in the suburban community was $14,625 and the median housing value was $32,000. No special effort had been made to teach the students about conservation or the environment.

The third student group consisted of 18 sixth-grade students who attended a renovated former high school near the center of the suburban community. The median family income and the median housing value were the same as for the other suburban school. This group had been engaged in a coordinated environmental education program during the school year before the study.

The final group, our criterion group, was made up of 12 faculty members and graduate students from the State University of New York College of Environmental Science and Forestry at Syracuse University, Syracuse, New York. It was assumed that these individuals, all of whom had at least 5 years of college-level study in some aspect of the natural environment, held ideal environmental attitudes.

STUDY PROCEDURE

The optimal device for measuring environmental attitudes should sample attitudes on a wide range of environmental topics. The method should measure specific attitudes about environmental topics (e.g. the role of decomposition, air pollution, etc.). It should also measure the intensity of an attitude so that change in attitudes could be detected.

To meet these criteria, a technique was developed that used 24 color slides of various natural and man-dominated environments and elements in these environments. A modified form of the semantic differential was used to solicit attitudes toward the scenes *(Osgood et al. 1957)*. The semantic differential was adjusted to the comprehension level of the sixth-grade students. The test instrument was set up so that students could judge each of the slides in terms of three adjective pairs; beautiful-ugly; bad-good; happy-sad. The range of alternatives between descriptive adjective pairs on each semantic scale was limited to five: e.g., *very good, good, neither good nor bad, bad,* and *very bad.*

The order in which the adjective pairs appeared for each of the 24 slides was randomly determined. However, in each instance the polarity of the second adjective pair was reversed. Combined with the random order of occurrence, this reversal of polarity forced the students to read each of the alternatives carefully. The reversal also helped to break up response patterns like marking all the choices in one column. Thus, a typical set of scales for a slide was:

Very beautiful	Beautiful	Neither ugly nor beautiful	Ugly	Very ugly
Very bad	Bad	Neither good nor bad	Good	Very good
Very happy	Happy	Neither happy nor sad	Sad	Very sad

DATA ANALYSIS

Individual student responses on each scale were assigned numerical scores as follows:

1 = VERY:	Good, beautiful, or happy
2 =	Good, beautiful, or happy
3 = NEITHER:	Good nor bad
	Beautiful nor ugly
	Happy nor sad
4 =	Bad, ugly or sad
5 = VERY	Bad, ugly or sad

An average response—one for each slide scene—was obtained from each subject by adding the three scale score responses and dividing by three. This score provided an indiction of the student's relative attitude toward the particular slide scene.

Scheffe's method for multiple comparisons *(Guenther 1964)* was used to compare statistically the group response distribution of each elementary school group with those of the criterion group for each scene. The null hypothesis tested was that the response distribution of each of the student groups was the same as that of the criterion group. The magnitude and direction of differences between the responses of individual elementary school groups and those of the faculty and graduate student criterion group provided the basis for evaluating the impact of organized environmental education on elementary school students' environmental attitudes.

STUDY RESULTS

In discussing results, the study groups will be referred to as follows:

Criterion—Faculty and graduate student group
High E.E.—High socioeconomic suburban group with environmental education
High N.E.E.—High socioeconomic suburban group with no environmental education
Low N.E.E.—Low socioeconomic urban group with no environmental education

ENVIRONMENTAL ATTITUDES, EDUCATION AND SOCIOECONOMIC BACKGROUND

The average group responses to each of the 24 slide scenes and results of statistical tests are shown in table 1. Scenes in table 1 are arranged so that statistically significant differences between student groups and the criterion group can be examined for possible factors that underlie particular attitudes, e.g., whether group differences are due to exposure to organized environmental education programs, to socioeconomic or urban background, to residence exposure, or, perhaps, to age.

Attitudes toward scenes 1 through 9 (table 1) did not show statistically significant differences between any of the student groups and the cirterion group. Most notably, these scenes describe nonwater natural landscape features and wildlife. The littered street scene also appears in this category. Environmental education programs that concentrate on these aspects of the environment may help to improve student understanding of the processes represented but would not substantially change their already desirable attitudes.

Students in the Low N.E.E. group held significantly different attitudes toward scenes 10 through 14 from those of the other groups (table 1). This difference may be accounted for by their lack of everyday exposure to the processes shown in these scenes. Although seashores and swamps are valuable elements of natural environments, urban students from lower socioeconomic groups are less likely to be exposed to them than suburban students from higher socioeconomic backgrounds. Except for the scene showing pine sawfly larvae, all scenes in this group involve water in some form. It would seem that for the most immediate benefit, an environmental education program directed toward inner city school children should be developed around water resource uses.

Regardless of socioeconomic background, students who were not exposed to the environmental education program held significantly higher attitudes about aspects of the environment shown in scenes 15 through 21 (table 1). Most of these scenes show man-altered environments or man-made inventions that may have adverse environmental effects. Here lies the most dramatic impact of an organized environmental education program—to clarify the role that man plays in influencing the operation of natural environmental systems.

Regardless of socioeconomic background, residence, or exposure to environmental education, all student groups held significantly different attitudes from those of the criterion group toward scenes 22 throgh 24 (table 1). The scenes that showed natural processes, fungi on a log and the skeleton of a deer, were given lower attitude ratings, and the scene of housing development was given a higher attitude rating by student groups than by the cirterion group. Thus, study results suggest that natural environmental processes—recycling through the

Table 1.—Average responses to slide scenes and statistical differences between groups

Slide scene	Group mean attitude toward scene			
	Criterion	High E.E.	High N.E.E.	Low N.E.E.
1. Mountain lake	1.56	1.65	1.63	1.74
2. High mountains	1.64	1.59	1.55	1.91
3. Deer in field	1.67	1.39	1.34	1.48
4. Farm country	1.72	1.57	1.46	1.46
5. Desert	2.00	2.33	2.25	2.57
6. Shed in woods	2.00	1.80	2.12	2.38
7. Prairie dog	2.14	1.69	1.65	2.21
8. Rattle snake	2.58	3.02	3.00	3.10
9. Littered street	4.42	4.50	4.59	4.21
10. Seashore	1.69	2.09	1.89	2.51*
11. Swamp	2.47	2.96	3.21	3.62*
12. Pine sawfly larvae	3.06	3.37	3.77	4.15*
13. Sludge pit	4.14	4.00	4.05	3.06*
14. Polluted stream	4.33	4.06	3.70	3.52*
15. Subway station	3.33	3.02	2.81*	2.54*
16. Downtown street	3.53	2.96	2.73*	1.90*
17. Airport	3.56	3.07	2.71*	2.30*
18. Jet airplane	3.64	2.98	2.70*	2.05*
19. City buildings	3.89	3.45	2.87*	2.41*
20. Old houses	4.09	3.48	3.39*	3.25*
21. Air pollution	4.20	3.79	3.41*	2.84*
22. Fungi on log	2.08	2.72*	3.08*	3.65*
23. Skeleton of deer	2.78	3.61*	3.76*	3.86*
24. Housing development	3.64	2.37*	2.11*	1.52*

*Response difference statistically significant at the .05 level between criterion and student group using Sheffe's method.

life cycle—cannot easily be taught to elementary school children. Similarly, elementary school children have difficulty understanding the impact of man-made alterations on the functioning of natural ecosystems.

RESULTS BY KIND OF SCENE

The 24 slides were classified as (1) natural environments, (2) wildlife, Z3) natural processes, (4) man-altered environments, (5) pollution, and (6) modern inventions (table 2). The following differences in responses were found within these categories:

Natural Environments

The natural environments category contained five scenes of natural areas with no evidence of man's influence (table 2). The Low N.E.E. group gave significantly more negative responses to the swamp and seashore slides than did the criterion group (table 1). It might be surmised that the children in this group, from urban families with limited income, had not had the opportunity to visit the seashore as frequently as the children from higher income families.

Table 2.—Scenes classified according to environmental category depicted[a]

Natural Environments

Mountain lake (1)
High mountains (2)
Desert (5)
Seashore (10)
Swamp (11)

Wildlife

Deer in field (3)
Prairie dog (7)
Rattlesnake (8)

Natural Processes

Pine sawfly larvae (12)
Fungi on log (22)
Skeleton of deer (23)

Modern Inventions

Airport (17)
Jet airplane (18)

Man-Altered Environments

Farm country (4)
Shed in woods (6)
Subway station (15)
Downtown street (16)
City buildings (19)
Old houses (20)
Housing development (24)

Pollution

Littered street (9)
Sludge pit (13)
Polluted stream (14)
Air pollution (21)

a Number in parenthesis refers to scene number in Table 1.

Therefore, they responded from a position of unfamiliarity, which, in this case, fostered a negative environmental attitude. Students in the High E.E. and High N.E.E. groups shared similar attitudes about these scenes. Thus, results indicate that environmental education

programs do not substantially influence already favorable student attitudes toward natural environments.

Wildlife Scenes

The wildlife category contained three slide scenes (table 2). No statistically significant differences were found between any of the student groups and the criterion group. All student groups, regardless of their exposure to environmental educaton or socioeconomic background, rated wildlife scenes in the same way as the criterion group.

Natural Processes

The three slides in the natural processes category were used to determine student attitudes toward the vital processes of returning nutrients to the soil through the natural life cycle (table 2). The Low N.E.E. group held significantly more negative attitudes toward all three of these scenes than the criterion group. Both the High E.E. and High N.E.E. groups held significantly more negative attitudes toward the fungi on log and skeleton of deer scenes (table 1). These results suggest that regardless of socioeconomic level or previous exposure to environmental education programsn the attitudes of sixth-grade elementary school students toward natural processes that operate in environmental systems are relatively consistent.

Modern Inventions

The modern inventions category contained two slides of airplanes (table 2). These scenes were included to ascertain students' attitudes toward modern inventions that account for a great deal of environmental damage. Both the High N.E.E. and Low N.E.E. held significantly more favorable attitudes toward these two scenes than the criterion group. Noise and air pollution caused by airplanes do not appear to be recognized by students who are not exposed to environmental education. These subjects were covered during the environmental education program of the High E.E. group. Their attitudes compared closely with those of the criterion group (table 1).

Man-altered Environments

This category contained seven slides showing human alterations of the natural environment of various intensities (table 2). The scenes ranged from very little alteration (shed in woods) to complete human domination of the environment (city buildings).

Except for sheds in woods and farm country, the High N.E.E. and Low N.E.E. groups held significantly more positive attitudes toward all scenes depicting man-altered environments than did the criterion group. The response of the High E.E. group was nearly identical to that of the criterion group on all scenes, except that they held a significantly more positive attitude toward the housing development scene (table 1). These results suggest that organized environmental education programs significantly alter students' attitudes toward the effect of mans' development activities on environmental systems.

The attitudes of all three of the student groups differed most from those of the criterion group on the scene depicting housing development. All student groups held significantly more positive attitudes than the criterion group did. The criterion group evidently saw much more in this scene than did the students. Regardless of exposure to organized environmental education programs, elementary school children appear to lack the sophistication of thought required to associate urban housing development with overpopulation and the quality of life.

Pollution

Environmental pollution was shown in four slide scenes (table 2). The Low N.E.E. group held significantly higher attitudes toward three of the four scenes than did the criterion group. Both the High E.E. and High N.E.E. groups had attitudes like those of the criterion group (table 2). With the possible exception of the littered street, the scenes in the pollution category should have been equally familiar to all the subjects. These results suggest that attitude toward pollution is more a function of residence than of exposure to environmental education.

All test groups expressed their most negative attitude toward the littered street scene. The fact that all groups unanimously gave this scene the most negative response is perhaps testimony to the numerous and widely publicized anti-litter campaigns waged over recent years.

The results obtained in this category show a wide disparity in the subject's abilities to distinguish between a natural and polluted condi-

tion. The criterion group made a very obvious and emphatic distinction between a natural area with no evidence of environmental damage and an almost hopelessly polluted situation. The High E.E. group's reactions were quite obvious but not as emphatic. By comparison, the High N.E.E. group made little differentiation. The Low N.E.E. group actually held a more positive attitude toward the polluted stream than they did toward the swamp.

CONCLUSIONS

The following conclusions appear to be appropriately drawn from results of this study:

- The slide evaluation technique is a workable method for measuring sixth-grade school children's environmental attitudes.
- The concepts on which the attitude-measuring method depends do not appear to be difficult for elementary school students to understand or accpt.
- Children exposed to an organized environmental education program held attitudes about various environmental conditions significantly different from those of children who received little or no exposure to environmental education. Attitudes of children who were exposed to environmental education programs were more comparable to those of college-trained environmental specialists than to those of children who had received little exposure to environmental education.
- Neither socioeconomic background nor exposure to an environmental education program influenced already favorable student attitudes toward familiar nonwater elements of natural environments.
- Children from lower socioeconomic levels and with urban backgrounds would benefit most from environmental education programs oriented toward unfamiliar natural processes, particularly water-resource uses.
- Attitudes most easily transferred through elementary school environmental education programs are those that relate the role that man plays as a contributor to environmental problems.
- Attitudes most difficult to transfer through elementary school environmental education programs are those that concern natural ecological processes such as the life-death cycle of living organisms.

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"In general, the qualitative studies find considerable positive influence for urban children in camp and outdoor education experiences. . . .The findings from quantitative studies provide a less optimistic perspective" - William R. Burch, Jr.

Urban Children and Nature: A Summary of Research on Camping and Outdoor Education

by WILLIAM R. BURCH, Jr., *Associate Professor of Forestry and Sociology, School of Forestry and Environmental Studies, Yale University.*

ABSTRACT. This paper reports the preliminary findings of an extensive bibliographic search that identified studies or urban children in camp and outdoor education programs. These studies were systematically abstracted and classified qualitative or quantitative. Twenty-five percent of the abstracted studies were quantitative. The major findings, techniques of study, and policy suggestions of the studies are summarized. In general, the qualitative studies report considerable positive influence for urban children involved in camp and outdoor education experiences. The quantitative studies find only slight changes or changes for only a small proportion of the campers. The changes reported in the quantitative studies are often attributed to the break in routine or to the class backgrounds of the campers rather than to the camp experience. This paper suggests that more refined quantitative research and more modest qualitative research are needed.

CHILDREN, NATURE AND URBAN PLACES are topics rich in published studies. Perhaps such a richness reflects our overwhelming expectations for all three. Children represent a hope for an improved future. Nature has been the green innocence from which we have extracted our material riches and to which we return in search of our self-understanding *(Burch 1971).* Urban places are where most of us continue to live, in some mixture of pride and despair. Still, it remains an interesting question whether hope and innocence can cure our despair.

This paper will take no steps toward answering such large questions. Even when we take a very much narrower topic such as outdoor education and camp programs for urban children we find a wide divergence of approaches. There are those whose primary interest is in observing the regularities of behavior which occur in such settings. There are those whose primary interest is in ensuring that urban children enjoy and appreciate their contact with nature. And finally there are those who think that urban life could be made more vital and humane if natural settings were part of all urban design.

In general, these three approaches tend to divide among professional specialties. Persons concerned with behavior tend to be academic researchers such as geographers, psychologists, sociologists, physiologists, and physical education specialists. Persons concerned with the child's enjoyment tend to be educators, camp managers, social workers, and so forth. Persons concerned with nature in the city tend to be architects, foresters, parks and recreation specialists, and so forth. Except for this symposium these three groups seldom meet together, seldom read one another's journals or other writings and seldom consider the existence of the other groups except to assign the

responsibility for solving "people" problems or "design" problems or "management" problems to one of the other groups. Our vision needs to be enlarged.

As a start, I offer the preliminary findings of an extensive bibliographic search which identified studies on urban children in camp and outdoor education programs. From this search my students and I identified over 200 items which could be called "studies" (articles with a reasonably systematic report of observed relationships). Reports and articles which were mostly polemical or basically operational (how to keep the plumbing working) were omitted. The others were systematically abstracted and classified by whether the reported observations were "qualitative" or "quantitative."

The following pages report some of our findings. I will first indicate something of the differences between the qualitative and quantitative studies. Then I will summarize the material that has been abstracted.[1]

QUALITATIVE STUDIES

This term refers to a varied body of literature dealing with youth and the camping experience. Here we find discussions of how to design a camp or camp program, descriptions of the operation or history of a particular camp program, accounts or testimonials concerning the benefits of camp experience, and general philosophical discussions on the needs for and values of the camp experience. Many of the articles combined several of these approaches.

This type of literature most commonly appeared in journals such as the *American School Board Journal, The Child, Recreation, International Journal of Religious Education, Childhood Education* and so forth. Another common source is publications put out by the camps and camp organizations about themselves (e.g., L. B. Sharp, *Education and the Summer Camp* [Life Camps]; J. Lieberman, *Creative Camping* [Pioneer Youth Camps]).

An interesting side issue which emerged in our abstracting was the tendency for camp management to reflect goals and techniques similar to those found in industrial management at the time. The early approach (up to the 1930s) in camp management stressed a finely structure program with motivation based on an elaborate and competitive reward system, and with the physical health and well-being of the camper as a primary concern. This management pattern resembles the "scientific management" (i.e., time and motion studies) approach to industrial management which was popular at that time. In the 1930s there was a shift in "progressive" camps to more concern with managing the campers' experiences. This is similar to its contemporary "human relations" approach in industrial management (e.g., Western Electric studies.) The more recent cooperative camps, in which the campers make decisions as a group, seem to echo a concern with decision-making processes similar to the recent "decision theory" (i.e., industrial democracy) approach in industrial management. We do not know whether these trends were "real" or simply an artifact of the kinds of studies we abstracted, yet such trends should intrigue camp and recreation professionals as well as academic researchers.

QUANTITATIVE STUDIES

Quantitative studies focus on a specific research question or problem. These studies employ a definite research design which lends itself to replication, they attempt some form of objective measurement and use some form of statistical analysis. In the ideal case, the problem under consideration is related to some aspect of systematic theory. This is seldom the case; most researchers simply tackle a reasearch question that interests them or their sponsors. There is also a small set of articles that discuss techniques of measurement and data collection.

Generally books and articles of the quantitative type appear in the standard professional journals (e.g., *Journal of Social Issues* or *Journal of Educational Psychology)* or in specialized professional journals such as those on health, physical education, and recreation (e.g., *Research Quarterly, Journal of Leisure Research).* Other common sources are theses and privately published (or mimeographed) research reports.

The importance of this type of literature for future research efforts is obvious. An examination of previous research indicates what has

[1]Those who wish a more detailed bibliography and a discussion of the technique followed in our abstracting process should contact the author.

already been done, what results were observed, what problems were encountered, and what solutions or future questions are suggested. However, such literature is only a small portion of the available literature on leisure. Of 197 books and articles selected from indexes and bibliographies on the basis of their titles which seemed related to children and camping, no more than 49 (25 percent) were quantitative.

SUMMARY OF FINDINGS

Selected Qualitative Studies of Camping and Outdoor Education for Children and Youth

The qualitative studies are not easily reduced to tables, standardized measures and reported tests of significance. These summaries illustrate the range of observation, insight, and generalization provided by such studies. They are divided by topic.

Outdoor education.—Dryden *(1936)* reports that camping serves a unique educational purpose by stimulating self-discovery and self-education. Grubb *(1943)* argues that camp and school life should be correlated and integrated because their aims and purposes are the same. Brimm *(1959)* suggests that schoolwork and school-sponsored camping education and experiences should complement each other. Johnson *(1959)* argues that a school divorced from nature gives us mere schooling. Nature can convert schooling to education.

Day camping.—Dryden *(1938)* demonstrates how day camping serves to introduce people from a crowded metropolitan area to recreation in the open countryside. Kidd *(1942)* reports that day camp provides citizenship education. Since all experiences are in the child's natural environment, day camp involves a minimum of business detail and can, therefore, readily retain leaders. The carryover effects of out-of-town camping are not known. Wilson *(1959)* argues that day camps should avoid "taking the city to the country." Mass campouts are to be avoided to keep the experience free of "city congestion" of all kinds.

Juvenile deliquents.—Persey *(1941)* reports that 75 percent of the boys (generally recent migrants to Los Angeles) do not appear again before the Los Angeles Juvenile Court after attending a Juvenile Forestry Camp. Solomon *(1948)* notes that recreation cannot cure delinquency, but it can help. Recreation is a means of contacting potential delinquents, cultivating their confidence, and influencing their behavior and ideals. Thomas *(1947)* persuasively argues that, as an isolated experience, a summer camp would have little value in the rehabilitation of delinquent children. Its brevity and its lack of continuity with children's previous and subsequent experiences would militate against its effectiveness. It is valuable when it is part of a year-round program. Remedial camps require a smaller ratio of campers to counselors than conventional camps to be effective. Oyasoto *(1953)* illustrates that the benefits of camping for juvenile delinquents are: 1) experiences in group living; 2) participation in activities and having fun; 3) getting along with peers; 4) assumption of responsibilities.

Disadvantaged youth.—An interesting contrast is provided by statements from two different decades. Clift *(1950)* argues that Negroes' problems in recreation are not different basically from problems which confront other social and ethnic groups. Limited economic resources have implications for leisure patterns. Negro youth live and grow with a pattern of unrestrained and uninhibited recreational behavior that is not a constructive form of amusement; it does not tend to develop physical and mental competencies. Rivera *(1966)* illustrates some of the benefits of camping for disadvantaged Negro and Puerto Rican high school graduates: learning to enjoy vigorous outdoor work; learning to enjoy a library; developing "esprit;" working in new areas of learning (nature, ecology); learning new skills and crafts, receiving individual attention from the staff; learning discipline; developing pride in Black and Puerto Rican heritage.

Lower economic background.—Hanson and Gee *(1968)* suggest that youth from lower economic backgrounds may not participate in programmed activities because of: 1) expulsion from an activity for antisocial behavior, 2) discomfort in an overly restrictive atmosphere, 3) programs that are atypical of their experience and background, 4) indifference to schedules, 5) leadership turnover, 6) lack of transportation, funds, clothing, and 7) distrust towards middle-class altruism.

Inner-city children.—Frank *(1968)* suggests that to facilitate communication, staff members should be of same race as children; the staff

should be briefed and be aware of inner-city conditions before campers arrive. Caulkins *(1935)* argues that free expression comes about because of a lack of regimented schedule.

Race relations.—Cooper *(1945)* seems convinced that an interracial youth camp program succeeds in overcoming racial prejudice, as is Duveneck *(1955)*, who sees camp as a potential laboratory for the prevention of prejudice.

Co-ed camping.—Greene and Greene *(1957)* think that by having both men and women counselors, some of whom are themselves parents, it is possible to establish more normal adult-child relationships than are possible in other types of camps.

Camp and child development.—Mower *(1934)* notes that hobby time allows children to satisfy their craving for self-expression and provides the opportunity for recognition. Curtis *(1938)* makes the surprising suggestion that for social interaction, farm children need camp more than city children do. Seltzer *(1938)* argues that camp aids socialization of the camper through his meeting life situations with a group in a primitive environment. Instead of being warned "Don't" the child should be urged "Do!" And Nash *(1950)* is convinced that the school-community camp can and does offer opportunities to develop a social sense of belonging.

Mason *(1930)*, on the other hand, finds both good and bad effects of camp. He reports on the bad effects of camp reported by campers—males: smoking and swearing; females: gossiping, swearing, cliques. Good effects—males: being a "good sport," obeying orders, obeying majority rule, self-control, regular hours, self-reliance; females: mixing well and making friends, good sportsmanship, consideration of others, good eating habits, independence. Social adjustment is the greatest contribution of camping.

Streckler *(1944)* feels that an analysis of case studies shows that campers' gains in personal stability in summer camp may be reversed in postcamp life by the very forces that fostered this instability in the first place (e.g., bad home life, etc.). Spencer *(1934)* also feels that harmonious camp life can become difficult with campers of widely varying backgrounds and abilities. Statten *(1929)* cautions that life in the woods is "unnatural" to a city boy. In examining behavior observation records, he found that the best results were invariably achieved with younger boys. This supports evidence that the best time for establishing desirable social attitudes and habits is early childhood.

Sharp *(1930)* reports that camp tends to eliminate social and economic barriers because 1) social contacts are confined to the camp group, 2) social and economic positions held in organized society play a less important part in camp, 3) there is no need for spending money, and 4) the simplicity of camp costume gives matters of dress less social importance. And Haskell *(1959)* believes that nature study develops the ability to see. Chase *(1968)* notes that an advantage of camp is that the structure may be geared toward the individual more readily and effectively than the classroom situation which, of necessity, is structured for the majority.

Harms *(1953)* reports that a well-guided introduction to nature itself is the best possible start for a child's happy adjustment to the rest of the world. Knowledge of the world we (children) live in means a basic feeling of familiarity and security about our existence. This is true for every young child; he needs to feel secure.

Myering *(1938)* cautions that the camping program may be so highly organized that little opportunity is provided for individual remedial treatment, even though difficult problems of adjustment to the demands of the new environment are discovered. More problems were recorded early in the camp stay than later on, and more on Sundays than on weekdays. Zander *(1938)* reports that long-term campers (6 to 8 weeks) received more favorable appraisal for behavior than short-term campers (1 to 5 weeks). The shorter the stay, the more unfavorable comments were recorded by counselors.

Attitude change.—Knight *(1953)* seems to run counter to the rest of the field when he argues that while change is possible in the camping situation, it is not necessarily inherent in it. There is no reliable evidence that a summer, or a dozen summers, spent in camp will necessarily make any significant change in the individual.

Conservation.—Shomon *(1964)* reports that the fundamentals of conservation are learned best through personal experience in the outdoors. Citizens whose contact with the land has been severed cannot be expected to act intelligently on conservation matters.

Camp as a society.—Frey *(1959)* expresses a fairly common notion in the field that camp is a miniature society with roles, expectations, values, a structural hierarchy, and so forth. Donaldson and Donaldson *(1955)* qualify it to note that a camp is a children's community. Children have trouble identifying with a role of submission to the mandates of adult society. Mason *(1930)* prefers the higher abstractions that a camp is a society and is subject to the same social processes and is regulated by the same social controls as any other society.

Benefits of camp.—Julian Smith *(1950)* provides a useful summary of the social value of camping; it contributes to: 1) social living; 2) healthful living; 3) purposeful work experiences; 4) recreational living; and 5) outdoor educational activities.

Quantitative Studies of Camping and Outdoor Education for Children and Youth

The studies are summarized in table 1. The information available on how these studies were done is often incomplete; some authors fail to state their hypotheses explicitly, describe their data analysis, or describe their research design adequately. Studies that use published instruments (tests, scales, etc.) seldom provide information on validity and reliability.

As the reader will note from table 1, most of the research questions are of a practical rather than a theoretical nature and though the findings tend to support *a priori* hopes that the camp program has certain physical, mental, and social benefits, the actual statistical tests suggest very modest relationships. Questionnaires (21 studies) and systematic observation (10 studies) were far and away the most frequently used means of data collection. A wide range of scaling techniques were used to measure the influence of the camp experience. The findings suggest some reasonably consistent gains in social skills but few specific gains in nature appreciation or understanding. Finally, the reader should be aware that although these studies suggest that certain desired behavioral changes occur in natural settings, there is no comparative context or other means for determining whether the natural setting is the necessary condition for the observed change.

Table 1.—Research techniques and findings of quantitative studies on urban children and camping experiences

Author	Paraphrase of author's research questions	Research design and methods	Findings	Instruments used	Comments and author's suggestions for further research
Barker 1969	Does a session at camp improve a child's physical fitness?	Four tests - before and after 5 weeks at camp. Boys aged 10-13 N = 9.	Gains on all 4 tests - only 1 was stat. sig. at .05.		
YMCA n.d.	Will a camp experience lead to greater achievement gains in school the following year?	Comparison of records of "culturally-deprived" inner-city children aged 10, 10 days at camp.	Not available at time of report.		
Barker 1958	Will a camp experience produce an improvement in skills? (Not specified in abstract.)	Interviews, questionnaires, rating scales on "underprivileged youth" aged 11, male, female.	Of all items tested, skills showed least improvement.		Greater followup and preparation for camping experience needed in interest of continuity.
Remer 1970	Will a remedial reading program in a camp setting result in reading level gains?	Tests administered before and after 4-1/2 weeks' camp. Boys and girls, grades 5-7. Also teachers' judgments.	2/3 of the youngsters showed gains of from 1-5 years in reading grade level.	Gates Reading Tests, S.R.A. Reading Laboratory Test .	
Barber 1958	Will a camp experience produce an improvement in leadership?	See Barber above.	Among those items tested, leadership showed least improvement.		

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Table 1.—continued

Author	Paraphrase of author's research questions	Research design and methods	Findings	Instruments used	Comments and author's suggestions for further research
YMCA n.d.	Will secondary campers develop leadership skills?	Ratings by counselors. Inner-city secondary school students.	Counselors rated them as doing a good job.		Leadership training is valuable.
Bozarth 1953	Is there a greater increase in interest in school after a camp experience?	Cast studies, sociograms, tests, questionnaires. Grade 6 pupils, 5 days at camp.	School camping increases interest in schoolwork.	California Test of Personality (Elementary)	Author suggests use of control group rather than repeated measures.
Hollenbeck 1963	Will a camp experience produce an increased interest in science subjects?	Questionnaires, tests, evaluation of work, opinion survey. 5-6th-grade graders. N = 22.	Noticeable increase in science interests by 5th-graders.	Science-interest section of "What I Like To Do," (Chicago).	
Jensen 1965	Is it possible to develop an instrument capable of measuring the change in camper attitudes towards a specific?	Attitude inventory at camps of varying lengths. Exp. and control. Girls, 9-15 years. 2 groups.	Test proved to be more reliable than valid.		
YMCA n.d.	Will a camping experience provide a more favorable attitude toward teachers?	Ten days at camp for "culturally deprived" inner-city children. Questionnaire, "My Teacher," given once. Age 10.	Not available at time of report. A preliminary test indicates that 1/3 of the children view their teachers unfavorably		
Remer 1970	See Remer above.	Participants: 5-7th-grade boys and girls.	Children's Aid Society workers report improved attitudes toward school and teachers.		
Stack 1960		44 boys, 44 girls, 5-6th grade, lower middle socioeconomic class.	Girls regard school more positively than boys, who changed positively a small degree after camp.		
Yarrow et. al. 1958	How is culturally appropriate behavior learned?	Comparison of behavior in segregated and integrated camps. All children of same social class. Instruments, interaction records, observations, assessments.	Children after integrated camp experience viewed members of the other race as individuals rather than stereotypes or racial objects.		2 weeks is not sufficient to produce a change of attitude.
Beker 1960	Do school campers experience greater social-emotional growth than non-campers?	Camp group and control group. Grade 6.	Campers showed gains in self-concept.	Instruments included an unpublished self-concept checklist.	
YMCA n.d.	Will an outdoor education program favorably affect a camper's self concept?	Test administered at beginning and end of camp. "Culturally deprived" children aged 10. Also given to secondary pupils.	Gains in self-concept were significant at .05 level of confidence was found for secondary pupil campers. No appreciable change for the elementary pupil campers.	2 unpublished scales, Sears Self-Concept Scale, and Waetzen-Liddle Self-Concept as Learners scale.	No change in secondary campers - may be due to an unanticipated influence.
McCreary-Juhasz and Jensen 1968	Will the self-concept of emotionally disturbed children be affected by a school-camp experience?	Behavior analysis, teachers' postcamp evaluation. Age, sex, not given. N = 22.	6 of 22, self-concept up. 1 of 22, self-concept down.		

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Table 1.—continued

Author	Paraphrase of author's research questions	Research design and methods	Findings	Instruments used	Comments and author's suggestions for further research
Stack 1960		See Stack above.	Failed to show a gain toward ego concept. 6th-grade students placed more value on associates than on selves.		
Yarrow et al. 1958	See Yarrow above.	See Yarrow above.	Negro children's self-esteem increased during camp		
McCreary-Juhasz and Jensen 1968	See above.	See above.	8 of 22 set "more realistic" levels of aspiration.		
Goodman 1952		Analysis of case records, interviews, observations. Most children came from families with emotional tensions. Ages 7-15, male and female. N = 23	1/3 of campers made poor adjustment. Length of stay is important factor (poorly supported). Family background is not a predictor of adjustment.		
Janus 1967	Is there a relationship between personality and camp adjustment?	Precamp personality tests, postcamp adjustment scales developed for the study. Female college sophomores, 1 week stay.	Although separate personality characteristics may be significant, camp adjustment seems to be facilitated by generalized ego strength, flexibility and openness to new experiences.	Barron's Ego Strength Scale (unpub.), Budner Tolerance-Intolerance of Ambiguity Scale (unpub.), Elias Family Opinion Survey, Edwards Pers. Reference Scale.	
Putter 1963	What factors have a significant effect on children's adaptation to a resident camp?	Test, sociometric tests, and counselor's ratings. 3-week encampment for 7-15-year-olds.	No stat. sig. difference between adjustment of 1st and 2nd time campers. Income level of camper's family correlated negatively with adjustment for 1st- and 2nd- timers.	Haggerty-Olsen Behavior Rating Scale.	
Bray 1945	What changes in selected social traits were exhibited by children in camp?	Comparison between first and last week in camp. Boys and girls, 6-13 years, N = 41.	All social traits had a higher mean in the second observation. "Important gains" in "cheerfulness," "companionableness," calmness, courage and consideration (stat. sig.).		
Dimock and Hendry 1929	How to measure development of desirable social attitudes and behavior and character.	6 age groups of boys, counselors' ratings, pencil and paper tests, questionnaires.	Most useful methods for measuring results were the descriptive records of the boys' behavior and the behavior rating scales. Desirable changes in behavior are not an inevitable outcome. Amount of favorable change seems to decrease with increasing age. Character changes depend upon many factors: type of program, group pressures and opinion, kind of guidance. 1 or 2 months stay does not yield significant differences.		Authors would like more objective tools.

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Table 1.—continued

Author	Paraphrase of author's research questions	Research design and methods	Findings	Instruments used	Comments and author's suggestions for further research
Henke and Kuhlen 1943	Is children's social adjustment better at end of YMCA summer camp?	Boys in 3 age groups; 8-18 yrs.; different socioeconomic classes; standardized tests at beginning and end.	Stat. reliable diff. in *happiness* and *impulse judgment* scores; not on *sympathy, truthfulness, control, purpose* and *alienation.* "Underprivileged" boys may have been harmed by feelings of "inferiority."	Washburne Soc. Adj. Inventory. Rogers Test of Pers. Adj. Sim's Scale of Socioeconomic Status (no information available), "Otis Intell. Test (A), Moreno's Sociometric Technique (no information available)	Greater variety of measurement and testing techniques. Socioeconomic class should be a constant.
Knight 1955	Are socially desirable traits reinforced by a camp experience?	Experienced (campers) and control group (noncampers). 124 5th-grade pupils from 2 different schools; observations of behavior in test situation.	No difference in % of volunteers for extracurricular task. Campers were more reliable-worked longer and harder at the volunteer task.		Can a brief stay produce a significant change in persons? Can difference in behavior be attributed to factors other than the camp program?
Kranzer 1958	What are the objectively measured social, emotional, intellectual, physical, and democratic living effects of a 5-day school camping experience for 6th-graders?	Tests and sociograms, teacher's logs and counselor's narrative evaluations, questionnaire (presumably control and experience groups).	Faster changes in social and democratic behavior in camp than might occur in classroom; teacher's opinion. Camping improves classroom behavior. No measurable effects related to sex or I.Q.	Woods Behavior Pref. Record. Haggerty-Olsen-Wickman Behavior Rating Schedules. Baxter's Rating Scale of Teachers. Personal Effectiveness (unpub.)	
Stout 1939	Does camp experience have an educational value (by which he seems to mean "improved behavior")?	Gathered opinions, sent questionnaires to parents whose children had been to camp (boys and girls).	Areas of perceived improvement: reliability (least), social relationships (greatest); emotional stability was also heavily checked.		
Beker 1960	Measure of social relationship by concept of "social distance".	6th-graders, subjects and controls; tests given before and after camp and 3 months later.	Camping has a positive influence on a camper's social distance although difference between Ss and control seems too tenuous for anything more than conclusions.	Classroom social Distance Scale (Dunningham) (no information available).	Future studies should focus on program content to identify determinants of change.
Bozarth 1953		59 6th-graders at school-camp (5 days), case studies, questionnaires, tests, sociograms.	Increase of acceptance among children with a fading out of both "stars" and "isolates;" increase of mutual friendship.		Author suggests use of control group rather than repeated measures.
Davis 1960	After a camping experience will children be chosen as friends more often?	32 8th-grade students, boys and girls; "home-made friendship test," before and after.	Both boys and girls received significant (.05) more choices after camp than before.		
Hollenbeck 1963		22 5-6th-graders, 1 week camp. 3-question sociometric questionnaire.	More willingness to work with members of the opposite sex after camp; 1 clique merged with the group somewhat; isolates more integrated into the group.		
Stack 1960		5-6th-graders, lower-middle socioeconomic background. 44 boys, 44 girls.	90% made new sociometric choices (mean 1.61). Boys formed more than girls; 6th-graders more than 5th.		

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Table 1.—continued

Author	Paraphrase of author's research questions	Research design and methods	Findings	Instruments used	Comments and author's suggestions for further research
Baer	What differences in behavior in camp might be predictive of recidivism?	Forestry camp; 20 boys (recidivists) each in subject and control groups. Data collected from files and camp records. No stat. analysis.	No significant difference in backgrounds, exctpt study group had more previous arrests than controls. Controls were higher on weekly merit list. Study group had more behavior problems.		Small number of cases; reliability of records questionable.
McCreary-Juhasz and Jensen 1968	What is the value of summer camp for emotionally disturbed children?	22 children, 2 weeks in school camp. Teacher's evaluations and behavior analyses.	Improved behavior noted in all cases but 1 (parents' responses): more realistic aspiration levels, greater self-confidence, better academic achievement.		
Cole 1957	Does a work camp for potential dropouts have more holding power than the regular school program?	Initial tests, follow-up interviews with questionniares, 2 groups of potential droupouts, one of which attended camp, and a control group of well-adjusted students.	Camp experience Ss became more "friendly and cooperative," improved attitudes toward school; improved vocational and personal skills; better health and eating habits.	Calif. Mental Maturity Test. Stanford Read. Test, Wide-Range Ach. Test, Mooney Problem Checklist, Rotter Inc. Sentence Test, Calif. Interest Inventory.	
Hollenbeck 1963	See above.		Outdoor scenic experiences aroused new interests in many of the children. Science concepts were enriched by the camping experience.		
Kranzer 1958	See above.	Questionnaires and evaluation forms.	School camping stimulates classroom activities, aids good instruction.		
Sharp 1948	Does school camping experience affect learning about specific subjects?	Experience and control groups. Pencil and paper tests in arithmetic, science, health vocabulary, nature and opinion surveys.	Significant difference (.05) in favor of experimental (campers) group.		Results may have been affected by camping-oriented curriculum for experimental group prior to camp.

CONCLUSION

In general the qualitative studies find considerable positive influence for urban children in camp and outdoor education experiences. These studies emphasize the need to have camp and school life integrated. The authors believe that children and youths involved in camp and outdoor education programs gain in self-esteem, in attitudes toward school, in ability to interact with others, and in tolerance for other races and ethnic groups. These studies regularly report that the shift from urban to natural settings has a positivebenefit for a child's awareness and attitude. However, some of these studies caution that a simple "one-shot" program, or simply returning youths and children to "poor" environments, will not gain the desiredsocial improvements.

The findings from the quantitative studies provide a less optimistic perspective. Though changes are reported, often they are not statistically significant or the change is slight and then only for a select few of the campers. Many of the quantitative studies seem to imply that change in behavior can as likely be attributed to a general alteration in the child's routine as to the natural setting of the camp. Other studies imply that the social class or social status of a child's family has a more crucial influence upon "benefit" from the program than does the specific camp experience.

Children from higher social classes and status groups seem "set" to benefit from the camp program, while others are less likely to benefit. Still most of these studies do indicate that for some persons there are some gains or benefits on certain measured dimensions.

It would seem that the quantitative studies are not finely enough tuned to identify the factors that permit these individual gains. On the other hand the qualitative studies may be overly hasty in extracting a general principle from too few cases. The question is not which set of studies is most correct; rather the need is for a shared humility regarding our very limited understanding. The nearly 50 years of studies summarized here represent a significant empirical and humane base of information. Our task is to use that base to explore more systematically the role that nature, camping, and outdoor education can play in the lives of urban children. And in that exploration there will be little time for managers or designers or scholars to pretend that theirs is the only correct path to understanding.

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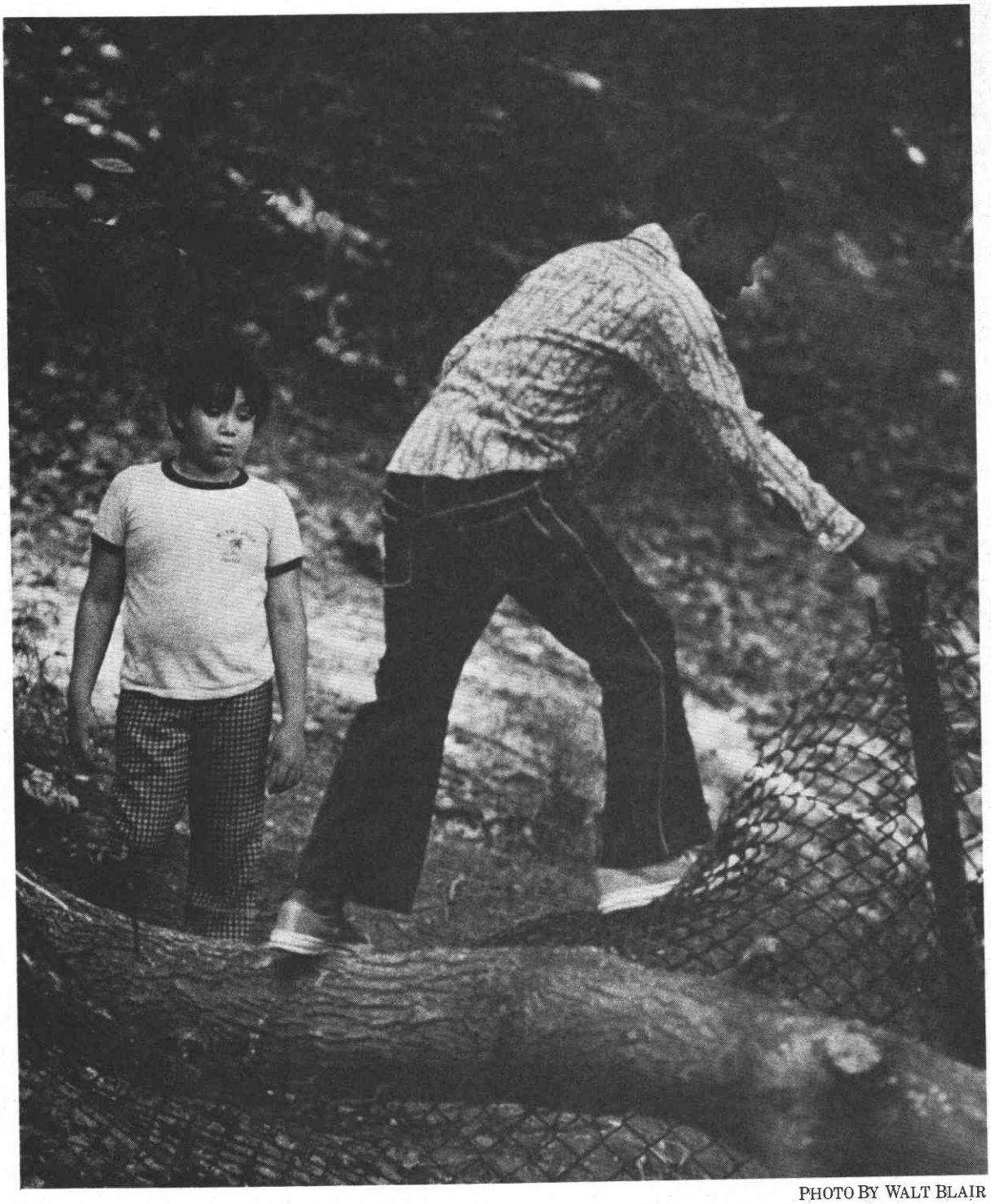

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"If these findings are correct, they suggest that it is the white students who are "deprived", because their preferences are less compatible with the urban environment in which they live" - George L. Peterson

Recreational Preferences of Urban Teenagers: The Influence of Cultural and Environmental Attributes

by GEORGE L. PETERSON, *Professor of Civil Engineering, Technological Institute, Northwestern University, Evanston, Ill.*

ABSTRACT. The study tests the hypothesis that the recreational preferences of urban teenagers differ with age, sex, ethnicity, and measurable attributes of activity and environment. Photos of activities are used to measure preferences, and the photos are scaled for content by a detailed appraisal. The results show that sex and ethnicity modify the preference process, and that choices are sensitive to attributes of the activity and of the environment in which the activity takes place. Several additional propositions are suggested by the data.

THE PROBLEM

THE RESEARCH reported here is an attempt to expose cultural differences in recreation preference and perception among urban teenagers. The specific questions addressed are the following:

1. What are the outdoor recreation preferences and perceptions of various types of urban teenagers?
2. What activity and environmental attributes explain those preferences?
3. What interacting personal characteristics explain interpersonal variation?

Unfortunately, the page limit imposed by the editors does not allow full development of the conceptual framework of which this study is a part. Taken thus out of context, the results are in danger of appearing to be disjointed answers in search of meaningful questions, as is the case with much of the outdoor recreation research to date. Something more has to be said.

Briefly, traditional recreation planning views demand in terms of descriptive measures such as user-days of participation in various kinds of standard activities, perhaps at specific sites. The traditional approach to the supply problem is to attempt, within budget constraints, to accommodate the demand thus described. The dangers and deficiencies of these approaches are many and serious, but we do not have room to expose them here.

Some of us have warned for a long time that wise recreation planning cannot occur without a functional understanding of why people make the choices they do, as well as of the consequences of participation, including personal and societal costs and benefits. To explain why people do what they do is not the same thing as to measure participation in user-days, nor is it the same thing as finding out what fraction of the population is attracted to fishing, what portion is attracted to skiing, etc. Much more is required, and it is the purpose of this paper to present a small part of the overall problem, a part concerned with explanation of preference in terms of 1) attributes of activity and environment, and 2) cultural differences among individuals.

THE HYPOTHESIS

The empirical study is based on the hypothesis that attraction to outdoor recreation activities is a function of measurable attributes of the activity and of the environment in which the activity takes place. It is also based on the hypothesis that personal characteristics such as

sex, ethnicity, and age interact to affect the way attraction responds to activity and environmental attributes. The study is designed to test these hypotheses for urban teenagers and to describe some of the variables and relationships.

STUDY DESIGN AND METHOD

Several thousand color photographs (transparencies) of outdoor recreation activities were collected. A subset of 200 pictures was selected to represent as much diversity as possible with reasonable photographic quality. These 200 photographs were described quantitatively in terms of 78 activity descriptors and 33 environmental variables. The attributes used are listed in Table 1. The descriptions were done judgmentally on semantically described rating scales by a paid panel of 10 highly experienced recreationists. Reliability and internal validity

Table 1.—Attributes used to describe the photos

A. Activity descriptors

1. Danger
2. Skill of participants
3. Amount of training required
4. Active (vs. passive)
5. Degree of social interaction
6. Educational
7. Amount of discomfort
8. Social acceptability
9. Noisiness
10. Physical exertion required
11. Advance planning required
12. Dirtiness (vs. cleanness)
13. Originality
14. "Naughtyness" (vs. niceness)
15. Constructiveness (vs. destructiveness)
16. Degree unregulated (vs. regulated)
17. Time required to get there
18. Time required to do it
19. Opportunity for girl watching
20. Opportunity for boy watching
21. Sexual interaction
22. Invasion or conquest
23. Importance of teamwork
24. Cost of equipment
25. Degree of sensory stimulation
26. Performance for spectators
27. Kind of travel involved
28. Social interaction
29. Opportunity to know people
30. Rate of energy expenditure
31. Amount of work
32. Age specific?
33. Degree of involvement
34. Use of extensions
35. Photographic composition
36. " exposure
37. " focus
38. " color quality
39. " lighting
40. Overall photo quality
41. Center of attention
42. Control
43. Objective achievement
44. Success experience
45. Compete against nature
46. Competition
47. Construction and improvement
48. Destruction or injury
49. Physical self-improvement
50. Family association
51. Possible to do alone
52. Male sexual exhibition
53. Female sexual exhibition
54. Girl watching
55. Boy watching
56. Predatory
57. Edible acquisition
58. Material acquisition
59. Invasion or conquest
60. Formal defense
61. Informal defense
62. Usually performed alone
63. Professional help required
64. Professional help being used
65. Performance
66. Observance of performance
67. Exploration and discovery
68. Special knowledge necessary
69. Special knowledge helpful
70. Specific environment
71. Fee required
72. Manmade facilities
73. Sightseeing
74. Solitude
75. Professional
76. Cross-country travel
77. Meet new people
78. Speed or sensation of it

B. Environmental descriptors

1. Manmade (vs. natural)
2. Crowded (vs. secluded)
3. Enclosed (vs. spacious)
4. Littered or polluted (vs. clean)
5. Uniformity (vs. variety)
6. Accessible (vs. remote)
7. Developed (vs. undeveloped)
8. Flat (vs. mountainous)
9. Unregulated (vs. regulated)
10. Barren (vs. foliated)
11. Planned
12. Colorless
13. Visual complexity
14. Chaotic (vs. ordered)
15. Unique (vs. common)
16. Dangerous
17. Cold
18. Dark
19. Desecrated (vs. conserved)
20. Noisy
21. Hard
22. Smooth (vs. rough)
23. Arid (vs. humid)
24. Contrast
25. Urbanized (vs. wilderness)
26. Altered by man (vs. original)
27. Buildings
28. Run-down (vs. well-kept)
29. Vistas of far places
30. Closed view (vs. open view)
31. Old (vs. modern)
32. Amount of capital investment
33. Reachable by public transportation

were confirmed by analysis of correlations among conceptually related items. Reliabilities were high. For example, the reliability for a set of five environmental attributes describing the extent to which the environment has been altered by man was calculated to be 96 percent. The reliability estimated from a set of four attributes measuring the amount of skill or training needed by the participants in an activity was 94 percent. These were estimated by domain sampling. Numerous parallel-test reliabilities for other attributes ranged from 90 percent to 98 percent.

Using the 200 photographs as observations for each of the 78 activity descriptors and 33 environmental attributes, orthogonal factor analysis was applied to simplify the lists. Two activity models and one environmental model were derived. Space does not permit describing them here. Interested readers are referred to Hanssen *(1971)*.

After quantitative content analysis, the set of photographs was reduced from 200 to 100 to eliminate redundancy and to make the subsequent work more manageable. Table 2 lists the photos.

A sample of 400 high-school students was drawn randomly from the rolls of the Evanston Township High School, with equal numbers for each sex, age (sophomore and junior), and ethnic group (black and white). The students chosen were invited to participate in the study. Particiation was voluntary. Table 3 gives the sample sizes and response rates.

The participating students were shown large illuminated projections of the color slides, and asked to rate on numerical rating scales their answers to two questions:

1. How desirable do you personally find the idea of participation in the activity shown?
2. How much experience have you had participating in the activity shown?

The students were also asked to complete an early version of McKechnie's Environmental Response Inventory *(McKechnie 1970)*. The purpose of this was to assess environmental aspects of personality.

Examination of the correlations among the response to the 100 photographs by the 200 subjects indicates that 1) the individual preference ratings contain information, and 2) an upper limit for reliability of the individual ratings is approximately 65 percent. Thus, a model that attempts to explain the photo preference ratings could not be expected to explain more than 65 percent of the total variance.

SUMMARY OF RESULTS

Analysis of variance of the individual preference ratings reveals the following:

1. Blacks and whites differ significantly in the process by which their preferences are generated.
2. Males and females differ significantly in the process by which their preferences are generated.
3. Sophomores and juniors respond to the photos in similar ways. However, this should not be construed to mean that a wider age difference would not reveal differences.

Thus the preferences of blacks, whites, males, and females for outdoor recreation activities must be explained, apparently, by different processes.

The photographs explain about 35 percent of the total reliable variance when the sample is stratified by sex and ethnic group. This leaves 65 percent of the reliable variation in preference that is unexplained by the photos and is perhaps attributable to interpersonal differences other than sex or ethnic background.

Analysis of the experience ratings reveals differences that are identical in direction but much smaller in degree.

Table 4 shows the correlations among classes over the 100 photos for the average preference and experience ratings. Sex differences are greater for the blacks than for the whites, and ethnic differences seem to be greater for the females than for the males. The greatest differences are across sex *and* ethnicity, and the differences in preference are much greater than the differences in experience, although the pattern of differences is the same. Table 4 also shows the correlations between average preference and average experience over the 100 photos for each class. Although these correlations are all quite low, the correlations for whites are lower than those for blacks, and the correlations for males are lower than those for females. Is this an indication that white males, for example, are more "frustrated" than black females in the satisfaction of their recreation desires? In all cases, the overall weakness of the

Table 2.—Photographs used in the study

1. Technical caving
2. Black kids flying kites
3. Big time track meet
4. Pony ride
5. Kids and dog in back yard
6. Urban ice skating
7. Black kids riding a bicycle
8. Family hike on mountain trail
9. Toy sailboats on park pond
10. Badminton at forested park
11. Kids swimming in a creek
12. Water skiing
13. Kids in sprinkler on front lawn
14. Pedal boat on park pond
15. Pheasant hunting
16. Surfing
17. Child on ocean beach
18. Crowded rec. vehicle camping
19. Slide in urban playground
20. Doubles tennis match
21. Skeet shooting
22. Outdoor concert
23. Soap box derby
24. Horseback riding
25. Bicycling on lakeshore
26. River floating
27. Rowing contest - race
28. Rowboat on remote lake
29. Swimming in surf
30. Motorboating
31. Tour boat at Wisconsin Dells
32. Kids playing football, spectators
33. Touching raccoon at zoo
34. Kids in playlot (black and white)
35. Spectators at big stadium game
36. Kids in sand on street (black)
37. Hippie demonstration in park
38. Pro golf
39. Picnic and campfire - forest preserve
40. Kids wading in rocky creek
41. Scuba diving
42. Slalolm ski racing
43. Casual golf
44. Amateur flying
45. Black fishing - Lincoln Park
46. Bear on road at Yellowstone
47. Sightseeing in cave (guided)
48. Technical cliff climbing
49. Old man feeding pigeons - contact
50. Kids fooling around on corner
51. Folk dance
52. Go-carts
53. Ski-bogganing
54. Public park and fountain - London
55. Family in pond near beach
56. Hot catamaran racing
57. Boy scout camping
58. Stream fishing in forest
59. Forest auto camping
60. Vacant lot shuffleboard
61. Grand Prix auto racing
62. Miniature train ride
63. Roller coaster ride
64. Kids jumping from high dive (flips)
65. Miniature golf
66. Pro baseball
67. Pro football
68. Urban zoo
69. Monkey bars at playground
70. Informal soccer
71. Remote powder skiing
72. Urban concrete beach
73. Family trailer camping
74. Giant slide
75. White-water canoeing
76. House painting
77. Sky diving
78. Kids on mud slide
79. Lying around on street benches
80. High slide at swimming pool
81. Lady sunbathing in back yard
82. Hot motor boat racing
83. Open air ocean beach camping
84. Nontechnical rock climbing
85. Pigeons and people in urban park
86. Horse racing
87. Sandy beach at lake
88. Crowded lake beach
89. Snowmobiling
90. Kids high jumping
91. Sleigh riding
92. Kids playing hockey
93. Mountain tram ride - summer
94. Unique slide in playground (house ruins)
95. Sailfish sailing
96. Track tobogganing
97. Shoveling deep snow
98. High mountain climbing
99. Flowered hills above ocean
100. Large boat sailing

Table 3.—Sample sizes and response rates

Race	Sex	Class	Photo Study: Random sample	Photo Study: Voluntary response		Environmental response inventory
				N	%	
White	Male	Sophomore	50	31	62	
		Junior	50	25	50	37
	Female	Sophomore	50	35	70	
		Junior	50	29	58	46
Black	Male	Sophomore	50	17	34	
		Junior	50	21	42	11
	Female	Sophomore	50	22	44	
		Junior	50	20	40	20
Totals			400	200	50	114

Table 4.—Correlations among sex and ethnic classes over the 100 photos for preference and experiences

	Preference				Experience			
	WM	WF	BM	BF	WM	WF	BM	BF
Preference								
WM	1.00	.75	.64	.36	.10	--	--	
WF	--	1.00	.42	.57	--	.37	--	--
BM	--	--	1.00	.64	--	--	.38	--
BF	--	--	--	1.00	--	--	--	.56
Experience								
WM	--	--	--	--	1.00	.92	.83	.77
WF	--	--	--	--	--	1.00	.77	.78
BM	--	--	--	--	--	--	1.00	.86
BF	--	--	--	--	--	--	--	1.00

correlations indicates that there is considerable disparity between preference and experience.

The relationships between preference and the activity and environmental attributes that describe the photos, and the relationships between experience and the attributes are interesting but too extensive to present here in complete detail. The multiple correlations as well as individual correlations indicate that preference and experience are significantly sensitive to the attributes that have been measured in the photos. However, no sweeping generalizations have emerged, and it is simply not meaningful to propose such things as linear equations at this time. Rather, some illustrative propositions about partial relationships will be presented.

Table 5 shows the correlations with a group of activity variables that clustered together in the factor analysis. These variables seem to measure the degree of "involvement' or "commitment" of the participant in the activity. The correlations show that the males are attracted to activities that have these attributes, while the females tend to be repelled. These tendencies are strongest for the white males and the black females. Experience, on the other hand, is negatively correlated in all cases.

Table 6 shows the correlations of preference and experience with the variables in one of the primary environmental factors. This factor measures the degree of urbanization and human modification of the environment in which the recreation activity takes place. It seems clear that the whites tend to prefer activities that take place in unaltered environments, while the black females are attracted to activities in altered environments. Experience is positively correlated with urbanization and development, and this tendency is strongest for the blacks, especially the black females. Are these preferences affected by differences in experience? It would seem not, because of the similarity in the experience correlations. Something else is going on.

The results of the environmental personality assessment support the environmental correlations. The white students tend to be pastoral and nonurban in their environmental dis-

Table 5.—Correlations of preferences and experience with the attributes in activity factors

Activity attributes	Preference				Experience				Factor loading
	WM	BM	WF	BF	WM	BM	WF	BF	
Skill of participants	+.31	+	–	–.18	–.42	–.43	–.55	–.55	.93
Amount of training required	+.32	+	–	–.19	–.43	–.44	–.57	–.56	.93
Active vs. passive	+.31	+	+	–	–.20	–.22	–.35	–.40	.92
Amount of work involved	+.31	+	–	–	–.25	–.29	–.42	–.47	.92
Degree of physical exertion	+.27	+	–	–	–.23	–.25	–.40	–.44	.91
Success experience	+.21	+	–.22	–.24	–.38	–.37	–.55	–.52	.90
Special knowledge or training required	+.31	+	–	–.25	–.48	–.48	–.59	–.61	.90
Degree of involvement	+.35	+	+	–	–.32	–.32	–.45	–.47	.88
Rate of energy expenditure	+.27	+	+	–	–	–	–.26	–.31	.87
Special knowledge or training helpful	+.35	+	–	–.26	–.40	–.45	–.53	–.56	.87
Degree of discomfort	+.34	+.19	–	–	–.28	–.29	–.47	–.49	.84
Achievement of predetermined objective	+	+	–.30	–.27	–.34	–.33	–.51	–.45	.77
Invasion or conquest	+	+.19	–.24	–	–.24	–.17	–.39	–.29	.75
Competition	+	+	–.21	–	–.20	–.18	–.35	–.26	.72
Professional participants	+	+	–	–	–.33	–.30	–.46	–.34	.70
Performed for spectators	–	+	–.19	+	–.18	–	–.29	–	.67
Informal defense of something	+	+	–.20	–	–.18	–	–.34	–.23	.66
Formal defense of something	+	+.19	–.17	–	–	–	–.23	–	.65
Formal performance	+	+	–	–	–.23	–.17	–.34	–.21	.65

Table 6.—Correlations of preferences and experience with the attributes in environmental factors

Environmental attributes	Preference				Experience				Factor loading
	WM	BM	WF	BF	WM	BM	WF	BF	
Developed vs. undeveloped	−.36	−	−.23	+.31	+.29	+.39	+.26	+.45	.97
Planned vs. unplanned	−.36	+	−.24	+.34	+.32	+.43	+.29	+.48	.96
Altered by man vs. original	−.36	−	−.24	+.29	+.26	+.38	+.23	+.45	.96
Degree of capital investment present	−.36	−	−.23	+.30	+.24	+.37	+.23	+.43	.95
Manmade vs. natural	−.38	−	−.27	+.32	+.29	+.41	+.26	+.48	.94
Urbanized vs. wilderness	−.36	−	−.21	+.27	+.24	+.37	+.22	+.43	.93
Regulated vs. unregulated	−.31	+	−.24	+.33	+.30	+.36	+.25	+.43	.92
Accessible vs. remote	−.39	−	−.17	+.33	+.40	+.46	+.38	+.53	.91
Crowded vs. secluded	−.33	+	−.23	+.38	+.28	+.38	+.22	+.41	.86
Many buildings vs. no buildings	−.37	−	−.22	+.23	+.20	+.32	+.20	+.37	.86
Modern vs. old	−	+	−	+.41	+.32	+.40	+.27	+.39	.86
Reachable by public transportation	−.43	−	−.24	+.26	+.33	+.46	+.31	+.50	.85
desecrated vs. conserved	−.27	+	−.19	+.31	+.18	+.34	+	+.39	.75
Noisy vs. quiet	−	+.30	−	+.37	+	+.30	+	+.26	.74
Enclosed vs. spacious	−.38	−	−.33	+.18	+.33	+.40	+.28	+.42	.71

positions, while the black students tend to be urban and not pastoral. These findings should not be generalized beyond the sample, but within the sample, the environmental personality test supports the validity of the measured responses to and content of the photos. If these findings are correct, they suggest that it is the white students who are most "deprived", because their preferences are less compatible with the urban environment in which they live. Of course, this assumes that other things are equal.

Classification of the photographs according to patterns of differences in preference reveals still more interesting information. Four comparisons were made for each photo: white males vs. white female, white male vs. black male, black male vs. black female, and white female vs. black female. In other words, preference comparisons were made for each photo across ethnicity within sex, and across sex within ethnicity. Each comparison has two possible outcomes. For example, in comparing white males and black males with regard to their average preference for a given photo, either the photo will be more preferred by the white males, or it will be more preferred by the black males. (Because of the sample sizes, the probability of a tie is extremely small, and this outcome, though logically possible, can be ignored.) With two possible outcomes for each of four comparisons, there are sixteen logically possible patterns of difference. There were no photos in four of these categories, and seven of the categories contain 88 percent of all the photos. This clustering of differences into certain patterns strongly indicates that there are systematic and nonrandom sorting processes at work.

Table 7 identifies 88 photos that fell into the seven most common categories. The numbers in the right hand columns are the average preference ratings for the group of students in question. A rating of 5 indicates indifference. Numbers greater than 5 indicate attraction, while numbers less than 5 indicate aversion. The aversions are indicated by parentheses. The column headings WM, BM, WF, BF mean "white male, black male, white female, and black female," respectively. A "+" by the column heading means that the photos in the group were more preferred by that class of students than by any other.

This report has only touched briefly on selected aspects of a rather complicated study that has been going on for several years. Lack of space has prevented elaborate development of the conceptual framework of which the study is a part, but the basic premise is that effective design, management and planning of natural outdoor recreation resources requires an *explanation* of the processes by which people make their choices as well as an exposure of the *consequences*, both perceived and actual, both personal and societal, of participation in various alternative activities. To *explain* attractive is to understand the decision rules people use in making their choices. It is grossly inadequate to deal with descriptive measures of participation levels (e.g., user-days) for categorized activities. The explanatory rules should be formulated in terms of the *attributes* of activity and environ-

Table 7.—Patterns of differences in preference among student groups

Type I: Preferred more by whites and males

		+WM	BM	WF	BF
75	White-water canoeing	8.0	6.7	7.3	(4.2)
56	Hot catamaran racing	7.8	6.2	7.8	5.8
28	Rowboat on remote forested lake	7.5	7.4	6.8	(4.9)
26	River floating - rubber boat - family	7.5	6.8	7.4	5.2
44	Amateur flying	7.5	6.7	6.9	5.4
41	Scuba	7.4	6.6	7.1	5.9
84	Nontechnical rock climbing	7.3	6.2	6.7	(3.7)
53	Ski-bogganing	7.2	6.9	7.2	5.1
8	Family hiking - mountain trail	7.2	6.3	7.0	5.7
98	High mountain climbing	7.1	5.9	6.1	(4.0)
65	Miniature golf	6.9	6.2	6.6	5.0
77	Sky diving	6.8	5.8	6.2	(4.4)
92	Kids playing hockey	6.6	6.9	5.7	(4.6)
47	Sightseeing in cave with guide	6.4	5.6	5.9	(4.4)
27	Rowing contest - team	6.2	6.0	6.0	(4.1)
38	Pro golf	6.1	(4.7)	5.2	(3.2)
43	Casual golf	6.0	5.2	5.2	(3.5)
48	Technical cliff climbing	5.6	(4.2)	(4.9)	(2.4)
1	Technical caving	5.6	(4.0)	(4.6)	(2.9)

Type II: For males, preferred more by blacks. For females, preferred more by whites; for whites, preferred more by females; for blacks, preferred more by males

		WM	BM	WF	BF
30	Motorboating	7.0	7.5	7.3	6.6
14	Pedal boat on park pond	6.4	7.4	7.0	.3
59	Forest auto camping	6.7	7.3	6.9	6.3
73	Family trailer camping	6.9	7.2	7.1	6.8
57	Boy scout camping	6.6	7.2	7.0	6.2
5	Kids and dog in back yard	6.5	6.6	6.9	6.4
68	Urban zoo	6.0	6.6	6.9	6.4
18	Crowded rec. vehicle camping	6.4	6.8	6.7	6.2
46	Bear on road at Yellowstone	6.2	6.5	6.7	5.9
37	Hippy demonstration in park	(4.7)	5.3	5.9	(4.9)
22	Outdoor concert	(4.5)	5.5	5.3	5.1
79	Lying around on benches in street park	(4.9)	5.5	5.5	4.1
85	Pigeons and people in urban park	(4.4)	(4.5)	5.2	(4.4)
50	Kids fooling around on corner	(4.1)	5.1	5.1	(4.5)
76	House painting	(3.6)	(4.5)	(4.3)	(3.3)

Type III: Preferred more by blacks and females

		WM	BM	WF	+BF
63	Roller coaster	6.8	7.9	7.2	8.1
74	Giant slide	7.0	7.9	7.5	8.0
54	Public park and fountain in London	5.7	6.4	6.8	7.8
72	Urban concrete beach	5.9	7.3	7.0	7.6
88	Crowded lake beach	5.5	7.1	6.5	7.5
80	High slide at swimming pool	6.8	7.4	7.3	7.3
4	Pony ride	6.0	6.5	6.9	7.2
9	Toy sailboats on park pond	(4.8)	5.4	6.2	6.5
62	Miniature train ride	(4.5)	5.7	5.5	6.4
13	Kids in sprinkler on front lawn	(4.7)	5.5	6.4	6.4
34	Black and white kids together in play lot	(4.5)	5.4	5.6	6.4
19	Slide in urban playground	(4.4)	(4.6)	5.9	6.3
49	Old man feeding pigeons in the park	(4.8)	(4.8)	5.4	6.2
69	Monkey bars at playground	5.0	5.1	6.0	6.1

Type IV: Preferred more by whites. For whites, preferred more by females; for blacks, preferred more by males

		WM	BM	+WF	BF
29	Swimming in surf	8.0	7.3	8.2	6.7
99	Flowered hills above the ocean	6.8	6.5	8.0	6.4
11	Kids swimming in a creek	7.3	7.3	8.0	7.1
12	Water skiing	7.6	7.5	7.9	7.0
95	Sailfish sailing	7.6	6.7	7.9	5.9
100	Large boat sailing	7.3	6.9	7.9	5.4
83	Open air ocean beach camping	7.3	7.2	7.8	6.3
91	Sleigh riding	7.3	7.0	7.8	6.5
33	Touching a raccoon at the zoo	6.2	6.1	7.4	6.0
97	Shoveling deep snow	6.5	6.2	7.0	5.4
93	Mountain tram ride - summer	6.4	6.4	6.9	5.3

CONTINUED

Table 7.—continued

	Type V: Preferred by whites and females	WM	BM	+WF	BF
25	Bicycling on the lakeshore	8.2	7.6	8.2	7.9
40	Kids wading in a rocky creek	7.1	6.5	8.0	6.9
17	Child at ocean beach	6.9	6.9	8.0	7.3
64	Kids doing acrobatics from high dive	7.2	6.9	7.7	7.0
71	Remote powder skiing	7.1	5.8	7.6	6.0
42	Slalom ski racing	7.0	5.8	7.4	6.0
20	Tennis match - doubles	6.6	5.8	7.0	6.9
16	Surfing	6.6	5.5	6.9	6.2
94	Unique playground slide (house ruins)	6.0	5.6	6.8	6.0
78	Kids on mud slide	5.1	(4.4)	6.0	(4.9)

	Type VI: Preferred by blacks and males	WM	+BM	WF	BF
67	Pro football	6.8	8.3	6.2	6.5
32	Football game - kids and spectators	6.4	8.0	5.8	6.6
52	Riding go-carts	7.4	8.0	7.5	7.4
66	Pro baseball	7.3	7.9	7.1	7.1
3	Track meet - big time	6.4	7.8	7.7	7.7
61	Grand Prix auto racing	6.3	7.2	5.2	6.8
45	Black fishing at Lincoln Park	6.4	7.1	5.9	7.0
21	Skeet shooting	5.3	7.0	(3.5)	(4.4)
23	Soap box derby	6.3	6.9	6.3	6.9
15	Pheasant hunting	(4.3)	6.9	(2.4)	(3.0)

	Type VII: Preferred more by females. For males, preferred more by blacks; for females, preferred more by whites	WM	BM	+WF	BF
39	Picnic and campfire at forest preserve	7.2	7.3	7.9	7.4
24	Horseback riding	7.2	7.2	7.8	7.6
10	Badminton at a forest-rimmed park	6.5	6.9	7.8	7.4
87	Sandy beach at lake	6.6	7.1	7.7	7.2
2	Black kids flying kites	6.1	6.1	7.6	7.2
55	Family in pond at beach	6.2	6.7	7.0	6.7
81	Lady sunbathing in back yard	(4.8)	5.5	6.4	5.9
51	Folk dance	(3.9)	(4.4)	5.7	(4.6)
36	Black kids playing in pile of sand on street	(3.9)	(4.4)	5.3	(4.9)

ment that are the objects of attraction (a la *Lancaster 1966),* the perceived experiential consequences that generate attraction (a la Driver), and the personal needs and motives that underlie the whole process. Even when this is done, the planning framework will not be complete without clarification of the actual consequences, so that it can be determined whether and in what ways participation in given activities is socially productive or whether it is nonproductive consumption of pleasure.

The following propositions are among those supported by the results of this study:

1. For high school students, there are significant differences in the decision "rules" by which males, females, blacks, and whites make their recreation choices.

2. When students are stratified by sex and ethnic background so as to separate these processes, then measurable differences among recreation activities explain a significant portion of the real variations in preference. The unexplained interpersonal difference (about two-thirds of the reliable variance in this study) is perhaps attributable to variables not measured in the study, either of the activity and environment or of the person.

3. Experience is not strongly correlated with preference, but the correlation is somewhat stronger for blacks and females than for whites and males.

4. Preferences can be partially explained in terms of measurable attributes or activity and environment. There are strong sex and ethnic differences in the attractiveness of many attributes. For example,

a. Activities requiring skill, training, physical exertion, etc., tend to be attractive to males, especially white males, and unattractive to females.
b. The degree of urbanization of the environment is negatively related to white preferences and positively related to black female preferences.

c. Experience has a strong positive relationship with the degree of environmental urbanization for all groups. There is much more commonality in experience than in preference.

5. There are types or classes of activities that tend to be preferred by the various sex-ethnic groups. For example:

a. There is a tendency for whites and males to be more attracted than blacks to such activities as white-water canoeing, climbing, and sky diving. Black females tend to find such activities unattractive, while white males tend to find them very attractive.
b. Activities that take place in urban parks, urban beaches, and amusement parks tend to be more attractive to blacks and females than to whites or males.
c. Whites and females tend to be more attracted than blacks or males to bicycling, skiing, tennis, etc.
d. Competitive physical sports such as football, baseball, track, etc., tend to be preferred more by blacks and males than by whites or females.

Although the above propositions and others that the data may suggest are interesting, they should be generalized and used with caution. To say, for example, that the differences observed in this study between blacks and whites at Evanston High School are true for all blacks and whites, or to apply the findings strictly to specific individuals would be irresponsbile.

At this point the discussion ought to turn to interpretation and explanation of the findings. Why do these differences exist? Are they inherent or learned? Should they be recognized and reenforced by the supply process, or is it more desirable to preserve diversity while diffusing racial or sexual differences? Unfortunately, such disccusion must occur elsewhere, for there is not room here. As yet the information is incomplete, and intelligent planning decisions cannot be made until motives, constraints, consequences, and social and cultural influences are better understood. In the meantime, the best rule is, perhaps, free choice and diversity of opportunity. That there are differences in recreational preference among individuals is well known, and has been further emphasized in this study. That these differences are related systematically to sex and race is perplexing but not surprising. What, if anything, should be done about such differences must be left to politics and further research.

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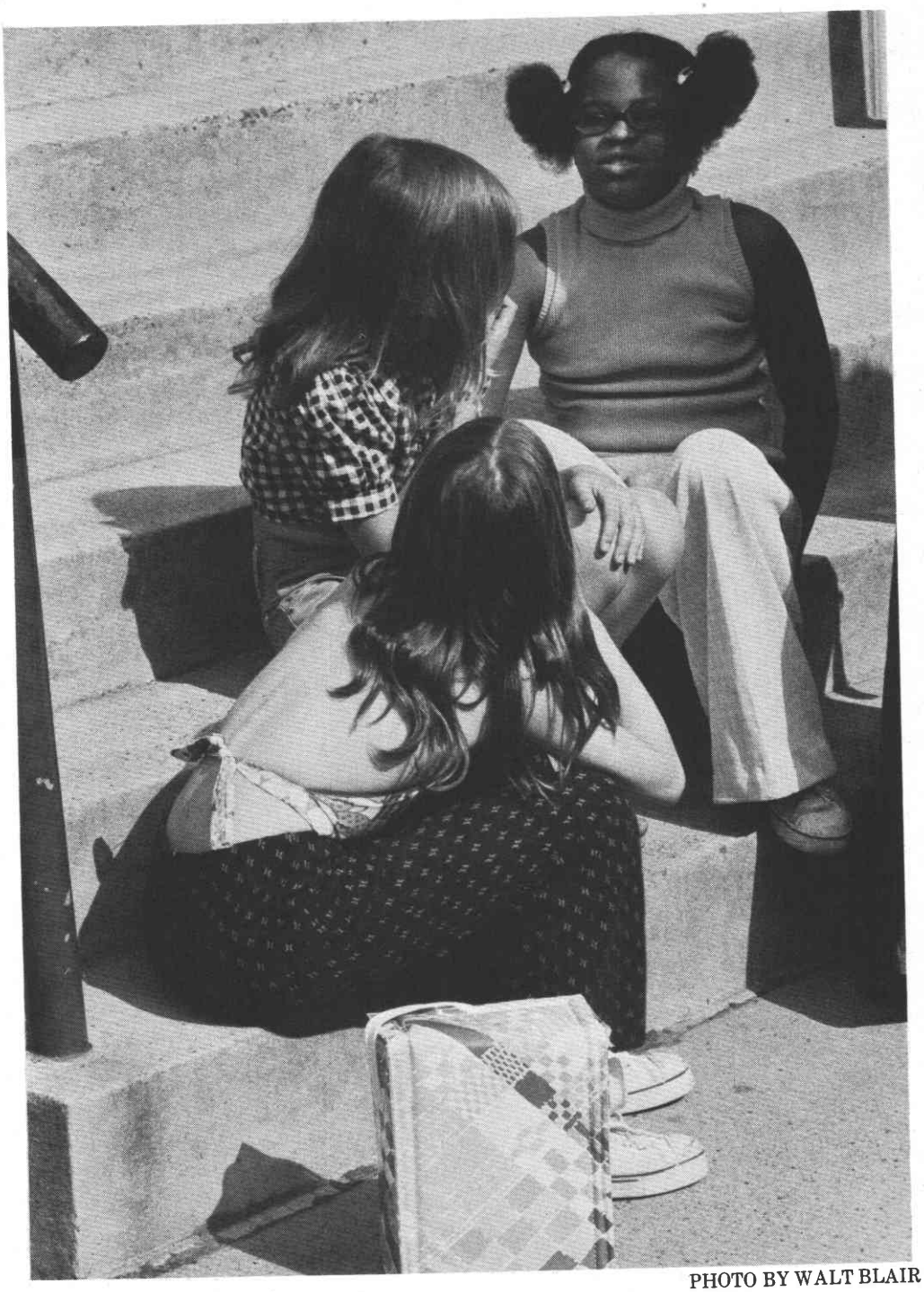

PHOTO BY WALT BLAIR

"Children almost never relate to the natural environment in a solitary fashion; they are members of social groups such as families, friends, or school classes, and relate to the environment as members of these groups" - Robert G. Lee

Observations in Public Settings

by ROBERT G. LEE, Assistant Professor, Department of Forestry and Conservation, College of Natural Resources, University of California, Berkeley.

ABSTRACT. Straightforward observation of children in their everyday environments is a more appropriate method of discovering the meaning of their relationships to nature than complex methodologies or reductionist commonsense thinking. Observational study requires an explicit conceptual framework and adherence to procedures that allow scientific inference. Error may come from those being studied, the investigator, or the sampling procedure. Systematic observation is one of the most useful ways of learning about the complex interrelationships of a child's world.

THE BEHAVIOR of children in natural settings is exceedingly complex. Researchers have responded to this complexity in two ways: One tendency has been to rely on highly technical methods of collecting and analyzing data. This approach assumes that a complex situation can be understood best by a complex methodology. The other tendency is to make reductionistic evaluations of children and their relationships, basing them on tenuous theories about human behavior. An example of reductionistic thinking is the almost exclusive emphasis placed on the individual child by educators, researchers, and the designers of children's environments. This emphasis on the individual often reflects a normative stance that abstracts the child from its milieu and treats the child as an *ideal* to be achieved rather than a *reality* to be grasped through empirical study.

Both reductionistic thinking and complex methodology overlook the advantages of systematic observation of natural behavior. Some of the most important scientific discoveries (the work of Charles Darwin, for example) have resulted from direct observation of complex phenomena. Therefore, let us follow the advice of the pragmatists and turn from the "thin abstractions" to the "thick facts".

OBSERVATION DEFINED

Observation as a research method differs from the everyday process of observing our surroundings. As part of that process, we constantly note what other people do and interpret their actions by drawing inferences as to their *meaning* for us or for others. We impute motives to others in order to explain why they act as they do. Our commonsense inclination leads many of us to impute a need for natural environments to children living in urban environments. Yet we know almost nothing about these children and the circumstances of their lives. Thus, our everyday awareness may not be the best tool for discovering the *actual* relationships between these children and their environment. Observation as a scientific data collection method requires us to suspend our tendency to impute meaning to the behavior of others; it leads us to discover meaning by systematically examining natural behavior.

What are the basic elements in the act of scientific observation? Webster's New World Dictionary defines observation as ". . .the act or practice of noting and recording facts and events, as for some scientific study". The practice of noting and recording events is always

structured by a theoretical or practical problem; only selected attributes or events are noted and recorded. We may be concerned with the natural objects children use in play and choose to ignore the children's social status, race, place of residence, and other characteristics that we consider irrelevant to the purpose of the study.

To be *systematic,* observation must be guided by an explicit conceptual framework and behavior must be noted and recorded in accordance with rules permitting scientific inference. The term *natural behavior* refers to behavior that can be observed as it occurs in an everyday situation or natural setting, uninfluenced by the actions of the observer. Natural behavior can be noted and recorded only if observation is unobtrusive.

Three procedural features are essential for noting and recording natural behavior *(Jones et al. 1975)*:

1) behavioral events must be recorded in their natural settings at the time they occur, not retrospectively;
2) trained impartial observer-coders must be used; and
3) behaviors must require little if any inference by observers to code.

Only directly observed behavior is noted. Excluded are reports of behavior from interviewees, third parties, or self-reporting questionnaires. These methods do not record behavior at the time it occurs, nor in its natural setting. Third-party or self-reports do not use impartial observers. Trained, impartial observers are required because in this instance the observer is the research instrument, and what the observer notes and records (codes) becomes data.

A CONCEPTUAL FRAMEWORK FOR GUIDING OBSERVATIONS

It is a common misconception that an understanding of behavior will emerge if we simply view others with an "open mind". However, such "immaculate perception" is a myth. We see reality through the lens provided by our culture, subculture, and institutional affiliations; reality is filtered and structured by our language, myths, habits, and formal rules.

The importance of a conscious conceptual framework guiding the observer is obvious from Whorf's statement that "We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face." As members of a culture and speech community "We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way . . . "(*Whorf 1947*:214). Knowingly or not, every observer employs some sort of conceptual framework to order the data-gathering process. Meaning is not a property of the behavior itself. Behavior acquires meaning because of its relationship to a particular context *(Scheflen 1974)*.

To illustrate: Milton Leitenberg *(1963)*, a biologist who was accustomed to making detailed observations of natural phenomena, was traveling in Nova Scotia when he stopped to visit a small town. The town was economically depressed, having previously been supported by coal mines that were now closed. Toward evening, as he sat watching the children play, he noticed that their game differed from any he had played as a child in the United States or had seen during 20 years as an apartment dweller in New York City. Leitenberg suggested that the unusually cooperative character of the game was related to the depressed economic situation of the townspeople.

> Perhaps the play sequence indicates some relationship between the degree of social cooperation, simultaneous lack of aggressiveness and other competitive or fearful components in children's games, and the economic situation of the parents. (p. 5)

In Western society our cultural bias leads us to think of children as *individuals* and treat their relationships to other people, culture, place, and time as constraints or opportunities for individual development. There is an underlying assumption that the individual child is inherently "close to nature" and that this inclination has been inhibited by artificial environments, abstract institutional symbols, and authoritarian social relationships.

It is entirely possible that our everyday attitudes toward children are not the best framework for guiding systematic observations. A logic that focuses our attention on the *relationships* between behavior and its context may be more appropriate for discovering the meanings of the natural environment to children.

The framework I propose interprets the

meaning of a child's behavior in terms of social, cultural, physical, and temporal contexts. Every child is *socially located,* beginning with the immediate family and extending to relatives, school, church, neighbors, community authorities, and many more individuals and groups. Children are also *culturally informed* about how they should behave toward other people and objects in their environment. Learning about the natural environment is part of the acculturation process. The social definition of *place* is always an important context for a child's behavior. Children learn to associate particular forms of behavior with places, such as sidewalks, parks, schools, and churches. Finally, the *sequence of events* also constitutes a context for behavior. The life of a child is punctuated by temporally prescribed activities, such as the school year, summer vacation, recess, and "after school". So when we ask what it means for a child to explore nature, we must specify the context within which we wish to examine meaning. The subjectively perceived meaning of nature to the individual is only one of many contexts in which behavior may be studied.

An illustration of how this conceptual framework may be used to guide naturalistic observation is my observation of a park in San Francisco's Chinatown (*Lee 1973).* The park was in the center of Chinatown, surrounded by Chinese restaurants, shops, and apartment houses. It was built on a hill and had two levels of approximately equal size. The primary users of the park were propertyless low-income residents, who used it as a place to join others for conversation, games of chance, or to observe local social life. Chinese residents of higher status used the park only as a pathway or for local ceremonies.

From daylight until 7:30 a.m. the park was used as a training ground for the Chinese martial arts. From 8 to 11 a.m. elderly men slowly gathered on the upper level to play traditional Chinese games and visit. Activity was greatest between 11 a.m. and the late afternoon. Between midmorning and late afternoon mothers brought small children to play in the children's playground, at the northeast corner of the lower level. When the weather was favorable they were joined in the late morning by elderly women who came to sit in the sun and visit. Adult women seldom used other sections of the park except as a pathway. At noon, Caucasion white-collar and construction workers sat on benches throughout the park to eat their lunch. Tourists used the park both as a pathway and as an attraction from midmorning until evening. In the afternoon and early evening younger Chinese men who had been working during the day came to visit and play games of chance. Throughout the day black and white Skid Row indigents wandered about the park, begging from tourists, sleeping, and drinking. Older children, ranging in age from 10 to 15, used the park as a place to gather and play after other people had left for the day.

These observations showed that the relationship between children and the park was imbedded in a complex network of cultural, social, temporal, and spatial relationships. This made it very difficult to talk abstractly about the meaning of a child's behavior toward the environment, because a child's behavior toward the environment was a result of the interaction of many different contexts. I observed that children spent very little time in the park itself. Instead they made extensive use of playgrounds, streets, sidewalks, alleys, and shops. Community workers and children expressed a need for more developed recreation facilities, such as playing fields, basketball courts, swimming pools, and playgrounds. Contact with nature, by itself, was not an experience that was valued highly by adults or children. The meaning of recreation was closely linked to the intensely social character of behavior in outdoor spaces.

PROCEDURES FOR GATHERING UNBIASED DESCRIPTIONS

There are advantages and disadvantages to every method of gathering data. Direct observation may be a better method than interviews for discovering relationships between children and their environments because people, particularly children, are unaware of how most of their behavior is related to various contexts *(Hall 1966, Scheflen 1974).* Even if people are able and willing to tell the researcher how they feel about particular objects in their environment, they may not be conscious of the degree to which their behavior depends on what happens in their surroundings. Many of these relationships can be discovered when observation is structured by

a logical framework and conducted in a way that reduces the introduction of error.

In studies of people there are three usual sources of error *(Webb et al. 1966:*12):

1) Error may be traced to those being studied;
2) Error may come from the investigator; and
3) Error may be associated with sampling imperfections.Error produced by those studied is far less when observation is used instead of interviews or questionnaires. Webb et al *(1966:*1) warned that:

> Interviews and questionnaires intrude as foreign elements into the social setting they would describe; they create as well as measure attitudes; they elicit atypical roles and responses. . .

From many years of experience in the use of observation for studying children, techniques have been developed that minimize the influence of the observer on the behavior of the child *(Willems 1965).*

Error from the investigator is far more likely to threaten validity when observations are used instead of questionnaires. The human observer is the data-gathering instrument, and is subject to boredom, fatigue, or distraction. Lack of reliability (interobserver agreement) also threatens the quality of observational data; different observers may vary in the kinds of behavior they note and code. These sources of error can be reduced substantially by careful training of the observers and use of standardized observation schedules. Mechanical recording instruments such as photographs, film, and tape recordings also reduce error from the observer. Multiple observers not only reduce the error in aggregated data but also make it possible to measure reliability *(Reiss 1971).*

Sampling errors may be introduced when access to populations of interest is restricted, or where populations vary over time or geographical area. Access to children interacting with their everyday environments is particularly difficult. Most studies have relied on samples structured by time, place, or institutional organization, such as school classes. Barker and Wright *(1951)* avoided sampling error by censusing the behavior of a child. They noted and recorded the minute-by-minute behavior of a boy for an entire day, using eight observers in succession. This yielded a complete description of a child in his natural situation, from home and school to places of play. Even though the external validity of such naturalistic observations is limited, the data enable the researcher to connect particular acts to specific social, physical, and temporal contexts. Barker and Wright's studies are convincing evidence that it is difficult, if not impossible, to generalize about the behavior of children without specifying the immediate milieu.

CONCLUSION

Many significant relationships are below the level of our everyday awareness. Commonsense thinking has resulted in so much emphasis on the dyadic relationship between an individual and the natural environment that the importance of other objects in a child's life has been ignored. Children almost never relate to the natural environment in a solitary fashion; they are members of social groups such as families, friends, or school classes and relate to the environment as members of these groups. The meaning of the environment also changes with time, place, and cultural context. Membership in a culture informs children how to behave toward nature in general and toward specific natural environments.

Many teachers, environment designers, and recreation specialists are concerned with enhancing children's awareness of and feeling for the natural environment. A great deal of idealism and emotion is associated with this objective. However, it is my observation that commitment, no matter how strong, will be insufficient for achieving even a small part of this ideal without factual information on the complex of relationships in a child's life. Systematic observation of children in public settings is one of the most useful ways of getting this information.

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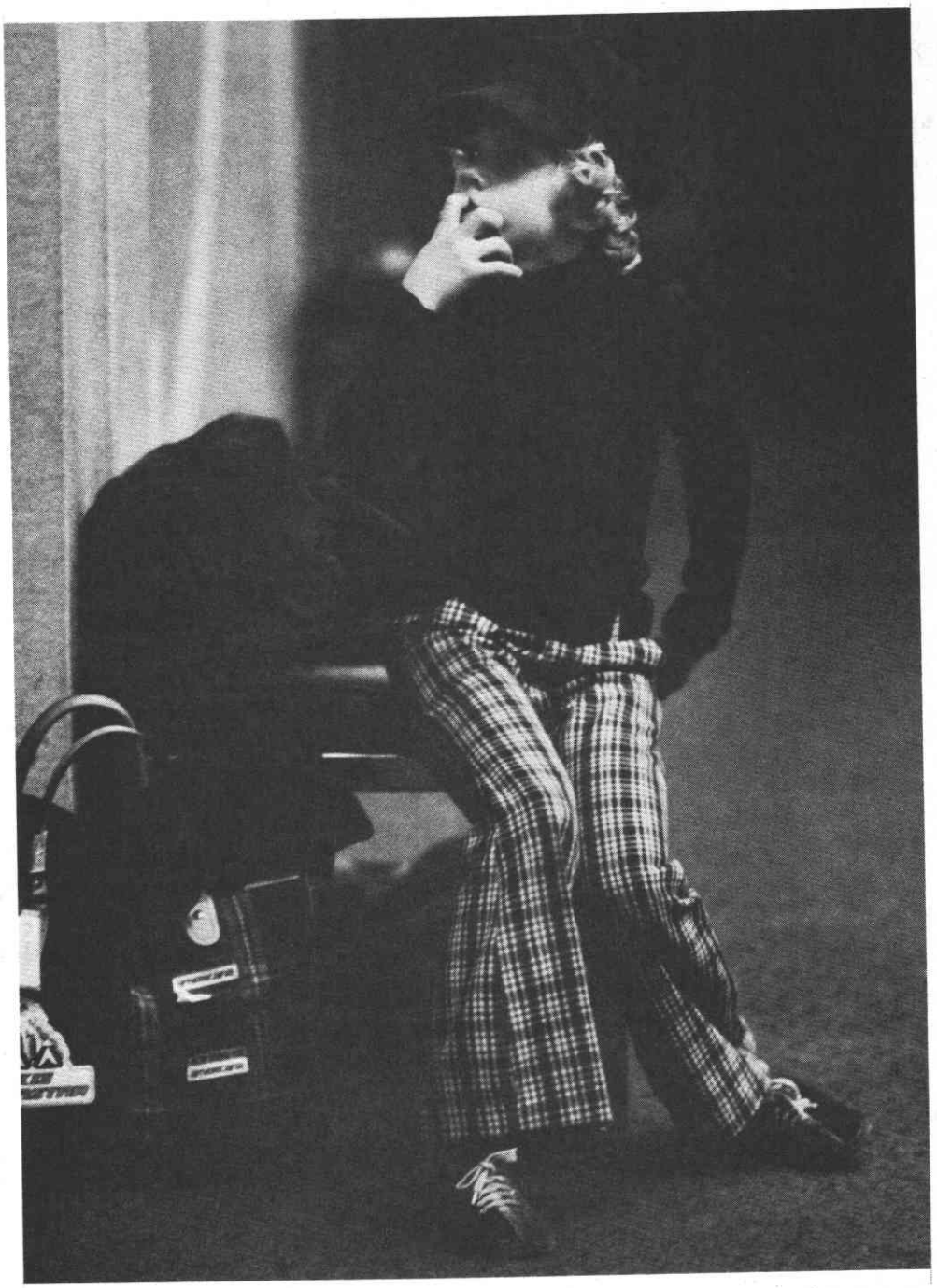

PHOTO BY WALT BLAIR

"The fact that children are pictured so rarely in situations where they can demonstrate problem-solving ability in a realistic (non-magical) way deprives children of opportunities for identifying with and internalizing the image of a competent child" - Gwen Hamlin, Yona Nelson-Shulman, and Sheree West

Children's Television: An Environmental Learning Resource?

by GWEN HAMLIN, YONA NELSON-SHULMAN, *and* SHEREE WEST, *all of the Environmental Psychology Program, City University of New York.*

ABSTRACT. This study was designed to explore the environmental information currently available on those television programs most frequently watched by children 2 to 11. The aspects investigated were: range and type of environments shown, relative proportions of time spent on interior and exterior scenes, and verbal expressions and actions related to the environment. Exterior environments were classified by topography, density of habitation, and land use. Saturday morning and prime-time programs were compared on these dimensions. All of the data were analyzed for environmental themes. Implications of the results and some directions for future research are discussed.

CHILDREN LEARN about their world in a variety of ways. Learning happens in countless environments: in the explicitly educational classroom situation, through direct personal action and experience in the world, and also through indirect, mediated experience. Television is one source of such indirect experience. Although its explicit function is most commonly entertainment rather than education, its potential for affecting viewers attitudinally, cognitively, and/or behaviorally has been established by recent extensive research on TV as a source of social learning *(Leibert, Neale, and Davidson 1973).* Our question in this research was: what is the potential for environmental learning through television?

Attitudes, expectations and information regarding human relationships with the land, with nature, and with the built environment are expressed constantly on television. Children can see different landscapes, and can learn (whether accurately or not) about various geographical regions of the world, as well as about natural and earth-science processes. Various types of built environments and the activities appropriate to them are shown. Children thus have the opportunity to see a range of lifestyles and their environmental supports. All of these may contribute to an explanding internal representation of the child's world.

TV has been criticized as a passive medium, a one-way communication process which deprives children of the time and incentive to explore their own environment selectively and to learn by asking questions and receiving feedback *(Bettelheim 1960).* On the other hand, the characters and stories viewed on TV may spark an active and creative fantasy play in children at other times and places. Furthermore, TV may expose children to a wider range of action possibilities, general information, and environmental learning than they would ever have direct personal access to, thus expanding their cognitive options and potential modes of behavior.

The classic communication model provided the conceptual framework for our investigation of the potential contribution of television to children's environmental learning. The model sets up three distinct areas to be investigated: 1) the communicators and their intentions; 2) the message (i.e., program content); 3) the audience

and its reception and processing of the message. Clearly, any television program reflects the multiple input of writer, director, producer, network and sponsor, and their individual and collective values and vested interests as well as generalized cultural assumptions of appropriateness, aesthetics, and morality. This study touched on only part of the greater system at work. It was an initial attempt to deal with the second area of the available message, by isolating and analyzing the environments presented through this medium.

Our aim was to find out what environmental information is available to children on popular television. What programs do most children watch; what are they about; what kinds of environments are represented; and in what format? What uses are made of environments and what explicit references are made to environments that express underlying values and attitudes? What are the major themes dealing with environmental issues? Finally, what are the roles that children play in relation to their physical setting; how do they deal with environmental problems; and what environmental skills do they demonstrate that might be of instructional value to their viewers?

We supposed that conventional social assumptions about children and environments might be revealed by comparing Saturday-morning with prime-time programming. Is children's performance in various environments handled differently when an adult audience is anticipated? Programs that are shown on Saturday morning are designed specifically for children, whereas prime-time programs (broadcast during the heavy-viewing hours from 8 to 11 p.m.) are aimed at adults as well.

METHOD

We used the Nielsen ratings for the first two weeks in January 1975 to determine which of the Saturday morning and evening prime-time programs were seen by the largest numbers of children. Of prime-time programs, only hour-long series were selected (table 1). Nielson estimates that 9 million children from 2 to 11 watch these programs regularly. We recorded a total of 20 viewing hours (10 from Saturday morning and 10 from prime time). We watched two episodes from each series and videotaped them for later analysis.

Each scene was described by reducing its visual narrative to a capsule scenario (scene changes were determined primarily by change of setting). With each change of setting, plot developments were noted. Setting was described in terms of location (e.g., California), topography (e.g., flat desert), land use/building type Ze.g., commercial, low-rise) and degree of habitation (urban, suburban, rural, uninhabited). Frequently, settings were categoriz-

Table 1.—Programs viewed

Program	Format	Principal setting	Main characters (all animated animals are anthropomorphized
SATURDAY A.M.			
Devlin	Animated	Nomadic (circus)	girl, teen boy, young man (siblings)
Hong Kong Phooey	Animated	Urban	dogs [a], cat [a], adults
Jeannie	Animated	Suburban	teens, female genie, immature genie
Land of the Lost	Live action	Artificial set: prehistoric jungle, caves	girl, boy, father
Pink Panther	Animated	Various and abstract	Panther, ant, aardvaark, anonymous humans
Run, Joe, Run	Live action	Nomadic	trained dog, male trainer
Shazam	Live action	Nomadic	teen young man [a], older man
Sigmund and the Sea Monsters	Live Action	Artificial set: suburban beach and house	2 boys, older 'Aunt', sea monsters
Superfriends	Animated	Metropolitan, air, and underwater	2 children, assortment of super-heroes [a]
The New Adventures of Gilligan	Animated	Tropical island	young man, adults
EVENING (all are live action)			
Emergency	Adventure	Metropolitan	Male adults (public servants)
Little House on the Prairie	Family drama	19th century, prairie	nuclear family
Six Million Dollar Man	Adventure	Various international	male adult [a]
The Rookies	Adventure	Metropolitan	male adults (public servants)
The Waltons	Family drama	1930's, Virginia mountains	extended family with grandparents

[a] Character with supernatural powers

ed on the basis of context, since the landscape was only glimpsed or was not in clear focus. Distinctions between suburban-commerical and urban categories were particularly difficult to make, as they are, in fact, typically blurred in American cityscapes. Other salient visual qualities (e.g., climatic conditions) were recorded and the setting was designated, whenever possible, as exterior or interior.

All verbal references to the environment (factual statements, emotional responses, puns, etc.) were transcribed, as were any salient actions upon the environment, e.g., carving initials into a tree. Each interior and exterior shot was timed to determine its respective contribution to the total time. Finally, themes and global messages emerging from a content analysis of verbal expressions and environmentally related actions or plot developments were noted and analyzed.

DESCRIPTION OF PROGRAMS VIEWED

Of the top 10 Saturday morning programs we viewed, 6 were animated and 4 were live-action productions. Three programs maintained stable settings, while the rest offered a wider variety of settings within and between episodes. Three programs featured characters whose nomadic lifestyles brought them to a new local each week. Only two programs were primarily urban. Four programs featured animals as main characters and four had main characters with some kind of super power.

All of the five prime-time programs viewed were live-action dramas, utilizing both locations and realistic sets. Three were action-adventure series, two of which were based in specific metropolitan areas. The third varied its location weekly, often suggesting international settings. The protagonists of these series were adult men. The other two series were both rural, set in the past, and featured families with children.

Few programs showed children under 12. On Saturday morning, when programs are aimed specifically at children of that age, only 4 of the 10 regularly showed children as protagonists. Adolescents were shown in four others. Altogether, of the 29 episodes viewed, only 11 featured a child as a main character (7 of 19 on Saturday; 4 of 10 in prime time). Of the two evening series featuring families, children were central to the plot in two of the four episodes. Young people were shown in urban situations only twice, both briefly on Saturday morning.

RESULTS

Of Saturday morning program time, 59.2 percent was devoted to exterior scenes, while 40.2 percent of the time the action took place inside. The remaining 0.6 percent used abstract settings which fit into neither category. The percentages were reversed for prime time: 40.5 percent of the total were exterior scenes, while 59.5 percent were interior scenes (table 2). Much of the exterior time in prime time was devoted to quick establishing shots (5 to 10 seconds for a long shot or pan shots used to provide a frame of reference), or to what we came to call "in-transit" sequences. These were typically chase scenes, where the environment added to the sense of risk and suspense, or transitional scenes, which eased the flow from one set location to another.

Table 3 summarizes the exterior environments by general type of landscape on a rough continuum of density of habitation and type of land use. In the overall sample, the predominant landscapes (30.5 percent of total exterior time) were rural and sparsely inhabited, as exemplified by the dry scrub and grassy hills typical of southern California. The

Table 2.—Time spent in interior and exterior settings by Saturday and evening shows

Time period	Interior		Exterior		Other		Total	
	Min.	%	Min.	%	Min.	%	Min.	%
Saturday	161.19	40.2	237.54	59.2	2.48	0.6	401.21	100.0
Evening	283.03	59.5	192.28	40.5	—	—	475.30	100.0
Total	444.22	—	429.82	—	2.48	—	876.51	—

Table 3.—Exterior time devoted to landscape types in Saturday and evening hours

Landscape type	Saturday			Evening			Total exterior	
	Minutes	% of Sat. exterior time	% of total exterior time	Minutes	% of eve. exterior time	% of total exterior time	Minutes	% of total exterior time
Urban	10.47	4.4	2.4	21.20	11.0	4.9	31.67	7.4
Suburban commercial	6.74	2.8	1.6	14.87	7.7	3.5	21.61	5.0
Suburban residential	26.75	11.3	6.2	9.30	4.8	2.2	36.05	8.4
Small town/campus 1.51	0.6	0.4	38.00	19.8	8.8	39.51	9.2	
Rural/sparsely inhabited	45.31	19.1	10.5	85.73	44.6	19.9	131.04	30.5
Wild/uninhabited	71.21	30.0	16.6	10.40	5.4	2.4	81.61	19.0
Subtotal	161.99	68.2	37.7	179.50	93.3	41.7	341.49	79.5
Public recreational	27.25	11.5	6.3	9.38	4.9	2.2	36.63	8.5
Other surfaces	34.12	14.4	7.9	.88	0.5	0.2	35.00	8.1
(air, water, etc.) Not accounted for	14.18	5.9	3.3	2.52	1.3	0.6	16.70	3.9
(technical difficulties, etc.)								
Total	237.54	100.0	55.2	192.28	100.0	44.7	429.82	100.0

activities most frequently shown in these dry rocky hills were high action chase sequences. Rural scenes of ponds, woods, or dirt paths, on the other hand, were usually settings for social interaction and intimate encounters between family and friends. Wild, uninhabited landscapes were second in frequency (19.9 percent). Urban settings accounted for only 7.4 percent of the total exterior time for all programs, and suburban commercial strips were seen least (5.0 percent).

The Saturday morning programs showed a much greater variety of landscape types, including more exotic and wild, uninhabited regions; e.g., deserts, mountains, tropical islands, jungles, etc. Often these settings served as remote or mythical supports for events more freely fantasized than those usual in evening programs. Most prime-time exterior scenes (93.3 percent) fell into one of the six density/land use categories shown in table 3, as did a smaller majority (68.2 percent) of the Saturday morning landscapes. Not all scenes could be categorized along those dimensions, however: 8.5 percent of the total exterior time showed public recreation settings, e.g., racetracks, fairgrounds, zoos, and stadiums. Of this category, 74.4 percent was contributed by the Saturday morning programs. Other surfaces, e.g., air, water, underwater, etc. accounted for 8.1 percent of the total exterior time, with 97.5 percent of that category attributable to Saturday morning programs.

On Saturday morning, the predominant category was wild, uninhabited landscape (30.0 percent of Saturday exterior time). The next most frequent was rural, sparsely inhabited (19.1 percent), followed by suburban residential (11.3 percent). Urban exteriors accounted for only 4.4 percent of Saturday time, with small town/campus appearing least often (0.6 percent).

The predominant landscapes in prime time, on the other hand, were rural, sparsely inhabited (44.6 percent of evening exterior time), and small town/campus (19.8 percent), contributed primarily by two programs—*The Waltons* and *Little House on the Prairie*—which feature the same rural locales each week. Urban landscapes were third in amount of evening exterior time at 11.0 percent. Wild, uninhabited landscapes (5.4 percent of evening exterior time) and suburban residential exteriors (4.8 percent) appeared least frequently.

Four of the most frequent environment-centered themes are discussed below with brief illustrative references from the specific programs in which they appear.

Being marooned, lost and/or isolated—generally as the result of some natural disaster—provides the raison d'etre and continuous plot line for the two most popular (according to a recent Nielsen statistic) Saturday morning programs. In *The New Adventures of Gilligan*, a shipwreck has left an odd assortment of people

stranded on an island, which provides a physical context for weekly adventures and mishaps. In *Land of the Lost,* a father, son, and daughter find their camping trip disrupted when an earthquake catapults them into a prehistoric time dimension. One episode of *Devlin* dealt with the experience of being trapped in a narrow mountain pass by an avalanche that followed an unexpected blizzard. In both *Devlin* and *Land of the Lost,* the environment is depicted as hostile and threatening, requiring the protagonists to muster their resources in dealing with the challenge of the situation. The characters in *Gilligan* also cope quite successfully with the situational demands of their island existence, but the environment is seen as more supportive, adding credence to the myth of easy and bountiful living on tropical islands.

A number of environments evoked responses of aesthetic appreciation. In *Shazam,* Mentor and Billy admire the tranquility of their mountain surroundings: ". . .especially up here where it's so peaceful and quiet." Sandy, in *Devlin,* is awe-struck at the same mountain snowfall which unnerved her older brother: "It's beautiful—look, it's snow. . .Like a kid's fairy tale!" Francie, in *The Rookies,* reminesces about "just walking through the park—it was beautiful, really beautiful." Most notable of all is 8-year-old Laura's soliloquy while fishing with her beloved Johnny: "What a pretty song. Squirrels playing and fish jumping—this is such a cheerful place. At times like this, I feel all warm and sparkling inside" *(Little House on the Prairie).*

Environments were also seen as refuges where people go to elude their pursuers. Although the rural, sparsely inhabited landscape often provides this escape, e.g. fleeing to the hills to escape police *(The Rookies),* the urban environment also provides multiple opportunities for flight and retreat. Microenvironments are often used for this purpose, e.g. hiding in alley trashcans *(The Waltons)* and in the doorways of dimly-lit urban streets *(Six Million Dollar Man)* as well as losing oneself in downtown traffic to shake off the police *(The Rookies).* Some imaginative hiding places included a tennis court, a filing cabinet, an underwater algae forest, the inside of a dam, and a clubhouse.

The clubhouse represents a subcategory of this major thematic element, since it is not only a refuge where two boys hide their sea-monster friend, but it is also a private place where the boys can meet and plan in secrecy without fear of intrusion from the adult world *(Sigmund and the Sea Monsters).* Interior settings are not the only places where people seek and find privacy: "Let's go outside where we can be private," says a character in *Little House on the Prairie.* Closely related to private places are settings for confidential talks, which range from conventional interiors, e.g. bedrooms, to the front steps of houses and schools, and very often to natural settings, e.g. gardens, ponds, waterfalls, dirt roads, and trees.

Another major theme that overlaps considerably with the concept of environment as refuge is the theme of running away. This category includes not only the characters who are fleeing from the police in various episodes of *The Rookies,* but also situations where children or animals run from a place of security and close familial ties to strange and unfamiliar places that demand rather complex adaptive strategies. Joe is the fugitive dog in the series *Run, Joe, Run* who is erroneously thought to be dangerous and must constantly flee his pursuers in alien terrain. In an episode of *The Waltons,* When Jim-Bob, the youngest boy in the family, feels ignored and misunderstood, he runs away from his rural home to the next town, where he attempts to buy a train ticket for "Japan or Washington". One segment of *Jeannie* features Babu, a genie, who thinking himself jinxed, runs away from his suburban home to a more rural setting where he encounters some unfriendly strangers. In all instances the runaways are sought by concerned family and friends and entreated to return home. Going home is, of course, the thematic counterpart to running away or getting lost — and the warm and supportive qualities of home are strong underlying themes in at least three series: the title of *Little House on the Prairie* physically describes the locus of the Ingals' homestead; Walton's Mt., Va. is where *The Waltons* live and work (most significant action takes place in and around the house in these two cases); and the sole objective of the family stranded in *Land of the Lost* is to return home. In each of these programs, the physical environment clearly shapes the lifestyle pictured.

Frightening and dangerous places often figure into the plots to create an atmosphere of

tension, adventure, and excitement and provide a context for displays of bravery and risk-taking, hence the final theme focuses on demonstrations of environmental competence. In only three episodes are children actively dealing with their fears and coping realistically with situational crises. Holly, the young girl in *Land of the Lost*, and Chad, a blind boy in one episode of *Shazam*, manage to rise above their handicaps and the overprotection of well-meaning adults by rescuing others whose lives are endangered. Most of problems faced by television characters, however, are dealt with by adults — many of whom are also equipped with super powers. In fact, out of 29 episodes, 10 featured characters with superhuman powers — none of them children. Implications of these findings for the development of environmental competence in children will be discussed in the next section.

DISCUSSION AND FUTURE RESEARCH

These results reflect general social attitudes about children and current programming theories as well as the different potentials for environmental learning inherent in the formats of evening and Saturday morning programs. One convention that appeared consistently is the placement of children in natural settings. Perhaps our cultural mythology perpetuates the notion of a link between the characteristics sterotypically assigned to children—simplicity, openness and uninhibited behavior—and the undomesticated outdoors. Our society has conventionally thought that the "natural" environment is the most suitable arena for a child's play and exploration and that the child should therefore be happiest in such a context. The city is seen as inimical to children in the harshness of its build environment. Restrictions are imposed by adults because of perceived physical and social dangers. In the television programs we monitored, we saw no children demonstrating skills or coping with problems in urban settings, although other characters that children may or may not identify with (animals and older adolescents) were occasionally seen acting in urban scenes.

The fact that children are pictured so rarely in situations where they can demonstrate problem-solving ability in a realistic (non-magical) way deprives children of opportunities for identifying with and internalizing the image of a competent child. Super power and technological intervention as the usual means of problem-solving on these TV programs may reinforce the child's notion of finding magical rather than skill- or initiative-derived solutions to ecological problems.

Such conventions about a child's relationship to the environment and the expectations of his performance within that environment emerge fairly consistently in both Saturday and prime-time programs. The differences between the two are largely in the kinds of environments shown and the kinds of action that take place. These differences probably reflect the anticipated differences in viewing audiences.

Exterior environments provide the potential for a great variety and quantity of action. It is known that action is a prime ingredient in holding children's attention to the screen *(Liebert, Neale, and Davidson 1973)*. On Saturday morning, mythical or remote exterior environments were often settings for that action and adventure. In prime-time shows, most of the fast-paced action sequences again take place outside, but verbal dramatic developments, perhaps of more interest to adults, are usually set indoors.

Since children do watch both Saturday morning and evening programs, the differences in settings may communicate conflicting images of the wider world beyond home. On Saturday morning, events that are exciting, adventurous, or challenging usually happen in exotic foreign places, in wild uninhabited places, or at least in places outside the home. While the situations that develop may or may not be realistic, they present an intriguing view of a world larger than that experienced by most children, or even most adults.

The evening programs we viewed split into an interesting dichotomy. On the one hand, there was a melange of violent, criminal and/or institutional processes generated in an urbanized world in which men were the main participants. On the other hand, programs featuring family life are set in the past and depict 'home' as a secure rural haven. Do children infer from this that the city is a frightening, dangerous place unsuitable for children and a secure home is only a remnant of our rural past?

Furthermore, what notions of lifestyle are

children absorbing? Several Saturday morning shows support the American romance of nomadic or highly mobile lifestyles inviting exploration of unknown environments. Some evening programs, on the other hand, reinforce the value of a stable, rooted home environment. The presentation of lifestyles in the context of certain environments, e.g., conventional suburban settings or nostalgic rural settings, may contribute to idealized images and expectations of how one "should" live and of options other people enjoy. It is possible that the comparison of his or her own lifestyle with those shown on television may contribute not only to the child's learning about the world but also, by reflection, to an emerging self-definition.

We should note that although Saturday morning shows often depicted more unusual environments, the "created" (drawn or modeled) settings were (with a few exceptions) highly stereotypic, abstracted representations of the suggested environments. If these are informing a child's image of parts of the world, it is on a highly generalized level. The "live" locations of evening programs, on the other hand, provide incidental information about more ordinary environments in much greater detail. For many young children, even these "ordinary" environments are different from anything they have experienced, and thus may be a source of environmental learning.

Although the settings of the evening programs were more detailed and realistic than most Saturday morning settings, landscapes were often viewed in glimpses. The scenes were short, and the screen was filled almost entirely by close-ups of people, car interiors, etc. Landscapes were often more suggested than shown, seen in fragments out of car windows, or blurred by panning or a shallow depth of field. One reason that so much of the landscape was seen in glimpses and fragments was the great amount of time spent in vehicles and on the streets. We are reminded of recent discussions of landscapes seen from moving vehicles and the educational and orienting functions that could be served in real urban landscapes by the different perspectives available in a trip through the city *(Appleyard, Lynch, and Myer 1964; Carr and Lynch 1968).*

In a sense children are carried as passively through television landscapes as they are in vehicles, but the images on television are even less connected and the scales of environments change much more abruptly in adjacent scenes of TV programs. The choice of perspective is also not available to the viewer of a television scene as it is to the car passenger. Learning to integrate different scales and perspectives of environment-landscape into a coherent image is a cognitive task which children achieve with varying levels of competence at different stages of development *(Hart and Moore 1973).* Future research should investigate the child's ability to integrate individual scene pieces into a unified image of a landscape based on the context of the program and to identify a type of landscape, as well as its region or place in the world.

This study has approached only one phase of the communications model, the message content. The other two facets, the choices and intentions of the producers of the message and the manner in which the information is assimilated and incorporated by child viewers, must also be investigated to elucidate the process of children's environmental learning through television. This conceptual and methodological approach is equally applicable to other popular media, e.g. movies, comic books, advertising, music, etc.

It is our hope that this presentation will spark an interest in media-based environmental learning. Decisions about environments are made by and for people who environmental attitudes and values have been shaped not only through formal education and direct experience but also through indirect and informal resources.

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PHOTO BY WALT BLAIR

"Observers of children have long been aware of how children use make-believe play to cope with traumatic events in their lives" - Anne Robertson

A Method for Observing Young Children's Make-Believe Play

by ANNE ROBERTSON, *Department of Psychology, Yale University.*

ABSTRACT. The influence of toy "realisticness" on the make-believe play of 20- and 26-month old boys and girls was studied by recording their play behaviors when they were presented with specific toys and play suggestions. Results indicate that age changes in make-believe play with the less realistic toys reflect increased competence in symbolic transformation, whereas age changes in play with the more realistic toys reflect social learning, which may differ for boys and girls.

THE EXPERIMENTAL METHOD described in this paper was used in a study of the effect of age, sex, and toy type on the make-believe play of children 20 and 26 months old. The children were observed playing in their most familiar and natural setting—at home with their mothers watching. While this study focused on the early development of make-believe play, aspects of its experimental design and methodology might well be used in investigating the more general question of how different settings affect behavior. One could, for instance, examine which types of play and interaction were most characteristic of children using different areas of a camp or playground

The theoretical basis for this research comes largely from the work of Jean Piaget, the Swiss developmental psychologist. Piaget *(1951)* has long been concerned with the child's cognitive development and regards the varying types of play one observes in children of different ages as reflections of the increasing complexity of the child's intellectual ability. Piaget's developmental sequence of play included three types—practice play, symbolic play, and games with rules. Although these three types of play coexist in older children and adults, they first appear and predominate during particular stages of the child's cognitive growth. In the first 18 months of life a child engages primarily in practice play, in which pleasure is found in repeating and solidifying a skill which has already been mastered—for example, a baby playing pat-a-cake. Examples of this sort of play in adulthood would include playing a musical instrument or riding a bicycle for pleasure.

At about 18 months the child becomes capable of what Piaget calls symbolic thought. This development is reflected both in the growth of language and in the appearance of make-believe play. In make-believe play the child is able to shape the world to his fantasy temporarily, rather than having to shape his behavior and thought to the demands and constraints of the environment. With the development of make-believe play a child can use behaviors he has already mastered for his own purposes. A 1-year-old must concentrate on making a stack of blocks just stand up; a 3-year-old is able to use his building skill to create an imagined airport or house.

Games with rules are the third form of play described by Piaget. These games predominate from around 6 or 7 years of age into adulthood. This type of play includes sports and board games, in which the player accepts a set of arbitrary rules and shapes his behavior to them.

A number of researchers view make-believe play as significant both to a child's cognitive growth and his emotional growth. Studies done

by Sara Smilansky *(1968)* of Israel suggest that a complex form of make-believe play, which she calls "sociodramatic play", may be important for later success in school. Sociodramatic play is the sort of role-playing engaged in by 4- and 5-year-olds around a theme, such as playing house or cowboys and Indians. Since such play involves a degree of abstract thinking, and is directed by the child's imagination rather than by the demands of the environment, it may provide necessary training for the abstract, internal thought processes needed in reading and problem-solving.

Observers of children have long been aware of how children use make-believe play to cope with traumatic events in their lives. Often a child will take an active role in play that parallels a situation in which he was passive; for example, a child might play doctor and pretend to give her doll a shot the day after she had received a shot herself. Further, fantasy play is a primary tool in psychotherapy with young children. Through a child's play the therapist may come to understand conflicts that are interfering with the child's normal development. Resolutions may also be achieved through play.

My study investigated the effect of how realistic the toys were on the make-believe play of 20- and 26-month-olds. A brief description of early make-believe play will help clarify why this may be an important factor. Early in the development of make-believe play a child may pretend to drink from an empty cup. He tips head back to drain the last drops of the imagined liquid, then smacks his lips with pleasure. Sometime later he may pretend to drink from a shell or closed fist and perhaps offer a sip to his teddy bear. In these sequences of play, the child apparently disconnects a well-established motor activity (such as drinking) from its customary function (consumption) and context (with a full cup). Also, as the child matures, he has less and less need for realistic props to support his attempts at make-believe. At first he pretends to drink with an empty cup, but later with just a closed fist.

The relationship of the amount of structure or realisticness provided by an object to make-believe play has interested other researchers *(Markey 1935; Fein 1973, 1975)*. Although 4- and 5-year-olds are able to pretend with few or no props (pretending to be Batman just by claiming to be and running around), realistic props may be necessary to the make-believe play of younger children. For older children with well-developed imaginative capacities, very specific realistic props may even restrict play.

Piaget's view of the process of symbolic or make-believe play is useful in understanding the relationship of materials to it. Piaget speaks of "symbolic transformations"; he means by this that in pretending to drink from an empty cup a young child must symbolically transform the empty cup into a full one. In pretending to drink from a wooden block, though, an additional transformation is required: imagining the block to be a cup. So, more symbolic work seems to be required from the child by less structured objects. While this symbolic work may be easy and fun for an older child, it may be impossible for a younger child without the cues provided by realistic objects. The implication is that with cognitive growth, pretend play may become less dependent on the physical presence of highly realistic or prototypical objects such as cuplike cups, trucklike trucks and babylike dolls.

I studied whether the relation between the structuredness of materials and make-believe play varies as a function of age by presenting 20- and 26-month-old girls and boys with materials that differed in their similarity to real cups, trucks, and dolls. Sex differences in early make-believe play were also examined in this study, but those results will only be mentioned briefly.

METHOD

The subjects were 28 Caucasian boys and girls, chosen randomly from hospital birth records. Restrictions on the sample were that no child have more than one sibling and that the parents live together. Most of the children came from middle-class homes.

Each child was observed twice at home with his or her mother present. Each session consisted of three distinct segments—two play episodes of 10 minutes each (in which the procedure was identical but the toys were different), separated by approximately 40 minutes of intervening tasks which were the same for all children. Two visits were approximately 2 weeks apart and lasted about an hour. Since each child was observed twice with each of the two toy sets (toy sets A and B were presented at each visit but not in the same order), the experimental design was one of

repeated measures in which each child served as his own control. Using two visits also made it possible to assess the effect of the unfamiliarity of the experimental situation and the experimenters. Since play is one of the first behaviors to drop out when a child is anxious or uncomfortable, it is essential that the child become familiar with the experimenters and experimental procedures.

Materials. There were two toy sets, each containing 17 objects, 4 of which were identical in both sets. Examples of the object categories were: cup, spoon, bowl, doll, truck, crib, phone. The highly realistic or "highly prototypical" (HP) toy set contained 13 objects which were either familiar household things or toys (crib, telephone, truck). The doll was a detailed representation of a baby. The 13 objects in the "less prototypical" (LP) set were roughly matched by function (things for drinking, for eating, for sleeping) but lacked the detail of their highly prototypical counterparts; e.g., a bed and a truck were matched to two boxes of different sizes, the coffee mug was matched to a plastic container of roughly the same size, the toy telephone was matched by a toilet-paper tube balanced on two blocks, and the baby doll was matched to a stuffed cloth figure.

Experimenters. Two female experimenters visited the home. One experimenter (*E*1) presented the toys to the child and administered the intervening tasks, while the other (*E*2) recorded the child's behavior.

Warm-up The initial 5 to 10 minutes of each session were spent in helping the child feel at ease with the experimenters. Either *E*1 or the child's mother showed the child a picture book while the other adults chatted. By the end of 10 minutes *E*1 took the first set of toys from the suitcase, arranged them on the floor in a predetermined way and invited the child to play with them.

Play episodes. Each 10-minute play episode began with 2 minutes of free play during which *E*1 sat near the child but did not participate in his play. During the remaining 8 minutes of the episode *E*1 made five play suggestions at specified time intervals and in a fixed sequence.

When making a play suggestion, *E*1 indicated or brought into view the appropriate toys for that particular play theme; for example *E*1 indicated the toy truck while saying, "Dolly wants to go for a ride; please take dolly for a ride." If the child did not respond to the first verbal suggestion, it was repeated approximately 30 seconds later. Beyond this, however, the child was not coaxed into following *E*1's requests.

During each play episode, *E*2 continuously described the child's activities into a tape recorder. A signal was recorded on the tape every 10 seconds. Even though there was a lag between the occurrence of an activity and the oral description of it, the relative duration and sequence were preserved. The language used to record the child's behavior consisted of about 50 core verbs which described the child's use of objects (e.g., pushes truck, fingers doll, claps blocks) and his interactions with other people involving objects (e.g., gives mother doll, shows *E*1 bottle). All of the child's behavior during the play episodes was recorded and transcribed, but only those behaviors subsequently coded as "pretends" will be considered here.

Actions, but not verbal labels, were scored "pretends" if they contained an element of make-believe. For example, a child's going through the motions of drinking from an empty cup was scored "pretend", but his pointing to an empty cup and saying "coffee" was not. A child's behaviors were coded "pretend" if they: (a) involved treating something inanimate as though it were animate (feeding a doll); (b) resembled normal, functional activities but occurred in the absence of necessary materials (drinking from an empty bottle); (c) were not carried through to their usual outcome (putting on a hat, but not going outside; closing eyes, but not sleeping); or (d) were typically performed by someone else (brushing hair, dialing a telephone).

Observation reliabilities were determined from tape recorded observations of filmed play sequences. Observer agreement for object contact was 82 percent, for activity it was 80 percent and for coding a behavior "pretend" it was 87 percent.

Measures. The four taped play episodes for each child were transcribed, the "pretends" coded and the following measures compiled for each play episode:

1) Pretend Frequency was the sum of all those behaviors coded "pretend" within a 10-minute observation period.

2) Variation of Pretend was the number of pretend activities which were unique in action, objects, or relevant vocalizations. For example, stirring with a spoon in a red cup five times was

scored as one variation, and so was stirring once with a spoon in a yellow bowl. Also, pretending to drink from an empty cup with accompanying noises was scored separately from drinking "silently", and saying, "Hi, Daddy," on the toy telephone was scored differently from saying, "No, I can't."

3) Total Activity was the sum of all the child's actions, whether make-believe or not, during the 10-minute play episode. This score served as a baseline of activity level against which to assess a child's pretend activity.

RESULTS

Since preliminary analyses indicated no significant experimenter effect (t = .79, df = 110, p <.43), groups were collapsed across experimenter and subsequent analyses were performed on these pooled groups. A multifactor analysis of variance with repeated measures *(Winer 1962)* was performed on each of the dependent measures: Pretend Frequency, Variation of Pretend, and Total Activity. The between-subjects factors were age, sex, and intervisit order (LP/HP - HP/LP or HP/LP - LP/HP), and the repeated factors were type of toy and intravisit order (first or second).

The three dependent measures were significantly correlated ($p < .001$), with Pretend Frequency and Variation of Pretend scores being more highly correlated with each other than either was with the Total Activity score.

The Pretend Frequency and Variation Scores were intended to reflect two dimensions of make-believe play, amount and diversity. However, the analyses of variance and the internal analyses for the two scores were so closely parallel (differing only in the degree to which the findings were more significant than $p < .05$), that this discussion will be limited to the results of analyses of the frequency scores only.

Age, sex, and toy type effects

Repeated-measures analysis of variance for frequency scores showed that the main effects of age, sex, and toy type were all significant (in each case, $p < .01$). Significant interactions between sex and age (F (1,20) = 4.22, $p < .05$) and among age, sex, and toy type (F (1,20) = 12.82, $p < .002$) were also found.

In general 26-month-olds pretended more than 20-month-olds (F (1,20) = 8.05, $p < .01$), and girls pretended more than boys (F (1,20) = 9.46, $p < .01$). But the influence of a child's sex on his pretend play depended on his age. Twenty-six-month-old girls pretended significantly more than 20-month-old girls (t = 3.49 > t' = 2.85, $p < .01$), but the difference between older and younger boys was not significant. It was only at 26 months that the sexes differed in amount of pretending (t = 3.66 > t' = 2.85, $p < .01$); at 20 months there was no difference. Thus, it was between the ages of 20 months and 26 months that the two sexes began displaying different patterns of make-believe play.

The interactive effect of age and sex is modified by toy type. With all subjects combined, children pretended more with the highly prototypical toys than with the less prototypical toys (F (1,20) = 26.12, $p < .001$). Using the Newman-Keuls method for multiple comparisons, I found this to be true also of each separate age and sex group ($p < .01$). The existence of a significant age by sex by toy interaction, though, means that the precise effect of toy type depended on the child's age and sex.

As can be seen from figure 1, boys and girls followed strikingly different lines of development from 20 to 26 months with regard to the influence of toy type. At 20 months both boys and girls pretended more with highly prototypical than with less prototypical toys ($p < .01$), but the difference was greater for boys. By 26 months the situation was almost reversed, with girls pretending much more with highly prototypical than with less prototypical toys ($p < .01$), and toy type making no difference in older boys' pretend play. Thus, from 20 to 26 months boys went from having toy type affect their pretent play to having it make no difference, while with age the effect of toy type was simply intensified for girls.

Both sexes significantly increased their pretend play with the less prototypical toys from 20 to 26 months (boys, $p < .01$); girls, $p < .01$). Although the girls pretended more than the boys at each age level (20 months, $p < .01$; 26 months, $p < .05$), the lines of development were parallel for the two sexes. The situation was dramatically different with the highly prototypical toys: the boys' pretending significantly decreased ($p < .01$) from 20 to 26 months, whereas the girls nearly doubled the frequency of their pretend play (p < .01). At 20

months there was no difference in the amount boys and girls pretended with highly prototypical toys, but by 26 months girls pretended more than twice as much as boys ($p < .01$). Thus, with these toys boys and girls showed divergent lines of development.

In summary, the factors age, sex, and toy type significantly influenced the frequency of make-believe play in the following ways:

1. Twenty-six month-olds pretended more than 20-month-olds.
2. Girls pretended more than boys.
3. Highly prototypical toys elicited more pretending than less prototypical toys.
4. The Age x Sex interaction reflected a large, significant sex difference at 26 months and no sex difference at 20 months.
5. The significant Age x Sex x Toy Type interaction reflected the following pattern of results: (a) With less prototypical toys, a parallel increase in pretend play for both sexes,but (b) with highly prototypical toys, a large increase in pretend play for girls, and a slight decrease for boys.

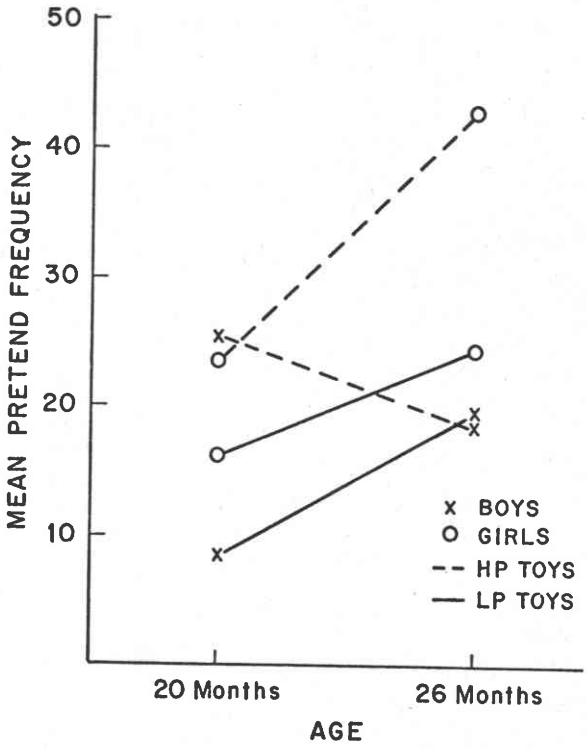

Figure 1.—Mean total pretend scores as a function of age, sex and toy type.

DISCUSSION

If one supposes that at about 2 years of age a child is beginning to acquire a sex-role identity and is being exposed to different sex-role behavior patterns and possibly to training in sex-appropriate play patterns, one would expect these to be revealed in his play, particularly with those objects most closely related to daily life experiences. It may, therefore, be useful to think of highly prototypical toys as those that receive the full impact of these socialization experiences. If one thinks of a generalization gradient along the dimension of prototypical similarity, it may be that play with less prototypical materials reflects developmental changes in the childs transformational competence, whereas play with highly prototypical toys reflects social learning. If so, then the parallel significant increase in pretend play with the less prototypical toys for both sexes was to have been expected. In contrast, the large sex difference in pretend play with highly prototypical toys (girls increasing dramatically and boys decreasing in amount of pretending) could be attributed to differences in the socialization experiences of boys and girls from 20 to 26 months.

The research design and methodology in this study could be used to study older children's behavior in various outdoor settings. The repeated measures technique allows the researcher to use each child as his own control and thus reduce error due to individual variation without increasing sample size. Also, taping could be adapted to record more complex behavior.

Acknowledgment

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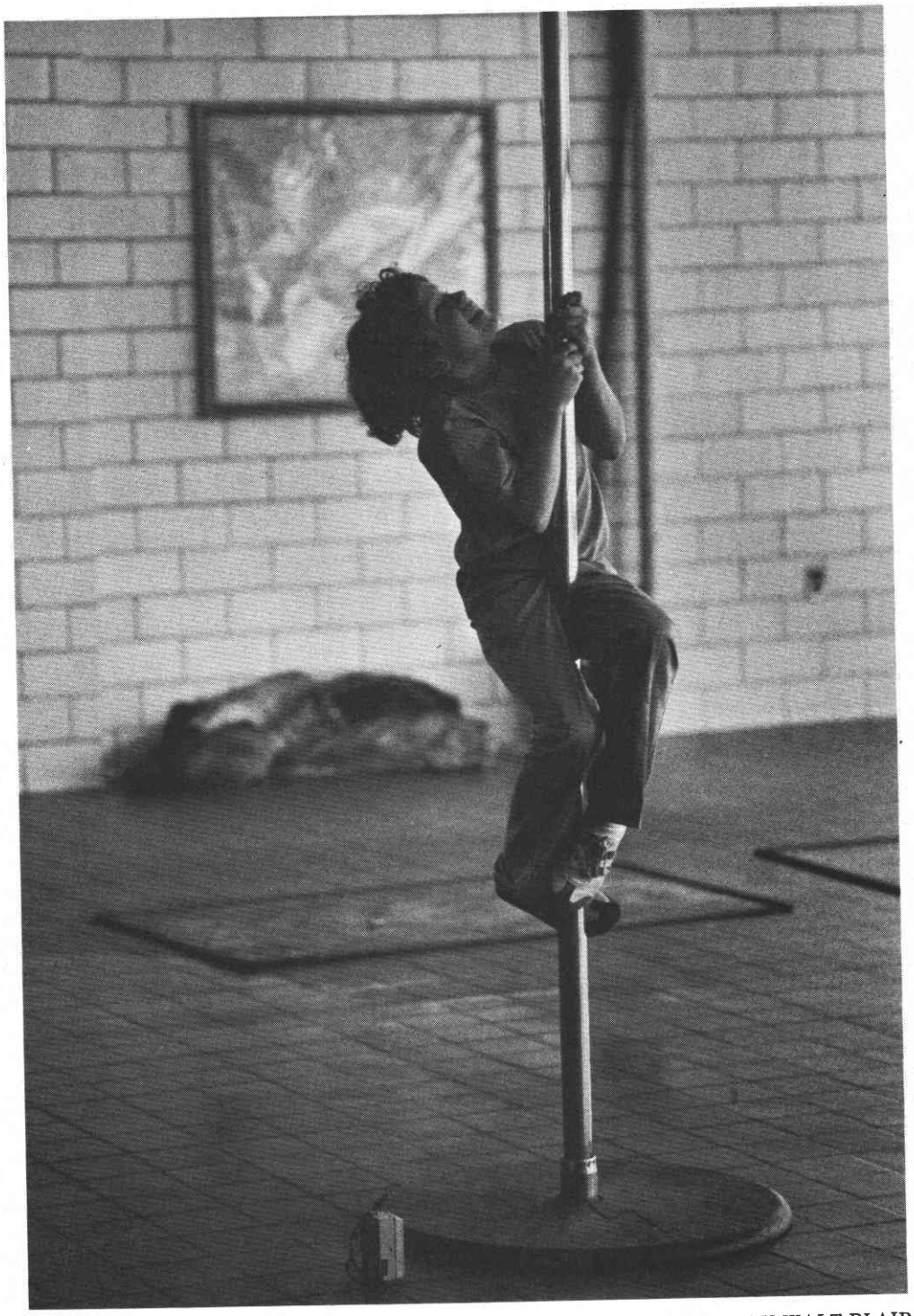

PHOTO BY WALT BLAIR

"He is full of potentialities, visions of the future, and questions concerning his fulfillment of himself"
- A. Laverne Dickerson

The Youth Conservation Corps and Adolescents' Self-concept

by A. LAVERNE DICKERSON, *Social Science Analyst, USDA Forest Service, Northeastern Forest Experiment Station.*

ABSTRACT. Four dimensions of self-concept were measured at the beginning and the end of the Youth Conservation Corps's 1971 pilot program. The overall evaluation of the program had found no changes in self-concept, but factor analysis identified some significant differences. The campers' perceptions of their adequacy decreased, while their perceptions of their personal worth and social skills increased. These changes differed with the sex, age, and family income of the participants and with the type, location, sponsoring agency, and management style of the camps.

INTRODUCTION

IT IS VERY IMPORTANT in the development and management of a Federal social program that a special effort be made to assess its success and failures. We need to learn answers to such questions as: Were the program's objectives stated clearly? Did the program meet the needs of its participants and society?

The overall evaluation of the 1971 Youth Conservation Corps pilot program has been published *(Marans, Driver, and Scott 1972).* One of the recommendations made was a closer look at the dimensions of self-concept. This has been done *(Dickerson 1973)* and some of the findings are presented here with the hope that those interested in children, nature, and the urban environment will find in them some insights, hunches, or ideas.

BACKGROUND

The Youth Conservation Corps was established in the Departments of Agriculture and Interior when the 91st Congress approved Public Law 91-378 on August 13, 1970. During the summer of 1971, approximately 2,400 youth of both sexes, ages 15 to 18, from all social, economic, and racial groups participated in the YCC program. The camps were located in 38 states and the District of Columbia. The sponsoring agencies and the number of camps they were responsible for were: In the Department of the Interior, Bureau of Indian Affairs, 3; Bureau of Land Management, 2; Bureau of Reclamation, 4; Bureau of Sport Fisheries and Wildlife, 12; National Park Service, 9; and in the Department of Agriculture, Forest Service, 34. There were 33 coed camps, 8 female camps, and 23 male camps. Fourteen of the camps were nonresidential. Thirty-eight residential camps were open 7 days a week and 12 residential camps operated 5 days a week. Duration of camp sessions and the number of camps with each length of session were: 4 weeks: 6, 7 weeks: 4, 8 weeks: 49, and 9 to 12 weeks: 5.

Eight objectives, originating from Section 1 of Public Law 91-378, were adopted by the Departments of Agriculture and Interior at the beginning of the program: Two concerned work accomplishment, two environmental learning, and four personal and social development. A detailed description of this cooperative effort may be found elsewhere *(Marans, Driver, and Scott 1972; Dickerson 1973).*

SELF-CONCEPT

What is self-concept? There is no unanimity

about the meaning of the term or its theoretical foundation. The interrelatedness of self as both object and process is discussed in the writings of many. (For a detailed discussion, see *Marans, Driver, and Scott 1972.)* Here, self-concept is viewed as the way of looking at and thinking about those aspects of his person that the individual perceives and toward which he develops opinions and attitudes *(Dewey and Humber 1966).* The adolescent is at the stage of development where he is deeply concerned with such questions as: Who am I? What will I become? What kind of work will I do? Why am I having problems with my friends? In short, feelings, thoughts, and behavior at this stage are mainly determined by concept of self. "Whatever the self is, it becomes a center, an anchorage point, a standard of comparison, an ultimate real. Inevitably, it takes place as a supreme value." *(Murphy 1947: 536).*

Rapid physical changes accompanied by internal physiological and psychological changes intensify the adolescent's concern with self, regardless of his socioeconomic or cultural background. And if these changes are not enough, ambiguities in our society confound his concept of self. One moment he is treated like a child; the next moment he is expected to act as an adult. His social duties and responsibilities may be those of an adult while his social rights and privileges may be those of a child. Criminal and violent behavior abounds, yet we speak of morals and ethics. All of these add to the adolescent's confusion about himself. He is full of potentialities, visions of the future, and questions concerning his fulfillment of himself. This is an interesting time of life at which to study self-concept; body changes and important life decisions are intensifying the awareness of and concern with the concept of self.

I believe that experience with natural environments can help the adolescent improve his concept of himself.

Three of the four personal and social development objectives of the YCC program formed the basis for selecting the dimensions of self-concept to be examined in this research:

1. To acquire increased self-dignity.
2. To acquire increased self-discipline.
3. To better work with and relate to peers and adults.

Self-dignity, self-discipline, and relationships with peers and adults are important objectives, especially for an age group whose attempts at social differentiation and integration appear to be directed by such value themes as acceptance, self-identification, and intimacy *(Gordon 1971: 832).* Searching the literature for instruments applicable to this study, we became aware that most researchers on self-concept found these dimensions of personality to be relatively basic and therefore stable over time. *(Bachman 1970, Brownfain 1952, Taylor 1953, Engel 1956).* Therefore, if any changes took place during this study, they would be quite significant.

There are four ways to measure changes in self-dignity, self-discipline, and relationships with peers and adults. The first identifies and measures observable behavorial responses related to these attributes; the second measures the individual's perceptions of himself; the third measures other peoples' perceptions of the individual; and the fourth measures some combination of the first three. Because time, money, and personnel were limited, the second method was selected—measuring what the individual thinks of himself, at the beginning and at the end of the YCC Experience.

The following are working definitions of the dimensions of self-concept:

Self-esteem is "an evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy. In short, self-esteem is a *personal* judgment of the worthiness that is expressed in the attitudes the individual holds toward himself." *(Coopersmith 1967: 4-5).*

Self-development is the degree to which a person had developed his positively valued abilities and potentialities into skills and competencies. *(French and Kahn 1962).*

Social skills: peers refers to the individual's perception and evaluation of his acceptance by others of his own age.

Social skills: adults refers to the individuals perception and evaluation of the worth of adults, and his understanding of and his acceptance by them.

To measure these dimensions, I asked YCC participants to respond to 45 statements at the beginning and at the end of their experience. Five responses were offered, ranging from "almost always true" to "never true". Numbers

from 1 to 5 were assigned to each of the responses in such a way that a higher score would reflect more positive self-perception. The total score on each of the five dimensions of self-concept was the sum of the scores on each item in the dimension. For example, if a dimension was measured by seven items, the total score would range from 7 to 35. An explanation of how these instruments were designed can be found in *Youth and the Environment (Marans, Driver, and Scott 1972).*

ANALYSIS

Factor analysis of responses to the 45 statements suggested the following dimensions of self-concept:

Personal worth is a way of looking at and thinking about valued personal abilities and potentials, ones the individual perceives and toward which he develops opinions and attitudes that contribute to his feelings of self-worth (includes 21 statements).

Adequacy is a way of looking at and thinking about valued personal abilities and potentials, ones the individual perceives and toward which he develops opinions and attitudes by comparing them with certain standards he has set for himself (six statements).

Social skills: adults and *Social skills: peers* retained the definitions presented earlier (six and seven statements respectively).

Research has shown that an organization's style of management and its attention to the personal values of its members influence their performance and their satisfaction with the organization *(Likert 1967).* Therefore, the final questionnaire included several questions about camp administration and organization. A single index was constructed, the Participation-Interpersonal Relations Index (PIRI) *(Marans, Driver, and Scott 1972)* to combine adolescents' perceptions of (1) the extent to which they participated in governing their camp, and (2) the degree of friendliness, confidence, trust, willingness to communicate, and supportiveness shown by the camp's staff.

Twelve characteristics of the adolescent and the camp were considered. Adolescent characteristics were sex, age, race, family income, and place of residence. Family income was categorized by the adolescent as under $5,000; $5,000 to $9,999; $10,000 to 14,999; or $15,000 and over. Each participant categorized his place of residence as urban (cities of more than 100,000), suburban (small cities or towns of less than 100,000), or rural. Camp characteristics were sponsoring agency, coed or non-coed, residential or nonresidential, size, length of session, region where located, and PIRI.

With 12 independent variables (adolescent and camp characteristics) and 4 dependent variables (self-concept dimensions), some of the cells in the matrix had too few responses for multivariate analysis. Simple analysis of coveriance was used instead.

RESULTS

Five characteristics of the subjects and seven characteristics of the camps were expected to correlate with variations in adolescents' self-concepts. F-ratios, the results of analysis of covariance, were computed for the four dimensions of self-concept. Significant relationships are presented in table 1.

Scores on the *personal worth* scale were correlated with age, sponsoring agency, session length, and PIRI. *Adequacy* scores showed significant differences on one adolescent characteristic and four camp characteristics: family income, residential or nonresidential camp, sponsoring agency, region, and session length. Three characteristics were significantly related to differences in scores on social skills: adults: session length, PIRI, and residential or nonresidential camp. *Social skills: peers* scores revealed significant differences for the variables sex, coed or non-coed camp, sponsoring agency, session length, and PIRI.

The overall evaluation of the YCC program *(Marans, Driver, and Scott 1972)* found no change in self-concept as a result of the experience. But as shown above, the factor analysis that collapsed five self-concept dimensions into four identified some significant differences among both adolescent and camp characteristics. A look at the subgroups of characteristics that showed significant differences can give us some clues to the variation.

Personal Worth

Participants at Forest Service camps showed the most growth in feelings of personal worth (see table 2). Decreases were recorded at camps

Table 1.—Significance of relationships between characteristics of camper and camp, and four aspects of self-concept (F-Ratio)

Characteristic	Personal worth	Adequacy	Social skills: adults	Social skills: peers
Camper				
Sex				**
Age	*			
Race				
Size of place				
Family income		*		
Camp				
Sponsoring agency	**	**		*
Coed/non-coed				**
Session length	*	**	*	**
Residential/nonresidential		***	***	
Camp size				
PIRI	**		*	**
Camp region		**		

*p≥ .05
**p≥ .01
***p≥ .001

Table 2.—Scores on "personal worth" before and after camp, by age of camper and camp variables

Variable	Before		After		Difference	N
	Mean	SD	Mean	SD		
Age						
15	81.075	10.515	80.335	11.043	-0.740	307
16	81.624	10.085	81.921	10.935	0.297	391
17	81.506	9.846	82.328	10.047	0.822	326
18	82.292	8.230	82.689	9.086	0.397	106
Sponsoring agency						
Bureau of Indian Affairs	76.969	10.531	75.750	11.648	-1.219	56
Bureau of Land Management	82.265	7.856	81.676	10.057	-0.589	34
Bureau of Reclamation	81.917	9.546	82.531	8.762	0.614	96
Bureau of Sports Fisheries, Wildlife	79.984	10.024	79.197	10.546	-0.787	127
Forest Service	81.880	9.883	82.538	10.387	0.658	692
National Park Service	82.592	10.406	81.456	11.447	-1.136	125
Session length						
4 weeks	82.193	9.432	83.467	10.023	1.274	212
8 weeks	81.388	10.081	81.293	10.593	-0.095	836
12 weeks	80.902	10.230	81.000	11.391	0.098	82
PIRI						
Low	80.853	10.350	79.620	11.137	-1.233	292
Medium	81.328	10.067	81.803	10.609	0.475	543
High	82.471	9.354	83.492	9.571	1.021	295
Overall average	81.504	9.971	81.680	10.575	0.176	1130

run by four agencies; the greatest decrease was at Bureau of Indian Affairs camps. Could different policies and procedures have affected these scores?

Decreases in personal worth felt by the 15-year-old participants could be the result of immaturity. Older participants usually performed better in work, recreation, and social situations. These successes seem to have produced feelings of pride and self-worth for many of the 17-year-olds. Could it be that the 15-year-olds judged themselves by the values of the entire group and that their judgments reflected their low status in that group?

The participants in 4-week camps showed a greater increase in *personal worth* scores than participants in either shorter or longer camps. Although this has not been reported previously

in the literature, I have observed that campers' apathy seems to increase after 4 weeks in camp.

The greatest significant difference for *personal worth* was associated with PIRI.

Adequacy

Most of the changes in *adequacy* scores were negative (see table 3). Could these changes reflect unrealistic expectations generated by the selection procedures? Perhaps the thrill of being chosen (often as the only representative of a school) elevated participants and encouraged them to formulate plans to solve major environmental problems. Even though they developed and implemented plans to solve problems and completed many important projects, the reality was that many things still needed to be accomplished and some problems were too complex for quick solutions. This speculaton is based on personal conversations with participants in northeastern and northwestern camps. The general theme was that much more needed to be done to improve and maintain the natural environment than had been anticipated.

Social skills: adults

The participants in 12-week camps showed the greatest increase in this dimension. It seems that time enabled them to understand the adults in their environment better (see table 4.)

The closeness of the nonresident camp staff to the participants while they were trying to overcome obstacles seemed to influence the participants' perceptions of adult relationships. Medium participation in camp governance and involvement in planning and problem solving (PIRI) provided the best climate for changes in adult relationships.

Social skills: peers

There was a significant increase in girls' perceptions of *social skills: peers* (see table 5). Evidently girls are more concerned than boys with their relations with peers. Rosenberg's study verified this finding:

Table 3.—Scores on "adequacy" before and after camp, by family income and camp variables

Variable	Before		After		Difference	N
	Mean	SD	Mean	SD		
Family income						
Under $5,000	21.371	3.574	21.067	3.685	-0.304	105
$5,000-$9,999	22.224	3.310	21.619	3.626	-0.605	357
$10,000-$14,999	22.558	3.080	22.391	3.198	-0.167	353
$15,000 and over	22.337	3.228	21.971	3.421	-0.366	315
Sponsoring agency						
Burea of Indian Affairs	20.714	3.489	19.893	3.535	-0.821	52
Bureau of Land Management	23.059	2.741	22.176	3.546	0.883	34
Bureau of Reclamation	21.948	3.537	22.656	3.340	0.708	96
Bureau of Sports Fisheries, Wildlife	22.291	3.239	21.520	3.527	0.771	127
Forest Service	22.289	3.160	22.176	3.202	-0.113	692
National Park Service	22.968	3.360	21.064	4.304	-1.904	125
Session length						
4 weeks	21.741	3.314	21.811	3.037	0.070	212
8 weeks	22.353	3.241	22.000	3.471	-0.353	836
12 weeks	22.939	3.077	21.207	4.305	-1.73	82
Resident/non-resident						
Residential	22.170	3.277	21.900	3.378	-0.270	943
Nonresidential	22.840	3.088	21.941	3.886	-0.899	187
Camp region						
North	22.131	3.343	22.677	3.360	-0.454	390
South	22.515	3.481	21.611	4.012	-0.904	262
West	22.274	3.044	22.257	3.192	-0.017	478
Overall average	22.281	3.254	21.907	3.465	-0.374	1130

Table 4.—Scores on "social skills: adults" before and after camp, by camp variables.

Variable	Before Mean	Before SD	After Mean	After SD	Difference	N
Session length						
4 weeks	20.316	3.348	20.670	3.209	0.354	212
8 weeks	20.367	3.670	20.695	3.757	0.328	836
12 weeks	19.829	3.845	21.183	4.292	1.354	82
Resident/nonresident						
Residential	20.403	3.635	20.749	3.675	0.346	943
Nonresidential	19.893	3.550	20.610	3.843	0.717	187
PIRI						
Low	20.363	3.792	20.428	3.868	0.065	292
Medium	20.252	3.652	20.877	3.876	0.625	543
High	20.397	3.408	20.742	3.159	0.345	295
Overall average	20.319	3.624	20.726	3.702	0.407	1130

Table 5.—Scores on "social skills: peers" before and after camp, by sex and camp variables

Variable	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	Difference	N
Sex						
Boys	26.361	4.104	26.344	4.104	−0.017	687
Girls	26.718	4.039	27.097	4.090	0.379	443
Sponsoring agency						
Bureau of Indian Affairs	26.250	4.060	25.911	3.604	−0.339	56
Bureau of Land Management	26.412	3.831	27.297	4.509	0.882	34
Bureau of Reclamation	26.198	4.017	26.656	3.641	0.458	96
Bureau of Sports Fisheries, Wildlife	26.315	4.231	26.047	4.491	−0.268	127
Forest Service	26.577	4.041	26.832	4.120	0.255	692
National Park Service	26.640	4.317	26.304	4.072	−0.336	125
Coed/non-Coed						
Coed	26.351	4.171	26.645	4.112	0.294	643
Girls	27.022	3.926	27.607	3.929	0.585	135
Boys	26.574	3.964	26.256	4.134	−0.318	352
Session length						
4 weeks	26.528	4.179	27.259	4.152	0.731	212
8 weeks	26.494	4.004	26.548	4.069	0.007	836
12 weeks	26.024	4.578	25.963	4.327	−0.061	82
PIRI						
Low	26.397	4.043	25.990	4.125	−0.407	292
Medium	26.494	4.191	26.691	4.203	0.197	543
High	26.617	3.918	27.186	3.853	0.569	295
Overall average	26.501	4.080	26.639	4.113	0.138	1130

> While boys and girls are both highly concerned with being well-liked by others, girls more consistently give this value top priority. They are more likely to stress values of interpersonal harmony and success (likeable; easy to get along with; friendly, sociable, and pleasant; a person who knows how to get along well with all kinds of people; well-liked by many different people). *(1965: 254)*

Campers at Bureau of Land Management camps showed the greatest gains in perceptions of *social skills: peers*. Campers at Bureau of Reclamation and Forest Service camps were second and third respectively. These agencies differed in the proportions of time devoted to social and recreation activities and to work and educational activities.

There was a negative relationship between length of camp session and *social skills: peers*.

The high motivation, enthusiasm, and zest for fellow campers waned after 4 weeks.

Participants in camps with high PIRI demonstrated growth in peer perceptions. Participation and leadership in these camps took place in informal groups, teams, and work gangs. The pleasure of human association with peers was enhanced by success in helping to plan the camp program. The interpersonal portion of the PIRI reflects the way significant others (camp staff) supported, trusted, and showed confidence in the participants.

CONCLUSIONS

Working to improve the environment through the YCC program changed certain dimensions of participants' self-concepts. Decreased perceptions of adequacy and increased perceptions of *personal worth*, *social skills: adults*, and *social skills: peers* were noted at the end of the program. These changes differed with sex, age, and family income of participants and with the type, location, sponsoring agency, and participation-interpersonal relations index (PIRI) of the camp.

Certain dimensions of self-concept appear to change over a short time. The casual atmosphere, the purpose of the YCC program, and the informal relationships with adults and peers at the camps seemed to affect the four dimensions of self-concept measured in this study. It seems logical that over a longer period of time, changes in parts of a whole should bring about a change in the whole.

The YCC program has many values other than enhancing selected dimensions of self-concept. The program serves as a type of career education, exposing young men and women to careers in forestry, resource management, and the sciences. It also helps to improve the environment and maintain our natural resources, and that is very important.

Acknowledgments

Data for this study were collected by the Survey Research Center during its evaluation of the 1971 Youth Conservation Corps program. The Center is a part of the University of Michigan's Institute for Social Research. Special thanks to B. L. Driver, Robert W. Marans, and John C. Scott for their encouragement and cooperation throughout the initial evaluation.

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"In today's society, a filling-station ethic prevails. Children are bused to camp for their measured portion of nature recreation, as if to a spiritual tuneup" - Ruth Hamilton Allen

Urban Children in Natural Environments: A Field Study in Sociobiology

by RUTH HAMILTON ALLEN, *Council of Governments, Washington, D.C.*

ABSTRACT. Six nature programs for urban children were studied from 1970 to 1974. Social networks in the camping programs and children's choices of locations for various leisure activities were examined. Return rates were found to correlate significantly with the intricacy of the social networks.

CHILDREN'S CAMPING PROGRAMS

Children from cities attend a variety of camping programs to experience the wonders of nature. In order to better understand the actual relationships between urban children and natural environments, I spent four summers observing city children at six camping programs.

The programs include: an urban nature center, a museum natural history program for inner-city children, an urban YMCA day camp, a neighborhood house camp, a scout camp, and a private charitable organization's resident camp. Major differences in the structure and organization of these programs are shown in table 1. These programs are representative of the main types available to urban children whose parents do not have the time or the inclination for family camping.

More than 40 percent of the children studied received financial aid to attend camp. The children were mainly 8 to 13 years of age at the time of the interviews. Boys and girls of all races attended all camping programs.

SOCIAL NETWORKS

Social networks can be defined as private and more or less permanent structures that bind individuals into complex lines of communication and transportation *(Moreno 1934)*. Moreno sees social networks as a container, or a bed that carries and mingles currents and opinions *(Moreno 1960)*.

Social networks among urban children in natural environments take several forms. First, there are existing social networks that are moved to camp. Siblings, cousins, neighbors, or school friends at camp together constitute existing social networks. Volunteer staff who bring their children to camp form another existing social network in the camp. Second, there are clusters of returnees who have shared previous seasons of camping together. Third, there are strong attachments developed in one season, especially between children and counsellors. If adult staff interact face to face with children, favorite children may be invited back for a second year.

Children's Social Networks and Leisure Preferences

Social networks are associated with children's leisure preferences. In individual interviews, 363 children were asked what they do in particular places when they can do what they like to do *(Allen 1977)*. The leisure locales given were: home, yard, school, neighborhood, in town (parks, museums and beaches) and out of town (special vacation places and trips to visit relatives). Children were also asked about their companions for each reported activity. These companions are the ingredients of social networks.

Table 1.—Major characteristics of six camping and conservation programs for urban children

Sponsor	Type of program	Return rate	Year established	Size of site	Distance children travel	Average length of visit	Primary season	Sex of director (s)
		Percent		*Acres*	*Miles*	*Weeks*		
Public city park nature program	Specialized conservation	32	1947	46	0-5	Variable (0-8 hr)	Fall, winter spring	M
Private university museum summer program	Specialized conservation	6	1968	1-50	0-5	3 (half day)	Summer	F
Public charitable day camp (YMCA/YWCA)	Centralized camping	22	1948	72	0-25	2	Summer	F,M
Private neighborhood house day camp	Centralized camping	35	1952	70	0-25	2	Summer	M
Public scout resident camp	Decentralized camping	27	1912	7-1100	5-100	2	Summer, winter	F,M
Private charitable resident camp	Decentralized camping	29	1887	1000	5-100	4	Summer, winter	F

Variations in leisure preferences by locale are shown in table 2. The 10 leisure categories are a synthesis of 6,463 separate responses and over 630 reported leisure activities. The categories of competition, chance, simulation, and vertigo are from a classification of games by Caillois *(1961)*. *Nature* includes fishing, hiking, camping, gardening and activities with pets. *Competition* encompasses baseball, football, basketball, and street games like hockey, handball, stickball, and tag. *Simulation* refers to pretending games such as dolls, house, doctor, cops and robbers, cowboys and Indians, and store. *Chance* includes cards, bingo, and commercial board games. *Vertigo* means games which stimulate or upset the centers of balance, such as, running, jumping, bicycling, swimming, climbing, and swinging. *Travel* means sightseeing and trips to shop, vacation, or visit relatives. *Construction* includes creative activities like sewing, painting, building models and commercial craft kits, coloring, and drawing. *Quiet* encompasses solitary and sedentary endeavors such as reading, talking on the telephone, listening to music, eating, and watching television. *Work* refers to domestic chores such as cooking, cleaning, running errands, and helping with younger children in the family. *Negative* includes teasing

Table 2.—Locations preferred by campers for various types of leisure activities, in percent of respondents

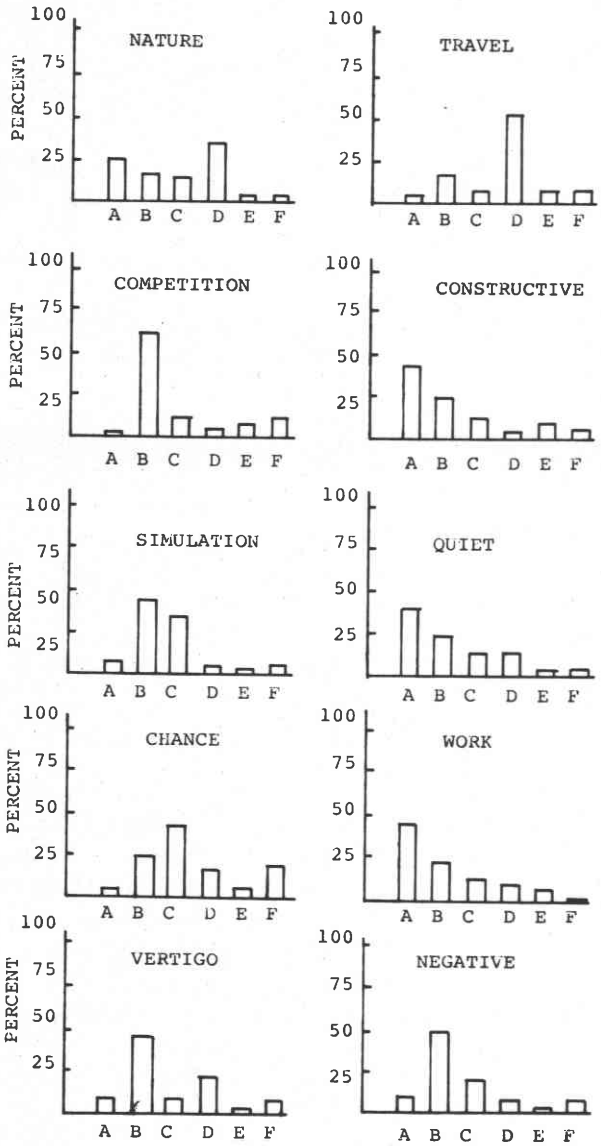
Type of activity	Location					
	Home	Yard	Neighborhood	School	In town	Out of town
Nature	3	12	5	1	7	11
Competition	6	61	37	45	13	4
Simulation	13	4	5	3	0	0
Chance	22	1	3	5	1	0
Vertigo	2	16	29	16	26	16
Travel	0	1	11	2	48	64
Constructive	12	1	2	9	2	1
Quiet	37	2	4	10	1	2
Work	4	1	2	6	1	1
Negative	1	1	2	2	1	1

people, fighting, getting into trouble, and aimless activities like "hanging around" or "fooling around."

Note that nature-related activities occupy a small portion of children's reported leisure, even though the children were attending a nature-oriented outdoor program at the time of the interview. The children reside mainly in cities like New York and New Haven, and the constraints and orientations of an urban lifestyle are reflected in their reports of leisure preferences. Competitive street games are the dominant activities.

Companions most often chosen for each category of leisure activity are given in figure 1. Competition, stimulation, chance, and negative activities are most often carried out with peers or siblings and cousins. Nature-related activities

Figure 1.—Companions most often chosen for each category of leisure activity (in percent).



A-alone B-peers C-siblings and cousins
D-parents and family E-other adults F-peers and family

and travel are more frequently with adult family members. Constructive, quiet, or work activities are often solitary endeavors.

Return Rates and Social Networks

A careful analysis of attendance records shows several things about social networks, children, and nature. Return rates can be derived by comparing names and addresses on attendance lists for consecutive years. For the six programs examined in 1972 and 1973, return rates varied from 6 percent to 35 percent. The lower figure is for a program that does not recruit in the same schools in consecutive years. The higher figure is more typical of cohesive neighborhood programs.

The nature experiences returnees and newcomers have in camp differ. Returnees have special knowledge of past events and camp lore. They know about natural features and ritual ceremonies. They lend stability and continuity. The slow replacement of group members provides a sense of belonging to a community that is recognizable year after year. In subtle ways, returnees contribute to the persistence of programs and social networks.

Social networks, in turn, influence recruitment patterns, the program's reputation with children, and the degree of cohesiveness among past staff and former campers. When these adult returnees are present they serve important functions. They orient newcomers, provide volunteer labor, donate money and material goods in times of scarcity, and generally foster the altruistic sentiments of the group.

The Significance of Social Networks in Children's Camps

This subtle role of nature in the lives of urban children has to be seen in the context of existing social networks. Too frequently, program managers think only in terms of the number of children served. In today's society, a filling-station ethic prevails. Children are bused to camp for their measured portion of nature recreation, as if to a spiritual tuneup.

Too little attention is paid to return rates and patterns of existing social networks in camps. Only one camp director routinely calculated return rates.

The physical isolation of most camp settings fosters a special feeling of community cohesion. The fixed location of the camp property is also important for the maintenance of social networks and group cohesion.

There is a sense of symbolic ownership of the land and the land-water interface among the people who return to children's camps. This group of people would ordinarily not control this resource of the more affluent. Four of the programs I studied have access to land they do not actually own; its use is made possible by donations from wealthy patrons.

LOOKING AHEAD

Suburban development is common on the fringes of all the programs. The wildness is largely symbolic. Camps face a number of serious problems: rising costs and strict health and safety standards that favor day and half-day programs over longer visits to natural environments. There is also a significant drop in the birth rate, which is already being felt in the larger organized programs. The professionalization of everyone and the increased participation of women in the labor force are changing the patterns of available volunteers.

The practice of busing children away from city neighborhoods ignores the more difficult task of making the places where poorer children live fit for growing children. Too often children have little time to get lost in fantasy play or explore nature because the bahavior norms of school are fostered in camp.

Nevertheless, camps for urban children will probably continue to provide low-cost vacations in natural settings. The challenge to managers is to provide urban children with variety, accessibility, and extensions of existing social networks.

The challenge to researchers is to see beyond myths and assumptions to what is actually happening to urban children in natural environments. A new synthesis of theory and methods of sociobiology *(Wilson 1975)* provides many clues for uncovering patterns of behavior in naturalistic settings. Social networks, kin groups, and face-to-face interactions observed at camp can be better understood in sociobiological terms.

Acknowledgment

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Community and Institutional Response

PHOTO BY WALT BLAIR

"Green is beautiful, but so is gray, the color most frequently attributed to the urban scene, a scene in which children explore and learn as actively and inquisitively as their suburban and rural peers" - Ellen Jacobs

Developing Teachers' Awareness of the Young Urban Child's Environment

by ELLEN JACOBS, *Concordia University, Montreal.*

ABSTRACT. An appreciation of the positive attributes of the inner city environment, where most of the population of the country lives and works, can lead to its use as a learning environment. Through proper training we can help the teacher reach out into the community and to bring the community into the classroom. A positive attitude toward the values of the urban environment can increase the self-esteem of the inner-city child and make his education more relevant. Rural and suburban environments should not be presented as utopian, for the stimuli they provide are different but not necessarily better. The teacher can obtain constructive learning support from the milieu in which the child grows and develops.

THERE HAS BEEN increasing emphasis recently on nature as an ideal environment for the child. In accordance with much of America's literary mythology, life in the city has been presented in a negative light. But an urban or suburban child's home range can play a positive role in the learning process for both the child and the teacher.

My premise is that the child's environment, his home range, and the teacher's understanding of it form an essential support system for the learning process. Emphasis is traditionally placed on what the child should learn; but in this paper, stress is placed upon the teacher's understanding of and involvement with the child's home range.

The teacher's awareness and understanding of a child's home range are of utmost importance in developing a meaningful rapport between the child and the teacher. The expectations of the curriculum and the teacher are more realistic when they are based on knowledge that belongs to the world of the child rather than to the world the teacher brings with her.

In an article on teaching in inner-city schools, Waddles and Robinson *(1968)* wrote about one school where a particular group of children were consistently late returning to school from the lunch break. These students resented having to remain after school to make up time. When a concerned teacher walked home with the children at noon, she discovered that a 40-car freight train blocked the student's path on their return to school. In this case normal administrative expectations were unrealistic and had to be altered in light of this teacher's findings.

Knowledge of a child's home range provides insight into the types of environmental experience to which the child has been exposed. This insight helps the teacher comprehend the particular child's reaction to the method of instruction and the subject matter being presented. With this knowledge, the teacher can be better prepared to meet the child's needs and help him further his learning in a meaningful way.

Experience within the home range plays a major role in the total development of the child; in ignoring its existence, one is ignoring an integral part of the child. For example, each morning teacher A is greeted by the sight of John arriving at school out of breath and wringing

wet. The teacher knows that he lives two short blocks from school. John's mother says that he leaves for school 20 minutes before starting time. John refuses to reveal the reason for his harried appearance. But a mapping experience has been introduced to the class: the children have been asked to draw the path they take to school and to include the points of interest and danger along the route. John's map shows that he takes a four-block detour to avoid a point of danger—a menacing bully. Now the teacher can try to help John deal with his problem effectively, and she can understand that this problem has taken the joy out of walking to school and has affected his self-esteem and his ability to concentrate in class.

TEACHERS' ATTITUDES

The teacher's attitude toward the environment in which the child lives has a great effect on the child's self-esteem. For the most part, the teacher's attitude has been molded by the values handed down from previous generations who extolled the virtues of rural and suburban life and presented the urban core as a dirty, unpleasant place in which to live—a place where one lives by necessity but not by choice.

If the teacher were to view the home range of the urban child through the child's eyes, the inner core might undergo a complete facelift. The gravel-covered back alleys and lanes, which may look unpleasant to the passer-by, provide local children with relatively traffic-free practice areas for football, soccer, baseball, and hockey. The gravel surface also provides enough friction for a child to have a relatively easy experience learning to ride a two-wheeler. None of these facts is apparent initially; one must glean this information from discussions and interviews with the children of the inner city.

CHANGING ATTITUDES

At Concordia University in Montreal, a course was developed to help future teachers understand the importance of viewing the child's world through the child's eyes. Several communities on and off the Island of Montreal were studied quite thoroughly. In each community, the student investigated the presence or absence of recreational facilities and programs, health and dental clinics, schools, religious centers, summer camps, youth groups, and day care facilities.

The students spent 3 months developing a questionnaire which they thought would help them piece together the home range of each child and find out how the child felt about his or her home range. After interviewing the child, the student observed the child's classroom to assess how closely the curriculum corresponded to the child's environment—whether it drew from his or her environmental experience and enhanced his or her learning, or ignored the child's world and presented unfamiliar things in an unsettling way.

FINDINGS OF QUESTIONNAIRE

The responses of the children to the interviewer's questions differed with the child's home territory. In response to the question: "What can you see from your balcony?", children in suburban Beaconsfield listed trees, grass, squirrels, birds, and a brook, while children in the inner city listed cars, trucks, street-cleaning machines, train tracks, men digging up a road and laying pipes, and telephone poles. Although the home territories are quite different, one is by no means a better learning environment than the other; the two are simply different and provide different experiences.

To compare inner-core environments, three students chose to study a downtown area on the Island of Montreal called Milton Park/Carre St. Louis. They divided the area into thirds: the community north of Pine Avenue, the community east of St. Laurent Boulevard, and the community west of St. Laurent Boulevard.

THE COMMUNITY NORTH OF PINE AVENUE

The area north of Pine Avenue is inhabited mostly by Portuguese immigrants. The children's responses to the questionnaire indicate that it is a close-knit community. All of the children have relatives living close-by, and many have grandparents sharing their living quarters. Where a mother is not at home at lunch time, the child has lunch at the home of a relative or close family friend, but not at school.

Most of the services the people use are found entirely within the community. Although there are several Health and Dental Clinics in the immediate area, the people who were interviewed are treated by the one Portuguese dentist, although he does not have a Canadian license, and the one Portuguese doctor, although he is not a member of any clinic staff. The Portuguese tend to shop only in small grocery stores owned and staffed by Portuguese people, which has caused large chain stores to pull out of the area. The parents of the children interviewed work in factories within the community.

All the children interviewed attend Our Lady of Mount Royal School and Portuguese School on Saturday. They lead quite an active life within the community; they swim in the indoor pool on St. Laurent and they play soccer in the school yard, which is left open on Saturdays because there are no parks nearby. All of the children interviewed take part in all of the extracurricular classes offered by the school: photography, art, music, and swimming. The school also runs a summer camp for the children who are not in Portugal over the summer. It was found that, although these children rarely move outside of their community, all of those interviewed had been to Portugal at least once since their move to Canada.

THE COMMUNITY EAST OF ST. LAURENT BOULEVARD

East of St. Laurent Boulevard, the community is quite diffuse. The people come from many different countries and the differences in language and customs seem to have been barriers between them.

Of those children interviewed, two are from the Philippines, one from Portugal, one from Hong Kong, and one from Sweden. The families in this area live in small apartments with no backyards and both parents in each family work. St. Patrick's School does not have any extracurricular activities and the children do not have access to a "Y" or a boys or girls club. There is a swimming pool on St. Laurent, which they do not use, but there is no summer camp available to them. Very few have traveled outside of the community and only two have ever used the Metro (subway).

THE COMMUNITY WEST OF ST. LAURENT BOULEVARD

The majority of the children interviewed in this area speak English at home. Their families live in row houses, except for one that lives in an apartment. They all have backyards in which to play. All stated that their fathers worked and that mother was home at lunch and after school. They have all traveled outside the community and all have flown. The majority go to day camp in the summer. Although St. Patrick's School does not provide extracurricular activities, all of the children interviewed were enrolled in private music courses and various other activities.

As indicated, students from communities east and west of St. Laurent Boulevard attend St. Patrick's School. Teachers there are faced with classes of students from diverse environments, with different experiences and opportunities. How, then, can the teacher plan the curriculum?

PROGRAM PLANNING

To plan an effective program of instruction, the teacher must meet the child where he is and work from his strengths and his past experiences. The child's home range, as viewed through his eyes, gives the teacher information she needs to plan an effective and relevant teaching program.

The home range is an intricate composition of the child's home, his family, friends, and relatives; the street on which he lives, his neighbors and the atmosphere of his neighborhood, the boundaries of the area which he is permitted to explore, and the facilities available to him—medical, recreational and extracurricular.

There are a number of ways the teacher can explore the child's environment with the child: Questionnaires and visiting, mapping, and photographing the home range have proven most effective. The teacher's exploration of the community she is working in gives a view complementary to that seen by exploration with the child. People who work and live in a community are usually quite willing to give information. Local entrepreneurs (especially owners of small restaurants), policemen, city hall employees, and people on the street can provide diverse views of the community.

So long as the teacher maintains an interested, open, and accepting attitude toward the child's environment, there is much she can learn about the stimulating and varied experiences available to the child in the urban environment.

ASPECTS OF THE URBAN ENVIRONMENT

Teachers have a tendency to regard what happens in rural settings as more educational, greener, and more pleasant than what happens elsewhere. Many teachers in urban schools have a penchant for busing children out to see the cows, chickens, pigs, and horses on Olde MacDonald's Farm. Yet inner-city pet shops have animals that are equally interesting and make better pets. A trip to the latest demolition site usually triggers a series of questions complex enough to require help from a resource book. Field trips are relatively simple in the city, as one may visit a variety of factories, garages, stores, movie theatres, live theatres, concerts, museums, libraries, and greenhouses. There is so much happening in the city that the supply of learning materials and situations will never be exhausted.

While attending this symposium, I took a trip with the children of St. Stephen's School, an inner-city school in Washington, D.C., to one of their favorite play areas—an abandoned dairy which they called the Scary Dairy. It is a place that provides them with constant adventure. There is a variety of visual, auditory, and tactile stimuli. The children pass small green trees growing through the concrete, the stark white processing area, the gray gravel roof, and the green entrance hall. They can hear their voices echo. They can, and do, jump from one level of the building to another. Their depth perception is heightened. The walk along the land to the dairy was delightful; red roses were in bloom and dripping over the fence of one of the backyards opposite the dairy.

The trip continued on to the creek. This 5-minute walk from the dairy seemed to take us from the urban core to scenes one would expect to find in the wooded country. The creek was swift and surrounded by dense green trees. The children said that they played around the creek frequently and enjoyed it almost as much as the dairy.

If a teacher at Stephen's School lived outside the area and did not explore it with the children, she would not know about these two very special places. Consequently, she would not be able to draw upon the children's experiences in these two locations and would not be able to use these places to help further the children's learning.

Green is beautiful, but so is gray, the color most frequently attributed to the urban scene, a scene in which children explore and learn as actively and inquisitively as their suburban and rural peers.

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PHOTO BY WALT BLAIR

"In a sense, all of us who work with children are nectar merchants offering our individual wares" - Mary A. Rhomberg

Green is for Growing: The Girl Scout Experience With Environmental Programs

by MARY A. RHOMBERG, *Volunteer Trainer, Girl Scout Council of the Nation's Capital.*

ABSTRACT. With neighborhood organization, program flexibility, and child participation in the planning and implementation of activities, the Girl Scout program is designed to be highly responsive to the varying needs of individual groups of girls. There is no fixed agenda or focus on a single aspect of environmental education. Instead, the Girl Scout concept of total environment encourages activities that place equal emphasis on projects fostering development of self, community involvement, and a variety of outdoor experiences. The Girl Scout movement has both strengths and weaknesses as a vehicle for environmental education.

A FORMER PRESIDENT of Girl Scouts U.S.A. said, "Words will be understood only when interpreted by experience and, if experience is wanting, then it must be supplied" *(Arnold 1934)*. The purpose of the Girl Scout program is to do what it can to supply experience in ways that are appropriate and acceptable to children. It tries to round out a child's definition of herself and her total environment.

Over a period of 60 years the Girl Scouts have developed a number of techniques or approaches that lead to a program of creative recreation that children enjoy and that has the capacity to grow as the child grows. The intent is not to fit the child to the program, but to fit the program to the child. Thus scouting offers an ongoing program designed so each small group can build a program suited to its individual needs.

The purpose of this paper is to share some aspects of the Girl Scout experience in providing environmental programs for children. A general discussion of what the Scout movement does in fact do will include adult-child partnership in developing troop programs, community contact as an integral part of environmental programs and some observations on our long and successful experience with outdoor programs. This will be followed by an appraisal of the role scouting plays (or can play) vis-a-vis an overall community effort to enrich the environmental knowledge of urban children.

To put these remarks into perspective, it is first necessary to define the Scout concept of environmental program and to outline the framework within which the movement operates, for these matters largely determine the types of programs we can realistically undertake.

The Girl Scouts prefer the approach that "environment is everything". In this view, individual growth, community affairs, obligations of citizenship, and outdoor activities are equally important elements of an environmental program and are equally deserving of attention in troop planning.

How this view is translated into program can most easily be shown by listing the activities of a single troop. During a school year, a busy group of teenagers did the following things: visited the state legislature and the U.S. Senate, talked with their state senator about gun control, did volunteer work at an animal shelter, and taught camping skills to younger scouts.

Being strongly oriented toward the outdoors, they also went camping and backpacking, took a canoe course, and built a new trail at a Scout camp. As a service project, some girls assisted in a program for underprivileged children and others were responsible for child care during periodic visits of the bloodmobile.

A troop with different interests, or at another age level, would have a different program, but the same elements of service, community involvement, and the out-of-doors would be included.

To the Girl Scout organization, the particular directions that troop activities take are not important, for scouting has no fixed agenda. What is important is that the chosen activities help a child to grow as an individual by giving her varied experience and a chance to make decisions and to assume responsibility. We believe that, over the scouting years, the many bits and pieces of experience will eventually fall into place to help build positive attitudes about oneself and one's environment.

Since scouting is based on voluntary participation, activities must also be designed so the girls have a good time and feel satisfied that their interests and needs are met. Both sets of goals are served by a child-adult partnership. Each troop (approximately 20 girls with two adult leaders) is completely free to plan its own activities, and the girls are encouraged to participate in the planning process to the fullest extent that their ages and capabilities allow.

This means that the first element of the Scout environmental program, individual growth, is a built-in feature of scouting. The operational structure is designed to give a child chances to feel good about herself. She is encouraged to think independently and to take responsibility in troop affairs and, within the sheltered troop situation, she can afford to try, because not so much is riding on the outcome as in school or even in the family. The inevitable failures are as conductive to growth as the successes. We can say that we want children to become independent, but we don't really mean it unless we let them try. A poet put it this way:

> Youth, you should heed the older witted
> When they say don't go too far;
> Now their sins are all committed,
> Lord, how virtuous they are![1]

[1] Wilhelm Busch in "Die Fromme Helene" ("Pious Helen")

Community contact, the second parameter of environmental program, is traditionally developed through giving service or excursions within the city. With younger children the results are mixed, for it is not easy to devise events that are meaningful and still appropriate in terms of age and experience. Nevertheless these projects are encouraged, for they expose children to the many strands that are woven into the fabric of a community. Hopefully, these small experiences in citizenship are the first steps toward full community participation in later years.

When girls reach their teens, service becomes an important part of the troop program. In general, teenage Scouts want to become involved in helping others, for they regard service as a mark of maturity. But they resent anything that smacks of exploitation; they want to be appreciated as individuals and expect their newfound maturity to be taken seriously. If their conditions are met, they can do a great deal.

We have some notable success stories, where enthusiasm and energy have sparked a whole community.[2] For example, some Scouts in Virginia established a library in Appalachia, and a Connecticut troop talked their community into saving a bog and helping them build a bog walk for community use. Although most projects are far more modest in scope, the motivational basis is the same, i.e., change is brought about by people who care and are willing to try.

The outdoor program is the facet of environmental education most commonly associated with scouting—everyone knows the Girl Scouts sell cookies and go camping. (In point of fact, the two are more closely related than some might think, for without cookie sales, outdoor programs would be severely limited.) The outdoor program is indeed very popular and, for some, provides the impetus for joining Scouts in the first place. It seems to be the one thing that, for many girls, scouting can provide more satisfactorily than most organizations.

Nature study per se is not emphasized, except in summer programs where the pace is more leisurely and special consultants are available. To help leaders who are interested, Scout

[2] A compendium of successful and imaginative project ideas developed by Scouts can be found in *Service Is a Way of Thinking,* Girl Scouts USA (New York 1967) Catalog no. 19-140.

resources include many suggestions for nature-oriented games, crafts, and other activities.[3] In Scout camps, nature trails are laid out over and over again as different groups with new ideas come along, and heavy stress is put on good conservation practices—the outdoor good turn is as old as scouting. Nevertheless, the main thrust is to help children enjoy and feel more comfortable in the out-of-doors. Outings are relatively unstructured so that, within reason, each girl has a chance to enjoy the natural environment in her own way.

At first, outdoor activities tend to center around camp skills, i.e., outdoor housekeeping. Younger girls are eager to learn these skills which are, after all, an exciting new way to play house. We have learned that this is also a necessary step in their outdoor education, because they are not very receptive to other things until they feel confident that they can cope with their surroundings and the mechanics of outdoor living.

With their basic skills well in hand, teenagers use outdoor experiences to learn more about themselves, and learning about the natural environment is secondary. Some outings come close to being retreats. Togetherness is very big and there is endless talk as the girls try out new ideas and express feelings. Though they actually do very little, the girls nevertheless place great value on the isolation and tranquility of the camp situation.

On the other hand, adventurous activities like backpacking, canoeing, and wilderness and winter camping are also popular. These activities have always been a part of scouting, but more and more girls are asking for them every year. Here the girls want to learn about themselves in another way: by accepting physical challenges to prove that they can "hack it". Some people attribute this heightened interest to the advent of women's lib and, in one way, they are right. Adventure has always been important to girls, but now the climate of opinion has given them the courage to demand it.

For any youth-serving organization, the cost of outdoor programs is a problem. In scouting every effort is made to keep camping within the financial reach of all troops, and for the most part we do well. The problem is approached in two ways. First, the organization assumes the responsibility of providing camp areas and some equipment at minimal cost to troops. Second, strong traditions of thrift and adaptability are fostered in the troops.

Many Scout councils maintain depots where equipment is available for a small handling fee. When this equipment is all spoken for, troops borrow and improvise. The need for thrift has resulted in the well-known Scout penchant for making camp equipment from discards, often called creative junkery. For example, a cardboard box lined with foil becomes an excellent charcoal oven; three plastic garden bags can make a serviceable rain suit. The main value of such items is not their very low cost, but the fact that they serve as constant reminders that the least expensive way must continually be sought for everything we do.

Both in adult training and in planning with girls, an unceasing emphasis on basics and inexpensive alternatives runs through all discussions of food, clothing and equipment. Doing-it-yourself and saving odds and ends become a way of life. And it works: we may not look very elegant, but we do get the girls outdoors in huge numbers.

In the Council of the Nation's Capital, we are particularly fortunate in that we can offer many outdoor opportunities at low cost. Besides having access to many parks, the Girl Scouts own a number of excellent camp properties that are used to capacity. During the school year the camps are used for day outings and weekend camping; in the summer they are day and resident camps. Additional day camps are established on non-Scout properties more accessible to the children in some areas. The result is that a larger percentage of girls are getting outdoor experience than in almost any other Scout council in the country.

Yet there are troops that do not take advantage of these opportunities. While finances do enter the picture, adult attitudes seem to be more responsible. When they take over leadership of a troop, not many adults have enough experience to feel comfortable in assuming the considerable responsibilities that go with outdoor program. They have to be trained. Where leader turnover is high, or where an outdoor tradition is lacking, the necessary training never takes place.

There are other obstacles. For safety, the Girl

[3] Two such publications published by Girl Scouts USA are *Let's Try It*, catalog no. 19-197, and *Leader's Nature Guide*, catalog no. 19-9833.

Scouts require that a number of adults accompany the girls, and these adults are sometimes hard to come by, either because they have no time or because they feel they would be of little use. Also, parents with no outdoor experience themselves worry about the well-being of their children out in the woods. (In general, parents are far more protective of their daughters than of their sons.) All of these problems are more acute in highly urbanized areas, but by no means confined to them. When parents are given a full explanation of what a troop plans to do, they are usually much more receptive and supportive.

For the children in such troops, summer day camps are particularly important. There they can gain experience under the tutelage of specialists. Therefore an effort is made to establish day camps that are easily accessible. In Washington, D.C., a successful day camp has been established on a wooded college property in the heart of the city. Guided by an imaginative director, the camp offers a full range of camp activities suited to the children's needs—they even get overnight tenting experience. The location reduces transportation costs and allays parental apprehension. The next step, going out to the Scout camps, is taken more easily after the day camp experience.

Looking at the total program, scouting clearly does make a difference to the girls involved, in terms of both personal growth and broadened experience. The next step is to evaluate Scout program as a vehicle for environmental education in relation to other youth programs in the community. There are several points of strength and weakness to be noted.

The two greatest strengths of scouting go together: it is essentially a neighborhood affair and it has a high degree of flexibility. Each troop is formed within a single neighborhood, with volunteer leaders recruited from the same area. Thus there is a strong element of identification and the leaders are able to assess more accurately the needs and interests that must be met. Because each troop plans its own activities, the leaders are free to use the resources of the Girl Scouts and the community in ways that are most suitable for their own group of girls. As the group's program develops, the girls will reach out from their own neighborhood to broaden their experience and understanding, but relationships and relevance to self and home remain clear.

Another strength of scouting is its ability to help very large numbers of children. Other programs may have a sharper focus and are able to handle specific phases of environmental learning more thoroughly and efficiently. However this sharp focus usually also limits time and numbers. In scouting, on the other hand, there is an established structure for building broad ongoing programs for very many children—programs well suited to the introduction of new views and new viewpoints.

The long experience of the Girl Scouts has shown that the single most important ingredient of good program is leadership. This ingredient is both a strength and a weakness of the Scout movement. As already noted, it is a strength because of the close identification possible between child and adult. It can also be a weakness because volunteer leaders come to their jobs with widely different capabilities and background experience.

The Girl Scouts maintain a strong adult training program, but only so much training can be required of volunteers. Most of our volunteers are genuinely interested in learning how to do a better job. In fact, the major unsung success of scouting is the amount of adult education that takes place in the name of serving youth. But where leadership is inadequate, the program suffers in scope or substance.

The other weakness is scouting's dependence on community support. Moral support is there—scouting ranks right along with motherhood and the flag. But the more tangible evidences of support are not so readily offered. Because the basic operating unit is the individual troop, and because the principal emphasis is on individual growth rather than the more visible forms of achievement, Girl Scouts have a low profile despite their large numbers.

On balance, scouting clearly has much to offer as a means of bringing environmental learning to children. Within the Girl Scout community, we believe we can increase our impact on the lives of children, first, by looking at our own operation to find how we can reach more of the girls who could most benefit from our style of program and, second, by working with other agencies where we can make a positive contribution. In the long run, the quality of experience is

more important than its substance; we expect that the quality can be improved by sharing resources and capabilities.

We believe cooperation works best on the local level and when it is aimed at reaching common, specific goals. For example, in one county we provide summer day camp for many children, but there are many others we cannot serve. Therefore we are sharing materials and program descriptions with the Department of Recreation, which organizes summer programs at neighborhood schools. In another county, the Girl Scouts have started working closely with the Youth in Crisis program, while in a third they are cooperating with the parks to set up a ranger aide program to expand the interpretive program for young children.

Sharing in one form or another makes sense. John Burroughs *(1913)* said, "I go to books and to nature as a bee goes to the flower, for a nectar that I can make into my own honey." In a sense, all of us who work with children are nectar merchants offering our individual wares. We can't say for sure how things will turn out, but we can provide the best possible selection of experiences and attitudes from which intelligent choices can be made.

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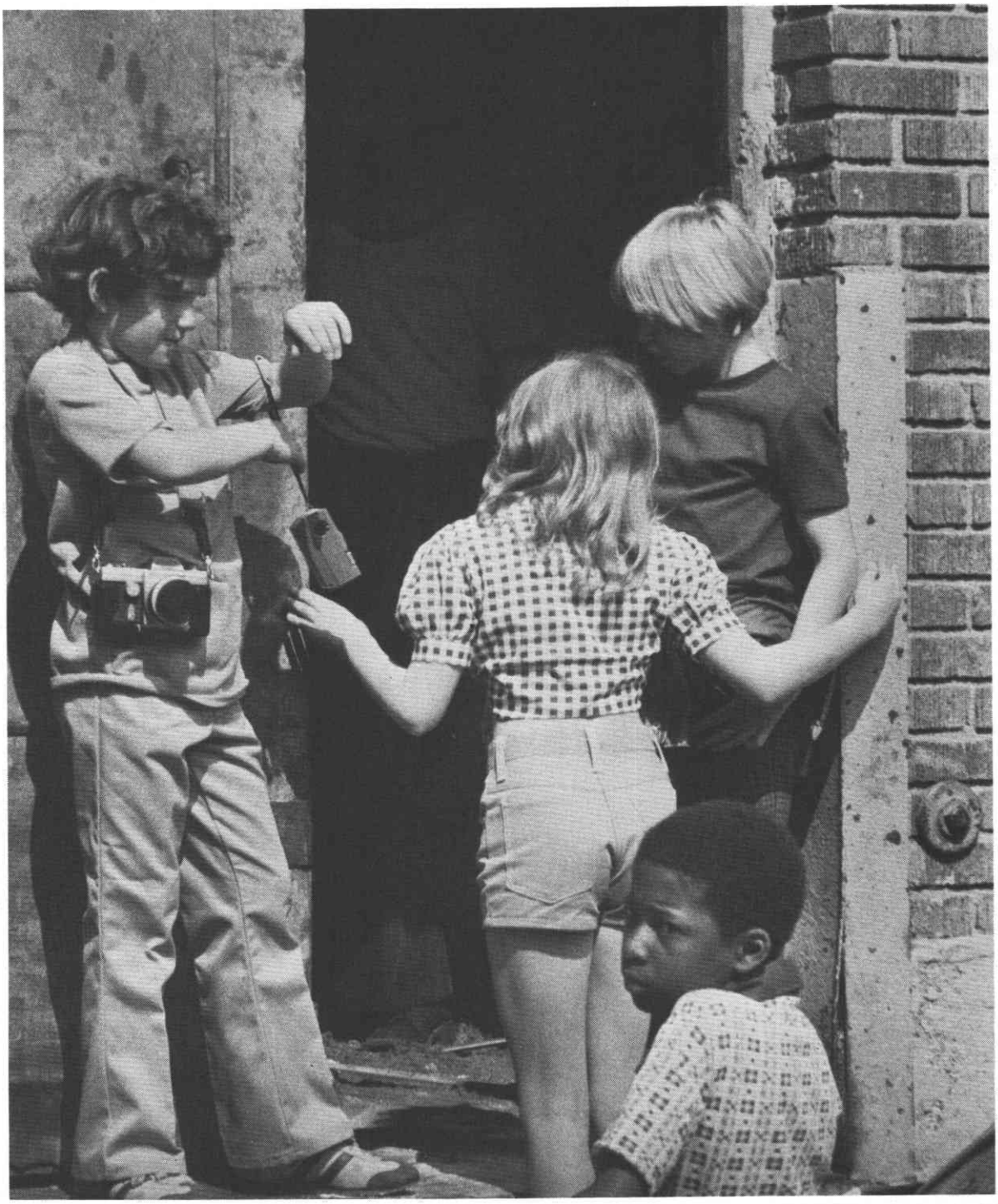

PHOTO BY WALT BLAIR

"In contrast, many of our urban youth today have only alleys, decaying lots, and condemned buildings to explore" — Robert A. Hanson

An Outdoor Challenge Program as a Means of Enhancing Mental Health

by ROBERT A. HANSON, *Community Mental Health Center for Marquette and Alger Counties, Michigan.*

ABSTRACT. Modern life fosters confusion and encourages passivity, and youth suffer most from this pattern. The Outdoor Challenge Program enables young people to experience the active roles and the clarity of purpose called forth by a wilderness opportunity. The experience appears to enhance their mental health during and after the program.

MAN HAS A GREAT NEED to explore and learn. These psychological processes evolved in the wilderness before history began, and it is still in wilderness that they can be experienced at their peak. Perhaps part of the continuing human need for exploration is what Pfeiffer (1969) describes as, "The central mystery of man, his persisting restlessness, this is the human drive . . . It is the force behind discontent, the search for novelty, exploration and missions of all sorts." When a contemporary man speaks of a need to return for a time to the wilderness, he is in essence going back to where his significant psychological processes developed. The natural environment is the true home of these processes, and in that environment we expect to find a clarity and effectiveness of psychological functioning. Indeed, research is now beginning to demonstrate them (see the following paper in this symposium by R. Kaplan).

To appreciate the significance of man's tie to his wilderness heritage, compare the effectiveness of his psychological processes in the wilderness with their effectiveness in a modern urban environment. Stanley Milgram *(1970),* writing on the experience of living in cities, says, "City life, as we experience it, constitutes a continuous set of encounters with overload, and of resultant adaptations." Each of the adaptations Milgram cities has a tendency to insulate and remove the individual from his environment and from fellow humans. The mechanisms that allow people to go about their daily activities in an urban setting without involving themselves with the drunk on the street corner, the crime in their neighborhoods, the bewildering mass of humanity, are really mechanisms that require them to ignore much of their environment. The opposite is needed in the natural environment, where man depended on knowledge. This dependence, in the sense of psychological functioning today is one of his major ties to the natural environment.

During man's development, natural selection favored effective exploration. Through many thousands of years of evolution man built upon his psychological capacity for exploration; many lands and places were discovered and rediscovered. Man's recent history is filled with tales of great explorers, and they often serve as models and idols for youth. In the last few hundred years, exploration of living space has ceased because there is no new space to explore. But exploration of wilderness or natural areas still seems meaningful. There an individual or group can rediscover the thrill of exploration, while leaving the land undisturbed for others to rediscover. In contrast, many of our urban youth today have only alleys, decaying lots, and condemned buildings to explore. Exploration, which used to be held in high esteem, is now often considered delinquent, because of the lack of opportunity and increasing population. The

need for this type of experience is greatest in urban areas where the opportunity is lacking.

It is the lack of clarity for many of these urban youth, (as described later in this symposium by Stephen Kaplan) that disrupts their relationships with their environment. Changing contemporary demands on youth foster confusion and tend to leave youth with little chance to respond by active exploration. They are forced to be passive.

THE OUTDOOR CHALLENGE PROGRAM

The Outdoor Challenge Program *(Hanson 1973)* was developed to give teenagers a highly active 2 weeks in the wilderness. It focused on clearly defined goals and on specific techniques that could be quickly learned and put into practice: map reading, compass orienteering, backpacking, setting up camp, rappelling, locating edible foods and shelter, solo experience, ecology (with emphasis on understanding the ecosystem to be lived with for 2 weeks), first aid, etc. The first day the group is taken by the leaders on an orientation hike into a swamp, then asked to find their own way back without instruction. Usually they become lost, and fail totally to function as a group. The leaders use each problem to put the group in a position where it must take responsibility for itself and find some way or organizing and solving problems. Techniques of map and compass orientation are taught the same day or the following morning. The next day the group must find its own way over a 5-mile course full of swamps, high cliffs, and trackless forest, under the watchful eyes of the leaders. Initially, the participants feel hesitant but in 3 or 4 days they are ready to strike out across 25 miles of trackless forest, and after 10 days they are eager to go off on their own without the leaders. It is inspiring to watch them change as they develop increasing confidence and self-esteem.

Rappelling and overnight solos offer the greatest challenge as well as the greatest rewards. These activities are specifically chosen to enhance a clarity of purpose, which is perhaps both frightening and appealing. They are presented and learned in such a way that even when the participants have fears (and most do) they believe they can do what they set out to. They learn to help and support each other, and though one may be afraid of one activity, he may do better than the average the next day at another activity. When the group has completed these 2 weeks, the members are both reluctant to leave the wilderness and ready and proud to go home. They have many stories to tell, but more important, they have a new sense of clarity and purpose in their lives.

HOW PARTICIPANTS CHANGE

As a leader in these programs, I have seen listless, bored, fearful (and sometimes eager) participants who left for the wilderness 2 weeks earlier return stimulated, active, hopeful, eager, and proud. They spoke of new things they wanted to do. Equally often they talked about old passive behavior using drugs, being afraid of the dark, having no interest in the future, all of which they intended to change. During the 2-week period, most of these young people were perceiving, thinking, and feeling at a high pitch for them; their psychological processes were active and they were making the best of this opportunity.

After a few days in the wilderness their ties to their previous environment are loosening and they begin to see themselves in a new, more active position. They have been able to find their way to a lake represented by a small mark on a mightly big map. They are tired but they know their accomplishments.

They are beginning to develop new ties to this environment; things in the wilderness are becoming real to them. They feel a stronger, clearer relationship to their world, which many acknowledge they have never felt before. They are eager to keep on and reach new and more fulfilling goals. As the 2 weeks are completed, I believe, the participants begin to feel at home in this unfamiliar but comfortable environment. They begin to feel that the wilderness is theirs; they have lived in it, been along with it, related to it. They can feel clearly the strength of a new relationship to their external world and a new self-concept. Their object relationships have been strengthened. They have explored and come to know an area in a way that most of them have had little change to before. They have come to know themselves a bit better, and by so

doing most of them have found something in the wilderness that they can take back.

VALUES THAT ENDURE

It seems that in this wilderness experience the paradigm of man's relations with his external objects is modified. The individual is active; he comes to know the world about him, first by the physical act of exploration on foot, then psychologically on solo where he has several days to reflect on his experiences and to strengthen his emotional and cognitive relations with this new, clearer, more definite world.

We can view man as able to relate to objects in his external world in three ways: First, he may relate to them with fear. A fearful individual often goes through much of his life having difficulty establishing close relationships with people and things; he never seems able to trust, avoids putting himself in situations where he will have to depend on anyone or anything. Second, one may relate to objects with dependence. A dependent individual tends to cling to others, has difficulty letting go of other people or trying anything on his own, and seems always to put himself in situations that force others to reassure him. He relates in a similar way to objects in his environment. Third, and far healthier, is the individual who relates to objects and people as other possibilities to explore, to learn about, to try new relationships with. Here exploration, which, as we have seen, has great evolutionary importance, is a key to developing healthier, clearer, and more meaningful relationships with one's environment.

Man, through exploration, built his knowledge-processing system and obtained the basic data about his environment that he needed to expand his knowledge of the world. When this knowledge-processing system was built and began functioning, man gained his knowledge by walking. The physiological process of walking while exploring gave basic data from the most primitive of human senses, touch. Man touched the earth with his feet; he felt it through the kinesthetic sensors in his muscles, and at times with his hands. Even today, the infant's first real contact with his external world is by touch, and it is often by touch that he explores and learns.

Walking also determined the amount and speed by which data was presented to our information-processing mechanisms. Even today we often hear that "one knows an area by having walked through it." Psychological evolution began with the speed of its data-processing requirements often determined by walking speed. These processing mechanisms have, in more recent times, been subjected to an increasing flood of stimuli. As we have seen, in the city much of this flood must be ignored; the psychological effects of doing so are considered by S. Kaplan in this symposium.

In the wilderness, exploration and active processes such as walking enable people to experience clear and effective functioning of their perceptual and cognitive processes. The clarity of this encounter seems to provide basic elements upon which an efficient and active behavioral system may be established. The experience seems to enhance mental health and facilitate psychological functioning even after it is over.

Acknowledgments

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PHOTO BY WALT BLAIR

"They seemed to approach each other in a very accepting fashion, enjoying the situation for itself" — Rachel Kaplan

Summer Outdoor Programs: Their Participants and Their Effects

by RACHEL KAPLAN, *Associate Professor, School of Natural Resources and Doctoral Program in Urban and Regional Planning; Lecturer in Psychology, University of Michigan.*

ABSTRACT. In a study of the benefits of various summer programs, especially those involving wilderness experiences, the use of pretests for all the groups made possible evaluation of the degree of self-selection as well. Similar tests 6 months later showed the influences of the summer programs themselves. The results suggest that even a relatively short encounter with the out-of-doors results in pervasive changes, the most striking of which relate to increased competence in skills required in the woods.

"... I WOKE up this morning at 6:30 not believing that I had made it through the nite. The sun was just coming up; it was beautiful. I am not even hungry it is so peaceful out here that I really could learn to enjoy it without the anxiety that I always have." (MJP)

"I got up today rather excited with the thought of leading the crew on our only hike without leaders. We broke camp . . . wasn't long before we hit a swamp — up to our waists we hit. We cam across three such swamps and even tho we arrived to our destination safely, my leadership was questioned and sometimes challenged. No one else was even willing to lead . . . I love this life. I am rather sad I have to go home. . . . When I go home I know I will want to tell my friends about this experience. I will become frustrated and bitchy because either I won't have the words or they won't have the ears. Whereas now I am happy." (AMG)

These are entries from the diaries written during a solo in the wilderness by participants in the Outdoor Challenge Program (described by Robert Hanson in the preceding paper). The kids express it so well! It is not hard to sense from their notes that the experience matters; that they acquire a different sense of themselves. Our aims in doing research in this area were several: we wanted to know whether the benefits of a program like this lasted beyond the program itself; we wanted to see whether it is the acquisition of specific skills that relates to enhanced feelings of self-confidence; and we wanted to find out whether the effects are specific to particular kinds of programs.

Our collaboration with Bob Hanson has been an exciting adventure for several years now. The first year produced a small-scale study of the benefits of the program *(Kaplan 1974).* The study presented here involved the larger scale effort during 1973. The participants were 267 youths of both sexes who had 1 or 2 more years to go in high school when they completed the first round of questionnaires just as the school year ended. Of these, 75 percent returned the second questionnaire some 6 months later, at a time when summer activities seemed long past and the school year was well under way.

The participants included five distinct groups. Two of these can be considered control groups, as we had no knowledge of their summer activities. One of the control groups was drawn from Michigan's Upper Penninsula, because that is the region from which the 20 Outdoor Challenge participants have come. Five schools serving 14 communities were included from this land of low population density where the winters are hard and long. The other control

group consisted of 30 students who took a conservation course at a local high school. It seemed that a group with some nature-oriented background might provide a fair comparison to those who would be involved in summer programs with such a focus.

The closest comparison to the Outdoor Challenge group was provided by the 28 youths who went on backpacking trips of roughly comparable duration—2 weeks or so of actual hiking. Some of these went to a wilderness area southeast of Yellowstone National Park and others to Isle Royal. The trips were described as "hiking, backpacking, canoeing, camping adventures" with an "emphasis on an appreciation and learning about our natural world."

The remaining group went to a 5-1/2-week coeducational camp in northern Michigan. Its focus was on community, on caring for people and the land. Although the concern for lifestyles adapted to ecological principles is an important feature there, the concern for personal growth in a supportive social setting is equally strong. The 44 participants differed from the other groups both in the duration of the activity and in having a nonnomadic base of operation. They were, however, similar to the backpacking group in orientation and goals, since both were under the overall guidance of the same insightful and dedicated team.

The variety of the participating groups provided an opportunity to determine whether self-selection would be evident in the initial data collected before the summer experience. It was. The members of the control group were outgoing and interpersonally active. The members of the camp group were also oriented toward interpersonal activities and situations, but in a much quieter, noncompetitive, and less active sense. They seemed to approach each other in a very accepting fashion, enjoying the situation for itself. The most striking difference between this group and the backpackers might be thought of as patience. Though the questionnaire did not tap this directly, the backpackers seemed to be more adventurous and eager to be "doing it" without excessive forethought. The Outdoor Challenge group was not strikingly different from the rest of the Upper Penninsula sample, although they were less involved interpersonally and more eager to "get away from it all." It should be mentioned that the comparisons of the groups yielded no significant differences with respect to self-esteem, nor on the measures of various skills.

AREAS OF THE STUDY

The sketches of the initial group differences are based on the responses to a 7-page questionnaire completed in June. At that time the participants had no reason to expect that there would ever be a follow-up. As it turned out, the 4-page fall questionnaires covered much of the same material. The common portions of the two questionnaires dealt with the following:

Care about and good at: A list of kinds of activities on which the participants indicated how much they cared about each and how good at each they felt they were. The list of activities included sports, camping, crafts and making things, sitting around talking, dating, and a few others.

Woodsmanship skills: Participants were asked to rate themselves on each of a dozen outdoor life skills, such as setting up camp, map reading, long hikes, ecology, and finding food in the woods.

Friendship skills: Included with the woodsmanship skills were two items on interpersonal skills: "making new friends" and "getting along with strangers in confined situations."

Reasons: The 39 items pertaining to reasons for choosing one's favorite activities were scored to form eight different clusters of reasons, including workout (the competition and exercise in the activities), affiliation, peace and quiet, leadership accomplishment (e.g., "gives me a chance to be in charge"), and self-directed accomplishment (e.g., "always learning new things").

Self-esteem: Our hope was to break down this concept into meaningful parts. Like many other psychological concepts (intelligence and creativity are good examples), self-esteem is often regarded as a global entity which people possess to varying degrees. It seems to us damaging to look at it that way. The "esteem" scales derived from the 20 self-description items in the questionnaires included: realistic task orientation (e.g., "I'm sensible about how long things take to get done"), challenge, self-reliance, and interpersonal. These four scales together comprised a positive view scale. In ad-

dition, the negative view scale (e.g., "I tend to avoid new challenges," and "I find it hard to open up to people") is quite separate from the other scales. It is possible and even likely for people to have both positive and negative feelings about themselves at the same time.

Open-ended questions: "How would your best friend describe you (aside from physical characteristics)?" "What sorts of things have given you the greatest sense of accomplishment or pride?" and "If you could change yourself in any way, in what way would that be?" These were analyzed in terms of categories based on the spring data and applied to both sets of responses.

In addition, the first questionnaire included the Environmental Preference Questionnaire, *EPQ*, which has two pages of short items dealing with preferences for different kinds of settings. It is scored for seven scales, including nature, suburbs, cities, and social.

Where "scales" are mentioned in the discussion, these are based on groups of items that are all about a common idea. Except for the open-ended portions, responses were rated on a 6-point scale so that there was plenty of choice to indicate how well the item described the participant's feelings. The technicalities of deriving the scales or clusters of items and a more extensive discussion of the findings of the June questionnaire with respect to EPQ, reasons, and self-esteem are the subjects of a separate paper *(Kaplan 1976).*

SOME RESULTS

A study of this kind has some built-in handicaps. In trying to avoid misperceptions of summer effects by collecting the "after" material too soon, one necessarily introduces other difficulties. By late fall many things other than summer activities play important roles in the lives of these students. In June school was almost over—for some participants it was already a thing of the past—but in late fall school is very much a reality. Furthermore, many of the topics we studied vary with the seasons. Sports activities and outdoor opportunities clearly differ from spring to fall. The place of driving and dating in the overall picture may also change. But this does not mean that changed responses on the questionnaire cannot be ascribed to the summer experience. The purpose of collecting "before" and "after" data from various groups attending different summer programs is to get a glimpse of such changes. I mention all these things only to encourage some degree of caution in looking at the results.[1]

Skills

Not surprisingly, the Outdoor Challenge group showed a profound and highly significant improvement in virtually every one of the woodsmanship skills. Of the 12 items, only canoeing showed no change—and it was not part of the program! These results are strikingly similar to what we found in the previous year, with a smaller and all-male group. The backpacking group showed significant changes on some of these skills and came out ahead of the camp group on eight of the items. The Challenge participants rated themselves more skilled than did the backpacking group on seven of the items. Although these skill ratings are all self-reports, they match our expectations surprisingly well. The groups did not differ in these ratings before the start of the summer, nor did they know each other's ratings. The emphasis of the Outdoor Challenge Program is on wilderness skills, and the participants are intensely involved in activities that require such skills. The backpackers also used such skills to a far greater extent than the campers.

Skills and Self Views

One of our ideas in doing this research was that gaining competence at something would enhance some aspect of a person's view of himself. While people have the capacity to dismiss their own skills as not important, we felt this was less likely to happen in the case of nature-related skills. It seemed reasonable, then, to relate the scores on woodsmanship skills to the various domains of self-esteem. Had we simply divided the entire sample into high and low scorers on the skills, we would have found the Challenge and other backpackers in the "high" group. Instead, we divided each of the five groups—those in summer programs as well as the controls—into high and low scorers within each group. Our concern was not whether

[1] Throughout this paper the findings that are cited are statistically significant at $p<.05$ when small groups are compared and $p<.01$ when groups of 100 or more are compared. The tools used in these comparisons were t tests, analysis of variance, and in a few instances chi square.

the skills were acquired through a specified program, but simply whether being more skilled in these particular activities had a bearing on the youth's feelings toward himself.

We found that within each group there was indeed a significant relationship between relative standing on woodsmanship skills and one of the domains of self-esteem. Those who scored higher on the skills thought of themselves as more realistic about the demands of their work and better able to gage their task-related limitations.

Quite apart from the measures of skills, the Outdoor Challenge people were less likely to express negative views of themselves. Comparably, of the people who initially scored low on the positive view scale, close to half of those in each of the summer programs ended with high scores in the fall. By contrast, only about a quarter of those in the two control groups showed such changes.

Composite View

The overall pattern of the results suggests that the different summer experiences resulted in changes that were clearly reflected several months later.

By late fall the two control groups reflected one stereotype of people in their mid-teens: they saw themselves as good at driving (motorcycles, cars); they cared about sitting around talking and listening to music. They were interested in dating. Contact with nature and various activities that were less interpersonal were not of great importance.

The campers from the start took a more accepting, noncompetitive stance toward their peers. By fall, many felt more skillful at "making friends," though dating was relatively less important to them. Many of them expressed a concern for social commitment, for being considerate of others. They also talked about personal growth and self-discipline, and continued to favor activities that permit creative expression.

Both the Outdoor Challenge and the other backpacking groups showed little desire to change their physical characteristics or prowess. Perhaps the competence they acquired in particular skills in the woods is related to this. The Outdoor Challenge people showed the least concern for interpersonal activities and interests, though they felt they were better at dating as well as better at getting along with others under confined conditions. In addition, they now preferred activities that permit some peace and quiet, some solitude.

The results suggest that nature-related activities do indeed make a difference. Even a relatively short encounter with the out-of-doors is reflected in some pervasive changes. There is a suggestion that competence in the skills required in the woods is related to some aspects of self-esteem. This is true whether the skills were acquired in a summer program specifically focused on such skills or elsewhere. The results also support the more informal findings reported in the previous Outdoor Challenge study, that a relatively short program can result in positive changes some time later.

Let me close with some more of the "poetry" that these kids produced while all alone with their thoughts in the woods:

"I have all ways been in the woods and I can relax by taking a short hike in the woods easier than watching TV or reading a book because in the woods there are no words or signs or people to look at and I am glad that they have nature areas like this so people can use this as an escape . . . Now I know why my father likes to take a lunch to work rather than go to the country club and eat. He is in a business that he makes deals with people every day because he is a car sales man and he is the best I know . . . [Like the other sales people] my Dad gets tired of people too, but he eats his lunch at the park and maybe that is all it takes—just that half or full hour in the park can make my Dad forget people and he is glad to go back to work. The other salesmen go and eat at the club and they see more people—they have no escapement." (WM)

"I spent the night sleeping and listening to the silence. I had a lot of thoughts. I have always worried too much what other people think of me. I am going to try and fix that. I will still worry a little bit but not so much . . . Silence is really a funny thing. I don't hear it often. Last night I think I experienced the most I ever have." (TP)

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Stephen Kaplan and me and to the Community Mental Health Center in Marquette, Michigan, which sponsors the Outdoor Challenge Program. Robert A. Hanson, the program's director, not only inspired our research but has been continuously helpful in its execution. The willingness of the sponsors to let us take this research in whatever direction we saw fit is greatly appreciated. Paula Leinbach and John Russell were most helpful in obtaining data from other participating groups. Janet Frey provided invaluable assistance with data analysis.

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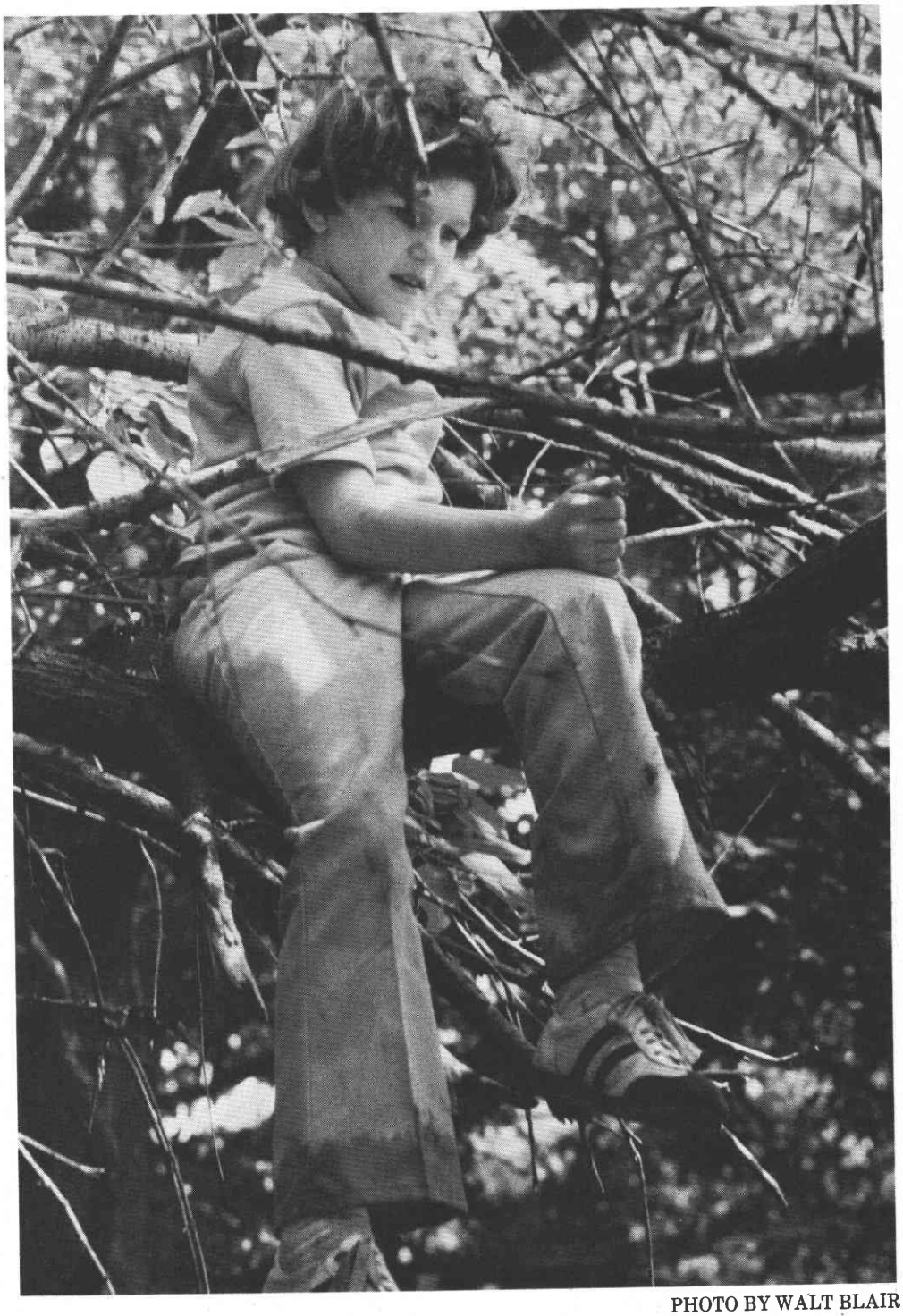

PHOTO BY WALT BLAIR

"What is perhaps the most obvious direction for theory, namely that people innately *like* nature, turns out to be quite unsatisfactory" - Stephen Kaplan

Tranquility and Challenge in the Natural Environment

by STEPHEN KAPLAN, *Professor, Departments of Psychology and of Computer and Communication Sciences, University of Michigan.*

ABSTRACT. The issue of clarity is perhaps most urgent and powerful for the adolescent. One interesting route to clarity is through challenge and fascination. People have powerful reactions to certain environmental patterns, although they may not be aware of them if they have not had the opportunity to experience them. Having such an opportunity at a time when issues of identity and one's relation to the environment are pressing could have a lasting impact on the character and functioning of the individual. The natural environment, with its special capacity to hold an individual's attention, may be unusually effective in fostering the experience of cognitive clarity.

NATURE IS IMPORTANT to people. This observation is hardly novel, yet it is only recently that there has been empirical evidence to support it. In fact, the evidence presented at this conference is probably as extensive as the sum of the hard data in the literature up to now.

Thus, at last, there is beginning to be evidence for the importance of nature. Both to guide future research in this area and to apply effectively what we know, the next step is to develop a psychological theory to explain this phenomenon. What is perhaps the most obvious direction for theory, namely that people innately *like* nature, turns out to be quite unsatisfactory. The fact of the matter is that people are quite often fearful or even terrified of nature. Indeed, a suitable theory will have to explain how nature has value and attraction for people in spite of its potential to frighten them.

As a cognitive psychologist interested in how people make sense out of the world, I have approached this problem by examining the effect that nature has on the thought process, on a person's state of mind. Dr. Mead's illustration of the child's reaction to an ant is instructive. The child reacts with fascination: there is a clear focus of attention and behavior. For some, nature is a source of perspective, of tranquility. What seems common to the various effects of the nature experience is the sense of cognitive *clarity* or, conversely, the absence of confusion. Undoubtedly, such a state of mind can be, and in general will be, highly pleasurable. But this is not the same as the direct pleasure of a lollipop or a pat on the head. It is, if you will, informationally-based pleasure, that is, pleasure mediated by clarity.

The link between clarity and pleasure involves certain physiological considerations too technical to go into here. But it is possible to relate these concepts on functional and intuitive grounds without detailing possible mechanisms.

On functional grounds people had better find clarity pleasurable. For humans to survive in the dangerous and difficult world in which they evolved, they would have had to make up their minds quickly. And they would have had to *like* being in the state of having their minds made up *(S. Kaplan 1973b).* Put the other way, liking to be lost in thought would have been quickly fatal in the context of the African savanna where human evoluation is believed to have taken place.

From an intuitive point of view, the relation

of clarity and pleasure presents little difficulty. People who are confused about themselves or their world, or both, have been known to despair and even to attempt suicide. On the other side of the ledger, crusades—where it is utterly clear who the bad guy is—appear to be a source of considerable pleasure (to the participants). The attraction of rather eccentric belief systems also seems to be related to the clarity they promise. Mobs, too, offer a kind of clarity. When everyone is shouting the same slogans, all the stimulation one experiences is in agreement—a state of affairs all too rare in the everyday world. Indeed, as the world becomes more complicated and value systems and life styles proliferate, the achievement of clarity becomes increasingly problematic.

TWO KINDS OF ATTENTION

My analysis, then, will be based on the concept of clarity—what it is, how it works, and how it is related to nature.

As it turns out, the concept of clarity has been little studied in psychology. Fortunately, *attention*, a closely related concept, has been studied extensively. Admittedly at first blush the two concepts may seem to have little in common. Clarity is a state of mind. Attention involves the selection of what stimulation to respond to out of the enormous variety of stimulation that might have been responded to. But when attention is successful, all the stimulation dealt with has a common focus. In other words, the outcome of the successful operation of attention is a clear state of mind.

The concept of attention received some of its most thoughtful analysis quite a few years ago. In 1892 William James put forward several distinctions that form the basis of this paper. *Voluntary attention*, in James' terminology, is that attention that requires effort. When one is tempted by distractions, but pays attention, as it were, by an effort of the will, that attention is voluntary. By contrast, some attention occurs in spite of ourselves. It not only requires no effort, it would take an effort not to attend. Something very beautiful might call forth attention of this kind, but so might something strikingly ugly, or potentially dangerous. James calls this latter kind of attention *involuntary*.

Voluntary attention is all too familiar. We fall back on it constantly as we make our way through the dull but necessary requirements of everyday existence. So much of what we do has little intrinsic fascination and demands an effort to keep our minds on the task. Indeed it might be argued that in the modern world the interesting is no longer important, no longer interesting.

The effect of this effort to stay with the task is the suppression or holding down of all potential distractions. There must be some mechanism, presumably inhibitory, that does this. The more stimuli there are that must be attended to even though they are not particularly gripping in themselves, the more this mechanism must be brought into play. Likewise, the more distractions there are, the more stimuli that must be ignored, the greater the need for this mechanism. As Milgram *(1970)* has pointed out, the city is an environment of overwhelming stimulation, a source of stress to which people respond by growing more insensitive. One can readily see how the stresses of modern life could lead to fatigue of the mechanism that gives us the capacity to suppress distraction. Recovery presumably requires resting this overworked capacity. This could be achieved by avoiding circumstances that require effort to pay attention. Thus recovery of voluntary attention could ultimately hinge on the availability of environments that are involuntarily interesting. If nature could be shown to have this property, then the popularity of natural settings for recovery from overload and stress would make considerable sense.

James distinguishes two kinds of involuntary attention, which he calls the immediate and the derived. The derived is based on experience, as (in James's example) the reaction to a faint tap on the window pane when it is a prearranged signal between lovers.

The immediate form of involuntary attention has a strikingly primitive flavor, as is clear from his list of examples: "strange things, moving things, wild animals, bright things, pretty things, metallic things, words, blows, blood, etc. etc. etc." (p. 88). This colorful list is rich in implications. First, it suggests that "immediate involuntary attention" involves the property of fascination so vividly illustrated in Dr. Mead's example yesterday. At the same time, James' list shows the close linkage to evolution; sur-

vival may well have dependend upon paying immediate attention to stimuli of this kind. A third characteristic of this list is its lack of system. Its disorder and incompleteness, even to James' exuberant use of "etc." fairly cry out for a more orderly, more coherent framework.

SOURCES OF FASCINATION

Such a framework follows readily from the evolutionary significance of this process. An individual's likelihood of survival would be enhanced if certain kinds of patterns or events were innately fascinating, if they required no effort to attend. These might include circumstances where it was likely that useful new information could be acquired (as in watching a highly skilled individual carry out some task). It would also be adaptive for potentially dangerous situations to be fascinating. If such situations were simply perceived as bad or painful, the reaction might be headlong flight without calculation or strategy. But fascination with potential danger would lead to the close scrutiny of the situation needed by a creature whose survival was far more dependent upon wits than speed *(S. Kaplan 1976).* Such fascination would also make possible the group cooperation and group defense that is characteristic of many primate groups. Headlong flight is rarely conducive to cooperative efforts.

Thus there are a variety of circumstances—the potentially educational, the potentially dangerous, the potentially important in one way or another—that would appropriately be fascinating to humans. To identify these circumstances would require a research program of major proportions. One might, for example, present visual patterns on a screen and observe people's behavior. Any stimuli that failed to hold people's rapt attention would be discarded and replaced by others until one had a vast collection of material, all of which had proven fascination value.

Fortunately for our purposes this research has already been carried out, and on a large scale. It is called "television," and it provides an excellent overview of what people do in fact find fascinating. For those who decry modern trends of this kind, and long for a simpler time gone by, the circus is a similar experiment—and leads to similar conclusions.

From these and other activities (e.g., zoos, auto racing, theater) that elicit rapt attention in humans, the various domains of fascination begin to be visible. A central distinction here appears to be between process and content.

Process

The process that people find fascinating is, in the largest sense, the process of coping with uncertainty *(S. Kaplan 1973a).* This can, of course, be broken down into innumerable sub-processes, since there are many facets of this vital human activity. For our purposes, three rather general subprocesses should suffice:

(1) Making sense out of the world: Recognizing (e.g., bird-watching) and predicting (e.g., gambling) are frequently fascinating and are the basics of the sense-making process.

(2) Acting on the environment: This includes evaluating (as in identifying the good guys and the bad guys), and coming to decisions, as well as acting per se.

(3) Exploration. The fascination of this process is so well known that it hardly needs discussion. It might be useful to point out some of the adaptive values of this process. On the one hand, it involves the acquisition of information in an organism that depends upon information for survival. In addition, it involves the *practice* of making sense and acting in an organism that must be able to carry out these procedures quickly and efficiently when the chips are down.

Content

The contents that people find fascinating presumably are related to coping with the environment just as the basic processes are. Thus it is hardly surprising that people have strong reactions to wild animals. In fact, wild animals are sufficiently fascinating that compounds where such creatures can be viewed by the public are available in most of our major cities. Snakes are legendary in this respect; wolves and bears elicit particular interest, as do any animals that are particularly large. There are also strong reactions to the young of many species.

Green things, too, have their special claim on human attention. Gardens *(R. Kaplan 1973, Lewis* in this volume), parks, wilderness, even house plants *(Iltis et al. 1970)* reflect this area of fascination. Although television seems not to

specialize in this domain, efforts to evoke a feeling of tranquility (e.g., cigarette commercials) tend to rely heavily on patterns of natural vegetation.

The preference for green things blends into the related issue of landscape preference. Here water must be added as a powerful (and evolutionarily appropriate) factor. A host of other factors are involved at this scale; while there is not the space to discuss them all here, they are quite consistent with the overall emphasis on attention and survival *(S. Kaplan 1975)*.

This variety of fascinating living things readily merges into various survival-related physical phenomena. Here we might include fires, caves, the weather (especially bad weather) and miscellaneous natural hazards. We might also include certain portions of the environment that humans have altered, adapted, or constructed for their own use. Shelters, tools, and food would be good examples.

While this collection may sound too much like the preoccupations of a myopic caveman, urban children still are fascinated by fires. An occasion that promises free food (or drink) is still very attractive, even to people who could well afford to buy their own, and even today people with little else in common talk about the weather.

NATURE AND PERSONAL GROWTH

In this perspective a challenging exposure to the out-of-doors (such as the Outdoor Challenge Program) provides a unique opportunity. It would be difficult to imagine another experience that draws so heavily both on contents and processes that command involuntary attention. The natural environment can provide an experience of clarity hard to match in any other way.

This special character undoubtedly has numerous implications for the process of personal growth. Let me comment briefly on three such possibilities that I find particularly intriguing.

(1) One of the ways the challenge-oriented outdoor programs differ from other sources of involuntary attention (like television and circuses, for example) is that they are active. It is necessarily the individual who is the source, the locus of control in what happends. By emphasizing the capacity to act (one of the subprocesses that inherently hold attention) they enhance an important aspect of confidence and competence.

(2) Skill learning in general might be expected to enhance self-esteem. But to the extent that people tend to dismiss the skills they have as being of little importance, this benefit might be minimized. Skills relevant to the natural environment, by contrast, are more difficult to dismiss, because the natural environment communicates its importance so effectively through the attention it demands and the clarity it evokes.

(3) It may be that the issue of clarity is particularly urgent and powerful for the adolescent. He is beset with unclarity concerning himself and his relation to others. He also is attempting to find effective ways of dealing with the lack of clarity in his environment. It may well be that he is at a critical point when such issues will be resolved one way or the other.

Among the many ways of achieving clarity, perhaps the most popular are reliance on the social support of the peer group and adoption of a simplifying world view (often of the "us vs. them" variety). An interesting alternative route of clarity is through the challenge and fascination of the natural environment. In this way a youth might discover an unexpected capacity for clarity. The power of the human reaction to certain environmental patterns is real only for the person who has experienced it. Having an opportunity to do so at a time when issues of identity and one's relation to the environment are pressing could have a lasting impact on the character and functioning of the individual.

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"Plants are nonthreatening and nondiscriminating in a world that is constantly judgemental" - Charles A. Lewis

Human Perspectives in Horticulture

by CHARLES A. LEWIS, *Horticulturist, Morton Arboretum, and Coordinator, American Horticultural Society People-Plant Program.*

ABSTRACT. Gardening produces not only vegetables and flowers, but also social and behavioral benefits. In low-income housing sites in New York, Philadelphia, and Chicago, gardening programs have resulted in reduced vandalism, new neighborliness, cleaned and painted buildings and streets, and other improvements. The human response to plants, and the qualities of plants that encourage this response, are valuable in the production of humanly satisfying environments.

MAN HAS BEEN associated with plants since his beginning. Our progenitors, primitive oxygen-breathing forms of life, evolved in an environment already populated with green plants. Iltis, Loucks, and Andrews *(1970)* suggest that primitive responses to vegetation were acquired during our evolutionary journey and are with us yet, buried deep in our psyches.

PROXIMITY TO PLANTS: EFFECT ON RESPONSE

It is difficult to delineate human responses to plants because plants are integrated into human experience at several levels, each of which produces its own typical response. By discerning the several levels at which people interact with plants, we may be better able to isolate and study the accompanying behavioral responses in a proper perspective.

The hierarchy of integrative levels is influenced by personal and cultural distances between the person and vegetation: the least personal responses occur with the greatest separation. The situation is somewhat analogous to the view of a city from several different heights and the kind of response engendered at each. The distant view, as from an airplane, reveals the gross geometry of the city, a flat structural abstraction of lines and lights. We observe it without personal involvement, except perhaps for trying to find meanings in the distant pattern. An intermediate view is seen looking down from a tall building. We are aware of the three-dimensional aspect: building walls create impressive deep canyons at whose remote base are narrow streets inhabited by tiny slow-moving vehicles and people. From this viewpoint, the city is awesome; we are impressed by its physical grandeur and we respond to it. The minute streets, people, and traffic are less impressive than the physical grandeur. The closest view is at street level, where we see and even become involved in the tangle of people and traffic. No longer observers, we participate intimately in the life fabric of the city. Responses at this level are extremely personal.

And so it is with plants, Distant views of vegetation, such as those from an airplane, reveal gross patterns in various shades of green and brown, interlocked like pieces of a puzzle. We may respond to the green as representing life, but the lack of detail at this scale prevents our discerning specific types of vegetation, such as field or forest, which would evoke a more personal response.

Closer proximity reveals scenic details of vegetation, such as open field, dense forest, or

tree-lined street. As observers, physically separate from the scene, we respond with meanings we read into the scene. Components of verdure, shade, and color carry pleasurable connotations which influence our response. This level of perception can be equated with viewing the city from atop a tall building.

The closest association with plants occurs in gardening, where we are intimately involved with growing one or more plants. We water and fertilize, always watching closely to determine whether the plant is responding properly to our nurturing. This direct involvement with plants is analogous to the street-level experience of the city and evokes the most personal level of response. This association of people and plants in an almost symbiotic relationship is the special interest of the American Horticultural Society's People-Plant Program of which I am coordinator.

GARDENING IN LOW-INCOME AREAS

I first observed these responses while judging the New York City Housing Authority Tenant Garden Contest, which permitted thousands of inner-city dwellers to garden on the grounds of their buildings. A subsequent visit to the Neighborhood Garden Association's window-box program in Philadelphia revealed similar responses *(Lewis 1972, 1973)*.

In both cities the gardeners were almost parental in their pride and protectiveness toward their gardens. They took turns guarding them against vandalism. The garden became a special place where friends met to talk, where wedding and graduation pictures were photographed.

Soon neighbors began to cooperate in activities beyond the garden plots. Streets were cleaned, buildings repaired and painted, vacant lots rehabilitated into playgrounds and miniparks. These activities were spontaneous, not part of the garden contest. Clearly something happened to motivate the gardeners into these nongardening activities.

Similar responses occurred in a garden contest sponsored by the Chicago Housing Authority in 1974, which attracted participants from a wide range of age and ethnic groups. Tenants of high-rise buildings were allowed to garden on plots near their homes, an activity previously possible only for residents of row houses with yards.

Again contestants were very proud of their gardens. They joined together to nurture the gardens, protect them from vandalism, and to share their bounty with neighbors at community harvest dinners. The gardens were considered special places—"holy ground", one tenant called them—and were held in high esteem.

Here too, gardening residents initiated activities outside the garden plots, painting curbs, benches, and chains along walks to harmonize with the garden colors. At the Robert Taylor Homes, an impersonal high-rise complex, the entrance columns and portico trim received the same colorful treatment. Soon large geometric or pictorial murals appeared on walls adjacent to building entrances. The anonymous decorations were exceedingly well designed and carefully executed, notwithstanding C.H.A. rules that forbade painting the buildings.

In public housing, grass around the buildings is considered part of the physical plant, to be maintained by management, and not the concern of residents. However, at Robert Taylor the gardening tenants sowed grass seed and created a large area of lawn on what had been bare ground surrounding their gardens. Would the results have been the same if C.H.A. had asked these tenants to paint the buildings or plant a lawn?

Gardening in low-income areas of Chicago, Philadelphia, and New York, seems to have encouraged residents to improve their physical surroundings. What personal changes are expressed in these activities? In terms of human values, what is the meaning of cleaned streets, reduced vandalism, painted houses, new neighborliness? In what way does the process of gardening, the interaction of person and plant, produce these results?

Lacking data from precise investigations, we have only theories about the qualities of plants and gardening that encourage improved behavior.

BEHAVIORAL RESPONSES TO GARDENING

Dr. Edward Stainbrook *(1973)*, Chairman of the Department of Human Behavior at the

University of Southern California School of Medicine, has written "An environment of ugliness, delapidation, dirtiness, over-built space, and lack of natural surroundings confirms the negative self-appraisal a person may have developed through other contacts with society. Self-esteem is the keystone to emotional well-being; a poor self-appraisal among other factors, determines how one treats his surroundings and how destructive he will be toward himself and others. These factors set up a vicious circle that is difficult to break".

How does the process of gardening enhance self-esteem? The gardener takes on a responsibility when he grows a plant. It is a living entity, and its future is dependent on the gardener's ability to provide conditions for growth. Each day as he tends his garden, the gardener observes new growth of the plant as it responds to his planting, watering and fertilizing. The slow but steady progress from seedling to young plant, then to maturity and flowering, provides the gardener with continuous evidence of his success. New leaves, stems, and flowers are his reward.

With a private garden plot, the gardener's sense of personal domain is extended beyond his apartment walls. Though the garden is a representation of his individuality, it also provides pleasure for all who pass by and see it.

In planting, growing, protecting, and enjoying the garden, the gardener finds opportunities for social contact with neighbors he may not have known before. Neighbors working together in the garden build a sense of community among themselves.

The garden, proof of an ability to change physical surroundings, projects a sense of personal mastery of the environment. His personal attitudes thus enhanced, the gardener goes on to effect changes beyond the garden. A large mural decorating a building entrance, for example, creates a distinct identity, and separates that building from its impersonal replicates. The cleaned streets and painted buildings may be seen as the physical environment upgraded to reflect the change in the gardener's psychological environment.

Dumont *(1971)*, studying the mental health of cities, cites self-esteem, sense of community, and mastery of the environment as unfulfilled needs of the urban ghetto dweller. Urban gardens help to fulfill all of these needs.

These qualities of gardening encourage a positive self-appraisal and help to create self-esteem.

LIFE-ENHANCING QUALITIES OF PLANTS

What intrinsic qualities of plants elicit human responses? Plants are living organisms, with specific requirements for growth which, in the wild, are supplied by the ecological niche in which the plant grows. In a garden, supplying the factors needed for growth becomes the responsibility of the grower. The dependency of cultivated plants on the gardener seems a key element in the interaction.

Plants are nonthreatening and nondiscriminating in a world that is constantly judgmental. Plants respond to the nurturing care they receive, not to the race or the intellectual, social, or physical capacity of the gardener. Plants provide a benevolent setting in which a person with real or imagined handicaps may take the first steps toward self-confidence.

Plants take away some of the anxiety and tension of the immediate. Now by showing us that there are long, enduring patterns in life. It takes time for a cutting to grow roots, for a seed to germinate, for a leaf to open. Plants respond visibly to the sun in its daily course and signal the change of seasons. These intrinsic rhythms were biologically set in the genes of plants by the same forces that set human biological clocks. Plants symbolize enduring qualities: an oak tree has looked like an oak tree for thousands of years. There is a certainty in knowing that a rose is a rose is indeed a rose—at all times and in all places.

These life-enhancing qualities of plants are utilized in horticultural therapy, aiding recovery and rehabilitation in mental hospitals, physical rehabilitation centers, geriatric centers, schools for exceptional children, drug and alcohol rehabilitation centers, and correctional institutions. This work is the focus of the National Council for Therapy and Rehabilitation Through Horticulture, with headquarters in Mount Vernon, Virginia.

From the human perspective, we can see distinct behavioral and social benefits accruing to gardeners in situations of stress. Research by behavioral and social scientists is needed to

identify the factors involved at the people-plant interface. Kaplan's *(1973)* study, "Some Psychological Benefits of Gardening", is a first step in this direction. Ultimately, we will see planners and architects designing environments for habitation that will, by providing opportunities for activities with plants, prevent some of the stress we now are trying to alleviate.

Those of us who work with children should be aware that gardening produces much more than flowers, vegetables, and plants. It can enhance a child's understanding of himself and his world. It can help a child gain self-confidence in a stressful environment.

Walter Hickle sensed the significance of man-plant relationships when he spoke, in 1970, of the need for a personal ecology of the mind and spirit of man. He said "There is a mystery attached to the variety and perfection of nature, a mystery which stirs wonder in a child and gives a grown man perspective. If we help refresh the inner man, we would help begin to answer such real questions as those of the inner city."

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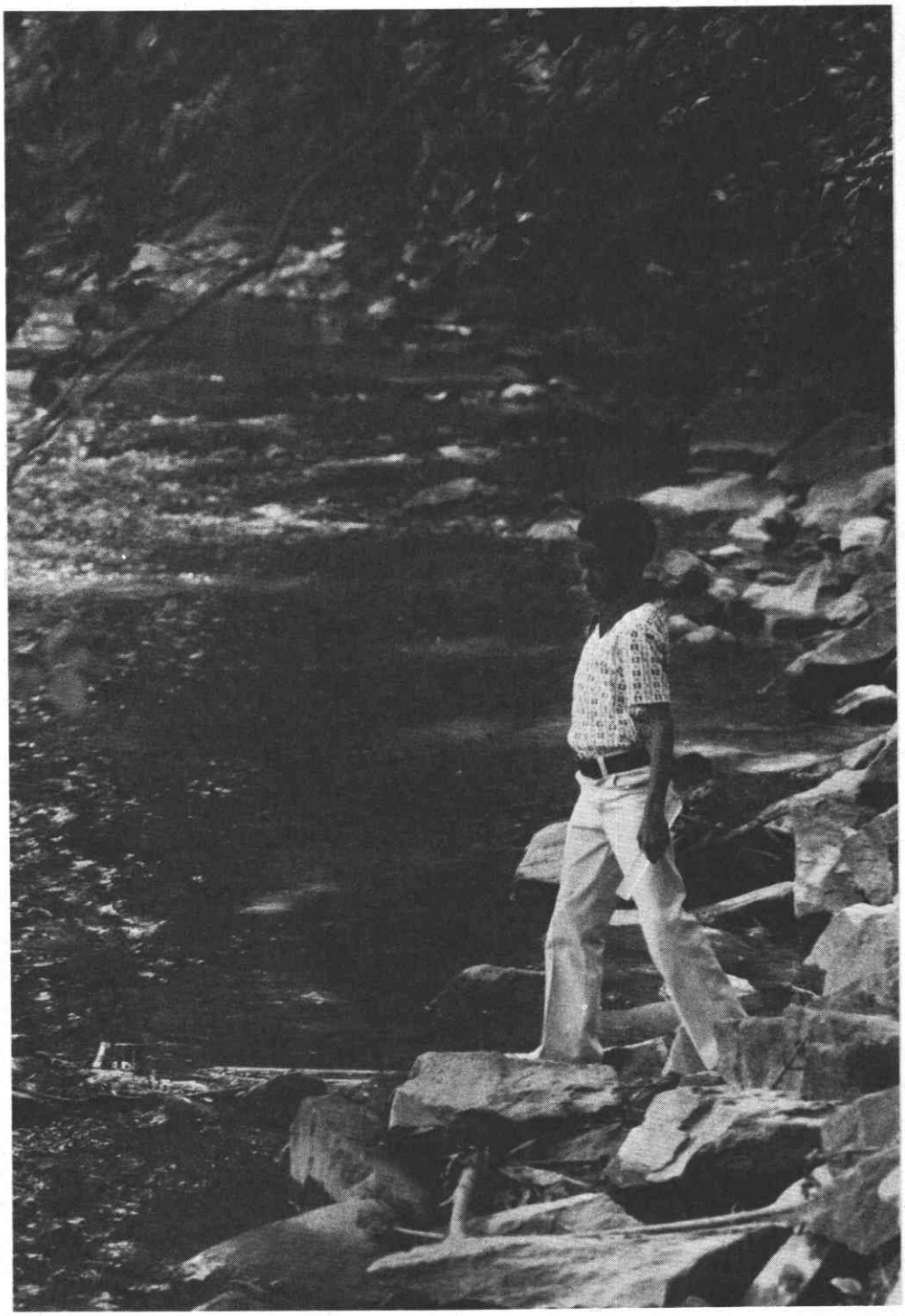

PHOTO BY WALT BLAIR

"What a person may learn about himself in an intensive outdoor experience is frequently indicative of how he lives the rest of his life" - Frederick W. Medrick

Confronting Passive Behavior Through Outdoor Experience: A TA Approach to Experiential Learning

by FREDERICK W. MEDRICK, *Rocky Mountain Center for Experiential Learning, Denver, Colorado.*

ABSTRACT. The concepts and techniques of transactional analysis (TA) can usefully be applied to outdoor challenge programs aimed at facilitating personal growth, developing responsibility, and teaching cooperative behavior. Passive behavior results from discounting of the self and others; four levels of it have been identified, and TA offers various means of preventing or confronting it. A no-discount contract and individual growth or learning contracts are prerequisite to responsible behavior. Both structural analysis (identifying ego states) and script analysis are valuable tools for detecting and analyzing the causes of ineffectual behavior. Permission, protection, and potency are essential for effective facilitation of outdoor growth experiences.

THE MOST EFFECTIVE learning, whether from an educational or therapeutic standpoint, occurs in situations where what is learned can be put immediately into practice and the learner can receive instant feedback and reinforcement. The outdoor environment is particularly effective in encouraging such learning and supporting individuals who are incorporating new ways of acting and responding into their daily lives.

I would like to share some theories and experiences which I have found helpful in crystallizing my position. I will draw upon my training in the use of transactional analysis (TA), as developed by Dr. Eric Berne, and my work with Outward Bound and similar wilderness experience programs. Incorporating the approaches developed by transactional analysis into experiences in the outdoors enhances the potential of these experiences for developing new awareness and effecting substantial change in a person's way of functioning.

The experiences I find most susceptible to TA approaches are those outdoor activities—such as backpacking, rockclimbing, mountaineering, ski touring, and river rafting—where the environment is totally new and there is a certain amount of objective danger, entailing substantial stress and requiring cooperative functioning to insure the safe and successful completion of the experience. Some of the learning in these situations is very directive (rockclimbing) while other learning is carefully supervised but largely experiential (camping and wilderness navigation).

The most essential component of such intensified learning is a person's decision to achieve some particular behavioral goal during the course of an experience. This goal may be as broad as developing the ability to assimilate more data, learning a particular skill, changing one's way of relating to others, or crediting (and getting support for confronting) the anxiety one has about unfamiliar and physically demanding activities.

The means I have found most effective for stimulating such learning is the therapeutic contract developed by transactional analysis. This entails a clear statement by an individual of why he is engaging in a particular experience,

what he wants to get out of it, how he is going to accomplish this, and what evidence will demonstrate that he has achieved this goal.

The important part of the *contract* is the *doing* part and, in a group experience like most outdoor pursuits, it is important for a person to identify what he needs or wants from others to support his growth. This support may range from verbal acknowledgement and praise to strong confrontation and refusal by others to support (respond to) negative behaviors. The contract is a means of monitoring a person's individual performance during an experience and using the support of others to reinforce a personal commitment to attaining new awareness or changing behavior.

Encouraging and monitoring such growth takes leaders trained and experienced in individual and group counseling. The most difficult stage in the process seems to be the beginning, when participants are helped to identify what they may have to gain from an outdoor experience and to risk committing themselves to utilizing the opportunity at hand to gain it. This requires a very careful introduction for the uninitiated to the whole notion of growth (as actualizing one's inherent potential) and how it may be approached through outdoor activities.

Essentially, this introduction is a statement that everyone is engaged in growth and movement of some sort and that part of the process of self-actualization *(Maslow 1962)* entails movement toward some goal or ideal that a person chooses for himself. I find that it helps to get people to share the aspirations they have for themselves—for the impending experience and for their lives as a whole—and there is a wide variety of techniques available in the growth movement to aid in this. It is even useful to have people write down certain growth goals to refer back to as the experience proceeds.

The next stage in the contract process has to do with how these goals may be pursued. This is something that needs to be focused upon during the early stages of an experience, since most persons have only vague notions of what they are going to encounter. At the outset, a fairly general statement may be sufficient for some, while others may wish to be very specific. As the experience evolves, it is important to review the appropriateness of each goal and to clarify or modify it if necessary. This is a basic part of the kind of self-definition that people appear to go through as they engage in something totally new.

The next stage is to identify the progress being made in meeting a particular part or the whole of the learning contract. This is most effectively done after some significant experience has taken place, such as getting lost, crossing a rushing stream, climbing a peak, or negotiating a challenging rapid. Usually, reviewing the experience and sharing success or failure is foremost in a group's mind at such a time. Progress on the personal contract is secondary to what has by then become the development of a group contract: to function well enough together to ensure the success of group endeavor. Each person's personal contract undergoes some change as a group identity begins to emerge.

The personal contract, then, is aided by the assessment of each person's role in achieving the group goal. It is important to stimulate exchange and feedback, both positive and critical, within a group so that the effects of an individual's actions, whether constructive or disruptive, are more immediately apparent. There is a very natural feedback that comes from determining whether events went according to plan, what preparations were made, and whether and how modifications were made in the original plan to adjust it for unexpected factors.

The effectiveness of any experience in contributing to the personal growth of an individual depends on his degree of participation in it. To evaluate the effectiveness of an experience, specific questions can be directed to each person's role and what he got from his participation. When a person has not felt particularly effective, it can be helpful to explore what may be getting in his way and how it might be changed. This can be the basis for a new "mini" contract.

Finally, it is important during the concluding phase of an experience to review both the expectations and the success of the personal contract. There is learning to be had in becoming aware that a particular contract did not work and that there were factors that interfered with its fulfillment. Even more helpful is for a person to see what he personally may be doing to get in the way of his own growth, and for him to credit the resistance to change he may have.

Facilitating these awarenesses takes a good deal of perceptiveness and counseling skill.

The contract structure establishes this self-assessment process as a norm for the experience, and can have valuable carryover into other parts of a person's life. What a person may learn about himself in an intensive outdoor experience is frequently indicative of how he lives the rest of his life. By becoming aware of this and trying some new ways of acting, a person may be able to initiate a new "program" for himself that brings him more satisfaction and clearer ways of getting his personal needs met.

This notion is supported and extended in the TA theory of scripts *(Berne 1972)*. Eric Berne's observation is that each person lives his life according to a certain plan or program that is determined early in his life by parental and cultural influences (injunctions and counterinjunctions). These influences program and regulate all his subsequent actions and choices.

The program generally manifests itself through certain "predictable" ways of responding to stress situations. A person trained to detect such patterns of behavior and response can anticipate and even head off destructive or dysfunctional behaviors. By observing the way a person approaches a challenge such as a rock-climb or initiative problem, one can often recognize the predominant approach or frame of reference from which a person responds to stimuli, analyzes problems, and makes decisions.

Another concept that is helpful in understanding behavior is the TA notion of ego states. An *ego state* is a pattern of behaviors and/or statements that represent personality structures incorporated by the individual to enable him to function as a "whole" person within his world. The classic TA labels of *Parent, Adult,* and *Child* refer to those aspects of one's personality that serve, respectively, to provide rules for behavior and guidelines for protection, process information and make decisions, and experience feelings and act in ways calculated to get personal needs met. These concepts are explained in detail in most TA literature *(Berne 1961, 1964, 1972)*.

Knowledge of these ego states and of the signs that indicate when an individual is functioning from one position or another indicates how a person can be expected to function. When information is communicated, particularly that pertaining to personal safety, it is extremely important that the recipient's Adult ego state be available to assimilate and apply the information.

Similarly, it is important to engage a person's Parent in helping him to incorporate and utilize the safety information that is given. Then the impulses of the Child will have some kind of internal monitor and compliance will be assured. Frequently it is necessary for an instructor to provide "parenting" in the form of permission to try a new activity or alter a self-destructive behavior.

Finally, it is essential that the kind of energy and excitement available to most children, the curiosity and the urge to experiment and discover, be stimulated in a person who is taking part in a new experience. This applies also to the process of getting individuals to work together as a group.

One particular TA theory that helps us comprehend and modify inadequate learning processes in the outdoors is the theory of passivity developed by the Schiff family at the Cathexis Institute in California *(Schiff and Schiff 1971)*. Essentially, the theory is that when there is incomplete separation from the major parental figures in one's life, much of one's energy is given over to re-establishing the kind of symbiotic attachment that was essential to survival in infancy but is inappropriate in an autonomous adult. Such a person tries, usually in subtle ways identified in TA as *games* or *rackets,* to get others to do what he is capable of but unwilling to do for himself—whether expressing feelings, taking care of his needs, or fulfilling his commitments or responsibilities. Instead of asking directly for what he wants, an individual may develop a variety of manipulative techniques to get his needs met.

The passivity material has particular application to outdoor experiences because the results of indirect and manipulative behavior are almost immediately evident in these circumstances; sometimes they critically affect safety and survival. For example, when a person is not being active in taking care of his survival needs, such as food, warmth, and shelter, it becomes evident very quickly in diminished performance or increased survival risk, such as by hypothermia, exhaustion, or illness.

Four levels of passive behavior are identified by the Schiffs: withdrawal, overadaptation,

agitation, and incapacitation or violence. *Withdrawal* is usually manifested by a person *doing nothing* and getting recognition and reinforcement (strokes) by having others *do* for him. Withdrawn people usually defer to others on decisions and actions that have to do with getting needs met, such as cooking, setting up camp, navigating, or initiating other tasks. Such a person waits for someone else to ask first instead of taking initiative. In more extreme instances, a withdrawn person does not act at all but only receives the benefit of others' actions. This is the form of passive behavior that I have witnessed most often in outdoor situations. Such withdrawal isolates the individual from the group and makes it even more difficult for him to influence his experience, have an impact on others, and get something for himself through his own actions. Hence, such passivity tends to be self-reinforcing.

Overadaptation is shown when a person does just what is asked or expected of him in a situation and little more. It usually looks as though such a person is cooperating and taking responsibility for his actions, but the responsibility for the *outcome* of his actions is usually left to his peers or the leader. For example, a person may do everything he is told to perfectly in preparing for a rock-climb. However, on the climb he requires constant coaching and specific directions from the instructors and other climbers, instead of solving problems and making decisions on his own. He may finish the climb, but he gains little sense of accomplishment from doing so.

Frequently, when a person is uncomfortable (fearful, angry, overly excited) with an experience or a situation, he tends to dissipate a good deal of energy in preparation or in activity that doesn't lead directly to accomplishing the task at hand. This is known as *agitation*, or nonproductive activity. A person may do a great deal of moving around and shifting of equipment in preparing a meal, but not actually make any progress in preparing it. Instead of asking for information or directions, he dissipates his energy in fruitless activity.

The ultimate expression of passive behavior occurs when a person is actually *incapacitated* or resorts to *violence* to get his way or get taken care of. I have witnessed this particularly in urban youth who are out of their "territory" and don't know how to get their needs met. The motive in this level of passive behavior, however subtle, seems to be to get attention, get taken care of, or make a point that the person was not effective in making more directly ("I told you I couldn't carry such a heavy pack"). A lower level of this same type of behavior is shown by the person who consistently complains either about the physical hardship, his own incapacity, or the fact that the program isn't working out the way he expected.

The basic factor in all the forms of passive behavior that I have been discussing is what is called *discounting;* it is a decision on the part of a person not to use the information or skills he has to get his needs met, because he believes either that he cannot get his needs met at all, or that he cannot get them met in any way other than the one he is using. Discounting is *not counting* that one has the means to get most of one's needs and wants met in direct and responsible ways.

In the outdoors, such discounting may have several causes. A person, for example, may either be unaware of or refuse to acknowledge the dangers in a particular situation. Threatened by bad weather and wind, he may not take precautions to avoid hypothermia, such as putting on extra clothing or drinking a cup of hot tea or chocolate. Or, a person may actually claim that he is fine when in fact he has goosebumps and is shivering. These two approaches are known as *discounting the situation* and *discounting the importance* (or danger) *of the situation.* In both instances, the person is waiting around to be told what is happening or what to do, instead of taking responsibility for himself.

Another form of discounting occurs when, being appraised of a situation, a person decides *there is nothing he can do about it.* An example of this is when a student is told that a shelter he has constructed is inadequate to provide protection in an impending storm and he decides there is nothing that can be done to make it better, and so goes to sleep, only to awaken wet and cold during the night.

This feeling is frequently personalized; a person decides that *he is personally unable to do anything* to take better care of himself. This is usually evidenced by an "I can't" attitude toward such tasks as making it to a destination when the going is rough or attempting a rock-climb that others have been successful in. Such a passive person may eventually respond to a great deal of urging from his peers or the leader,

but he is essentially unwilling to make the decision and commitment for himself.

All these forms of discounting promote a "taking care of" atmosphere in which the individual seeks and obtains reinforcement for being passive about meeting his needs. Some of my most frustrating wilderness experiences have been when every member of a group chose this mode of functioning. The obvious goal of such behavior is to make another person feel uncomfortable enough with what he is witnessing and experiencing the effects of that he, instead of the person being passive, will take action and responsibility. This puts particular pressure on the leader, who is responsible for seeing that something does happen. In each of these instances, however, taking over instead of confronting can be seen as a rescue of the other person. It is a way of supporting his maintenance of a personally dysfunctional pattern of behavior.

The format that I have found most useful for dealing with ineffectual performance during outdoor learning experiences is the *passivity confrontation contract.* This is an agreement among the participants to work together to achieve both the individual goals and the groups that have been identified, as they have evolved during the experience the group has been sharing. Each person agrees to be confronted when his behavior does not match the behavior he identified as a goal. Similarly, he agrees to confront others when their behavior does not match what they identified as goals. Such confrontation may range from pointing out some neglect or avoidance to, in extreme circumstances, very strong objection and some form of consequence for behavior that is discounting. It is important, particularly where physical safety is an issue, that each person agree in some verbal fashion to abide by the guidelines laid down for an activity. It is equally important that each individual be involved in establishing and working with those guidelines that are less critical but equally important to the success of the experience. These include how the basic tasks of the day are to be accomplished as well as how the most important decisions are to be made.

Claude Steiner, in his book *Scripts People Live (1974),* identifies three criteria which, I believe, define effective leadership in implementing the growth approaches I have described: potency, permission, and protection. *Potency* results from the personal competence of the leader in outdoor skills and whatever counseling ability he brings to the situation. It is a product of the willingness of the leader to risk stating his own expectations clearly and providing a role model for others.

Permission is the support a leader provides for a person who is ready to experiment with new behavior and tune into what he needs to do to get his needs met. This frequently means countermanding rules and messages that were established early and are deeply ingrained.

Protection means assuring a person, both by the structure of the course (goals, procedures, rules, guidelines, etc.) and by the precautions taken for his safety, that he will be both physically and emotionally safe. In short, he will be credited for whatever position he comes from, given space to explore his interaction with others on whatever level he needs to, and asked to be responsible for himself and his actions for the duration of the experience. In accordance with the passivity confrontation contract *(no discount contract),* he will be confronted for discounting and expected to alter his behavior in a way that aids cooperation and is consistent with the physical circumstances.

In summary, the effectiveness of any outdoor activity as a growth experience depends on the nature, structure, and, most importantly, the communicated intent of the program. The contract procedure of TA and its understanding of passivity provide an effective vehicle for identifying and acting on how a person functions. The ego state concept and script theory provide a conceptual framework for understanding how behavior originates and is expressed. Combined with the natural encounter that occurs during intensive outdoor experiences, these approaches provide support for participants to examine their old ways of acting and develop new structures and means for validating and modifying what they do and how they do it. Some of the approaches provided by TA enhance the total impact of outdoor programs and increase their potential for carry-over of significant learning into the rest of a person's life.

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"It is imperative that those who design the environments in which children must live and learn, and those who design the programs that use these environments, understand the special problems of handicapped children" — Dennis A. Vinton and Donald E. Hawkins

The Natural Environment and Human Development: Implications for Handicapped Children in Urban Settings

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ABSTRACT. This review of literature is intended to promote awareness of the needs of the 15 percent of the nation's children and youth who are afflicted with some form of handicap. It is imperative that those who design children's programs that utilize natural environments understand the special problems of handicapped children.

INTRODUCTION

THIS PAPER is based on a review of the literature prepared to help participants in the Symposium-Fair on Children, Nature, and the Urban Environment be aware that fully 15 percent of the nation's children and youth are afflicted with some form of handicap.

These children, be they physically or mentally handicapped; deaf, blind, or emotionally disturbed; suffering from impaired or speech-learning disability, face very special problems that make it difficult for them to participate in those life experiences that are the birthright of all the nation's children.

It is imperative that those who design the environments in which children must live and learn, and those who design the programs that use these environments, understand the special problems of handicapped children. Their goal must be to design environments and programs that meet the needs of *all* children.

In an effort to provide relevant input for the Symposium participants, the authors identified two major topics that were generally related to the topics presented and discussed during the Symposium sessions. They were: (1) the value of the natural environment in the growth and development of handicapped children; and (2) program planning, administration, and evaluation.

A thorough search of the literature was undertaken for each of these topics to identify and review research with implications for handicapped children and youth. During the week of the Symposium, specially trained teams monitored all presentations and evaluated the information presented for applicability to handicapped children. Specific recommendations for designers and program planners were then developed to guarantee that the special problems and needs of handicapped children would be provided for. These recommendations were presented to participants at a panel discussion on the last day of the Symposium.

The Symposium program showed that little, if any, thought had been given to the unique problems of handicapped urban children. This oversight is more likely benign than willful.

THE URBAN ENVIRONMENT: A UNIQUE PROBLEM SETTING

Until recently, the urban environment was excluded from environmental education. When outdoor programs were offered at all to city children, teachers generally headed for a city

park to conduct a nature study class. The city as an environment was rarely considered. Yet the city is the area most profoundly affected by the environmental crisis *(Hawkins and Vinton 1973)*.

Air and water pollution, solid wastes, and a lack of space for comfortable living are more serious problems in cities than in areas with low population density. In today's cities noise, crowding, inconvenience, and disunion from natural environments combine in a unique threat to personal mental and physical health. The inner-city child bears the brunt of the urban environmental crisis, for he is more crowded and his dwelling less sound.

Even the more fortunate city children grow up with little awareness of the natural environment. Urban environments are constricted; they offer little room for imaginative play and almost no contact with nature. They are often confusing, dysfunctional, and even dangerous. Although the city is notable for the diversity of cultures, values, lifestyles, and services it shelters, these are to a great extent segregated from one another so that children have few opportunities to experience the different environments within their city. The children move from their homes to their egg-crate schools and back, and fail to observe the nuances of even the small environment in between *(Yambert 1970, Bushnell 1970)*. Instead of learning to perceive with all their senses, they learn to blot out unpleasant sights, sounds, and smells.

Environmental education for urban children—and most of our children now grow up in metropolitan areas—would enable them to perceive their environment, appreciate both its good and its bad aspects, and participate in improving it. It would take them out of what are usually gloomy school buildings and provide an environment for learning different from the one in which they too often face only failure. It would allow them to investigate real things instead of artificial ones and to develop all their senses.

Children of poverty, more than children of affluent backgrounds, tend to be what the Gesell Institute of Child Development terms "reality bound." They learn better dealing with the concrete than with the abstract. Environmental education could be a means of providing successful learning experiences for such children.

Environmental education for urban children should provide experiences in many kinds of environments, so that they can know of worlds beyond the tenement, the subway, and the street corner. Best of all, they might build a positive self-concept from success at solving problems in these environments that could encourage them to participate in ameliorating the problems of their own.

The city is actually an ecosystem, a community of physical and biological entities interacting with each other and with the total environment. Education that deals with the urban environment should help learners understand the city as such a totality. The city, moreover, does not end at a specific boundary, but influences environments far beyond its political limits.

Urban environmental education thus includes investigation of all types of environments. In addition to the study of the effects of the city on the natural environment, urban environmental education must deal with public health, transportation, architecture and landscaping, and zoning and planning. The most traditional forms of environmental education—nature study and conservation—are easily adaptable to urban surroundings and points of reference familiar to the city dweller.

According to current statistics provided by the National Advisory Committee on the Handicapped *(1976)*, there are presently 8 million children in the United States who are classified as handicapped or disabled. Over three-fourths, or 6 million, of these children reside in urban areas. Few would deny that children growing up in urban centers today encounter problems unprecedented in our nation's history. For children who are handicapped, these problems are magnified.

THE VALUE OF THE NATURAL ENVIRONMENT IN THE GROWTH AND DEVELOPMENT OF HANDICAPPED CHILDREN

Although limited, existing research indicates that the natural environment can provide a fertile medium for the physical, emotional, intellectual, and social development of the disabled child *(Havighurst 1965; Lefebvre 1972; Holden 1962; Robb 1971; Balla, Butterfield, and*

Zigler 1974; Guthrie, Butler, and Gorlow 1963). The value of the natural environment as a therapeutic modality can also be inferred from studies that have identified the detrimental effects of isolation, hospitalization, and institutionalization and the positive effects of exploration, free play, and the home environment.

Physical and Motor Development

Research has shown that physical and motor development of handicapped children may be retarded by environmental conditions related to their disability, such as institutionalization and isolation. Other research has shown that for some disability groups, physical and motor development can be enhanced by the provision of physically-based learning experiences in a play environment *(Drowatzky 1968, Oliver 1972, Rarick 1973.)*

Perceptual Development

The available research indicates that perceptual development is independent of intellectual development in the mentally retarded and that haptic perceptual development is similar for blind and sighted children *(Doyle 1967, Gottesman 1971).* Since, in these skill areas, the mentally retarded and blind can perform at approximately the same levels as their normal peers, it can be inferred that providing opportunities to develop these skills through play could give the disabled child successful experiences. It can be further theorized that these successes may be of value in enhancing self-attitudes and may have carryover value in other areas as well. Further research is needed to substantiate these inferences.

Behavioral, Personality, and Affective Development

Numerous studies of various dimensions of the self-concept of handicapped children have been reported *(American Camping Association 1972).* It is generally accepted that the lower self-concepts found among disabled children are due primarily to environmental factors related to the disability, and that self-attitudes can be enhanced through programs in which the environment is manipulated so that the child is able to perceive himself in positive ways. Similarly, in other areas of personality and social development, research indicates that environmental manipulation can be of benefit to the disabled child *(Lowry 1974, Robb 1971, Tait 1972).*

Intellectual/Cognitive/Language Development

The effect of the natural environment on intellectual, cognitive, and language development has been investigated in several recreation and school camps, as well as in recreation-oriented education programs. The results of these studies indicate that camping and recreation in general can benefit the mentally retarded, blind, deaf, and those with learning disabilities in improving communication and academic skills *(Baer and Stanley 1969, Buell 1956).*

PROGRAM PLANNING, ADMINISTRATION, AND EVALUATION

A considerable amount of literature describing innovative ideas in programming and program administration, and a limited number of research studies have been published. However, the body of scientific knowledge about the planning, administration, and evaluation of programs for the handicapped that use the natural environment contains many large, easily identifiable gaps.

Programs

Many environmentally oriented programs for handicapped children have been implemented. Some, within public school systems, have helped mentally retarded and learning disabled children to improve their academic skills and attitudes *(Albert 1970, Brannan 1969).* Others have been used to enhance the physical and social skills and self-attitudes of children with all kinds of handicaps. The activities in these programs have ranged from highly structured nature studies and traditional recreation to individualized environmental exploration.

Environmentally oriented programs for the handicapped in the community, sponsored by youth organizations such as the Girl Scouts, Boy Scouts, and YM and YWCA's, also comprise both traditional and innovative activities *(Barnett 1970).* Unlike school programs,

however, their objectives are usually not stated in terms of specific physical, emotional, and intellectual benefits.

Community-based programs sponsored by municipal recreation departments, universities, voluntary health agencies, and private organizations *(Mitchell 1971, Ryan 1964)* differ according to the philosophy and goals of the sponsoring agency. Some, like public schools, establish their programs to achieve specific therapeutic objectives. Others, like the youth organizations, offer a purely recreational program based on the philosophy that activities which use the natural environment are inherently therapeutic.

Outside the urban community, environmentally oriented programs for the handicapped can be found in organized camps and in federal and state parks. Most camp programs described in the literature are at therapeutic camps and integrate therapeutic techniques into traditional camping activities *(Vinton and Pantzer 1974)*. In the parks, services have been expanded in recent years to include not only accessible outdoor facilities, but also larger environmental programs for the handicapped.

Two major trends are the integration of handicapped with nonhandicapped participants (mainstreaming) and year-round programing. Integration of people with every major type of disability has been described in the literature, and both successful and unsuccessful integration efforts have been documented *(Bent and Miller 1969, Williams and Coltoff 1965)*. Although we do not fully understand when and how integration is successful, some answers are being provided by demonstration projects and research studies.

Year-round programming is gaining impetus across the nation. It is being offered as a partial solution to the financial waste of using facilities and personnel only part of each year. Some descriptions and discussions have been presented in the literature, but the overall impact of year-round programing has not yet been assessed.

Administration

The diverse public, private, and voluntary organizations involved in providing environmental programs to special populations share certain administrative concerns, especially funding and staff development *(Nesbitt et al. 1972)*.

Inadequate funding has prompted agencies in some communities to pool their resources. In other communities, it has led to a greater use of volunteers. Among the sources of volunteers cited in the literature are Vista workers, members of senior citizen groups, older persons with handicapping conditions, and reformatory inmates.

Although it is generally agreed that staff working with the handicapped need specialized training, there appears to be little agreement on the type or extent of training necessary.

During the spring of 1972, a major national conference on training personnel in camping and outdoor recreation for handicapped children was sponsored by the Bureau of Education for the Handicapped and San Jose State University. Using a modified Delphi technique, the participants developed a position statement that was published with other position statements in the conference proceedings *(nesbitt et al. 1972)*. To date, there is little evidence that the recommendations of this conference have been implemented.

One need identified by that conference was further study of program evaluation. Although considerable research has been reported on the physical, psychological, educational, and social effects of specific programs that use the natural environment as a therapeutic modality, few investigations that dealt with overall program evaluation have been reported. In studies of the effects of camping programs, the programs are generally described, but rarely quantitatively or qualitatively defined. Thus, replicating successful programs remains difficult and evaluating failures remains guesswork.

SUMMARY AND RECOMMENDATIONS

Environmental learning is a joyful activity, a relevant pursuit, and a way to help the handicapped child understand his or her own environment. Environmental learning programs for handicapped children should closely resemble those for nonhandicapped children. Modifications should be based on the needs and abilities of each child, not on their handicapping conditions.

In developing such programs, parents, camp personnel, recreation leaders, and teachers should understand that environmental learning includes various stages of experiential development—planning, anticipation, actualization, recollection, and evaluation. The following are general suggestions for developing and implementing those experiences:

- Provide group situations that encourage close contact with other people.
- Use interested people and whatever equipment, props, and spaces are available.
- Provide a nonthreatening, nondemanding environment.
- Develop a program that will allow all children a variety of experiences despite their handicapping conditions.
- Introduce new activities gradually or incorporate them with familiar ones to expand the child's experiential range.
- Encourage creative, inventive, and expressive efforts by providing environments with a wide array of manipulatable materials.
- Develop a program what will afford personal enjoyment and satisfaction to all participants.
- Provide the positive "can" instead of the negative "can't".
- Encourage the child's sensitivity to what is happening in his environment by helping him to understand his own feelings and reactions.
- Develop within the child the responsibility and desire to manage life pursuits.
- Work to create a positive self-image and self-respect leading toward the desire to grow and develop.
- Encourage self-discovery, curiosity, inquiry, and initiative.
- Don't limit yourself to one facility. Utilize all types of environments, especially the natural environment.
- Integrate handicapped children and other children in the same program.
- Recognize that children are innately curious and will explore their environment without your intervention.
- When two or more children are interested in exploring the same problem or materials, give them full opportuntiy to collaborate in some way.
- Understand that a child may possess knowledge and yet be unable to display it publicly. Knowledge resides with the knower, not in its public expression.

Although camping and environmental education are steps in the right direction, they touch only a small group of children and usually only for one or 2 weeks a year. What kinds of environmental learning activities can take place every day? It is much easier for the handicapped child to adjust to the natural world, with its diversity, than to the physical or cultural environment.

The man-built physical environment presents problems for the handicapped child because design standards have ignored those with unusual requirements. Advocacy of the handicapped child's right to equal opportunity is beginning to create public awareness and bring about changes. The next major problem is the social environment, which includes people and their culture. The handicapped child is restricted by social norms that exclude those who are different.

Traditionally, environmental programs for the handicapped have been endorsed by parents, educators, and recreation professionals because of the supposed benefits of living in the natural environment. As we enter a new era of concern for our natural, physical, and cultural environment, the concept of human ecology is coming to the fore. There is a trend toward reconceptualizing programs for the handicapped, with the focus on the individual, not the handicapping condition, and on the individual's interaction with his total environment. The learning experience that takes place in the natural environment can take place in daily life also—in the home, the school, the recreation center — everywhere. The environment itself is the classroom, and the learning that takes place there can help the handicapped child enter the mainstream of society.

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"Unless children have the chance to experience novelty in the real world they will slip into the well-worn thoughtways of the adult status quo—biologically conservative before their time—where awareness is prematurely relegated to the nonconscious level of reflex, habit, and routine" - Robin C. Moore

The Environmental Design of Children-Nature Relations: Some Strands of Applicative Theory

by ROBIN C. MOORE, *Assistant Professor of Urban Design, Department of Landscape Architecture, University of California, Berkeley.*

ABSTRACT. A brief framework for children-environment relations, focused on 8- to 12-year-olds and their natural environment, is based on the principles of maturation and Gestalt therapy. The concepts of "quality" and "place" are discussed. A comprehensive ecological framework is proposed, relating theory to the material resources used in place-making, together with a set of design criteria emphasizing the use of natural materials.

THE MATERIAL presented here focuses on "middle-aged", 8- to 12-year-old children; the nature of their relationship to natural resources; and some suggested criteria for the design of natural environments in urban areas. Let me stress that the focus is only partial. Children cannot be separated from society. Neither can nature be divorced from environment—they can only be distinguished. I write as a designer/researcher, interested in constructing a theoretical framework to guide more relevant research and help build child-environments that foster a higher degree of well-being. Thus far, my thoughts arise from a fruitful combination of theory, gleaned from clinical psychology, and natural ecology, plus my own empirical experience.

MATURATION AND ENVIRONMENT

The "principle of maturation", as reviewed by Hadfield *(1962)*, recognizes that the human organism is born with a set of innate capacities and urges that emerge in a predictable sequence of development. Although their initial appearance is presumed to be unrelated to external stimulation, their exercise and application are actually entirely dependent on the quality of the setting. As Hadfield says:

> "The [social] environment and the *material world* [my emphasis] . . . are the medium in and through which the potentialities in the child's nature are expressed and developed."

Thus, heredity and environment are a coacting duet. Heredity provides the potential for *action;* environment is the applicative *medium* for skill development, direction and purpose—what White *(1959)* calls the growth of *competence.*

Maturation theory enables us to identify and define stages of growth and development. It is quite unrealistic to treat children as a monolithic social group for the purposes of research and design. Hadfield identifies five "phases of development", from birth to adolescence, in terms of differing dominant characteristics. Before age 8 or so, a child's experience is mainly limited to the immediate home range by the scope of its natural desire to explore, plus parental fear of the world outside. Early childhood has included the playful exploration, discovery, imitation, and testing of the environment—a time of preparation, hopefully divorced from the harsher, dominating realities of the larger world. This has allowed the child's personality to emerge and be itself, without an irreparable amount of psychic warping.

THE PRIMITIVE YEARS

It is in their middle years (about 8 to 12) that children have their deepest and most extensive relationships with the outdoors. Hadfield (himself born in the South Sea Islands), calls this period the "primitive age" reflecting its behavioral characteristics. It is a phase when the child applies nascent skills to the real world, while still unaware of its real problems. The child can play beyond the now extinct functions of the home shelter, parental protection, and the necessity for adult endorsement.

These middle years are a unique period of freedom, health, and vitality (e.g. they have the lowest mortality rate) during which the child has a great interest in making a practical contribution to life around her/him. Playful behavior is retained from earlier periods, but its style and purpose have changed to serve in an apprenticeship for life. In this phase, interaction with nature on a large scale reaches its highest level of behavioral significance. Hadfield (1954) suggests that the principle of recapitulation/collective unconscious may be at work here, whereby behavior is informed by an archaic genetic memory of earlier human history. Edith Cobb *(1959)*, in her unsurpassable essay, talks about the innate genius of the child and the intuitive understandings that arise from its interactions with the natural world. Her evocative ideas do much to explain the overwhelming attraction of untrammelled natural environments but they need further development to be operational for design.

ENVIRONMENTAL ASSIMILATION AS GROWTH

Gestalt therapy theory, as presented by Perls, Hefferline, and Goodman *(1965)*, is an eclectic but unified system of concepts for understanding people-environment relations. It retains considerable evocative power, yet takes us many steps forward along the path of application.

Here we find growth and development described in terms of *assimilation* of environment by organism. In this process organism aggresses environment—"destroying" (destructing) it, to provide material for the "reconstruction" of a new actuality. It is an endless cycle of "creative adjustment", motivated by the organism's "excitement", via its environmental "contact", leading to/flowing from "awareness of self" as an "organism/environment field".

The inventors of gestalt therapy were mainly interested in interpersonal relations. We need to apply their theory to the material environment, and thus provide ourselves with a tool for people-environment research. Environmentally, the primary factor involved is *novelty/diversity*. The excited organism seeks novelty. To satisfy this need, the environment must supply sufficient diversity to *accommodate* varied user-needs, over an extended period of time.

Although natural environments provide a necessary (and unbeatable) opportunity for overt manipulation, creative adjustment can take place in other ways. Some environments can be perceived anew with each visit, each time stimulating new imaginings and reinterpretations of reality. Natural resources are especially potent because of their sensory complexity and attendant characteristics of change.

Unless children have a chance to experience novelty in the real world they will slip into the well worn thoughtways of the adult status quo—biologically conservative before their time—where awareness is prematurely relegated to the nonconscious level of reflex, habit, and routine. Therefore, let us say that "strong contact" with natural resources is necessary (but not sufficient) for complete well-being. For the purposes of research and design we need to elaborate the point a good deal further.

QUALITY IN CHILDREN-ENVIRONMENT RELATIONS

When we talk of a "responsive environment" we are referring to a *relationship* between the organism and its immediate surroundings. Gestalt therapy talks about the excitement of growth that arises in a person as a result of strong, aware contact. But what part does the physical setting play in this process.?

Anyone who has been in the company of children, in a diverse natural setting, must have been impressed by the way certain objects and materials seem irresistibly to draw attention to themselves. I call this characteristic *incitation*. The setting incites, from the outside; the user

excites from inside. Both characteristics must be present to a balanced degree for creative aware contact to be initiated and grow into a qualitative relationship.

There is no other type of relationship between organism and environment except a qualitative one *(Pirsig 1974)*. In essence it is an expression of *values* between the two. Thus the designer-as-interpreter-of-values must help provide an environment for the propagation of "good quality" user-setting relations. If we now incorporate this point of view within an ecological framework, we can operationally recognize the fact of human volition and self-government and give tangible expression to the concrete manipulable designable elements of the material world.

THE MATERIAL BASIS OF CHILDHOOD ECOLOGY

Childhood quality arises from the *interaction* of children with a *diversity* of surroundings. It is a process of continuing growth, learning, and *change* resulting in the *adaptations* of children and environment to each other *(Moore 1974 b)*.

Figure 1 illustrates the person-environment basis from which this ecology is generated. The diagram is derived from an earlier one of Billings' *(1970)* illustrating plant-environment, rather than child-environment relationships.

Since children (unlike plants) can manipulate their environment, all the relationships are potentially two-way (double-ended arrows). For example, if it rains or the wind blows, children

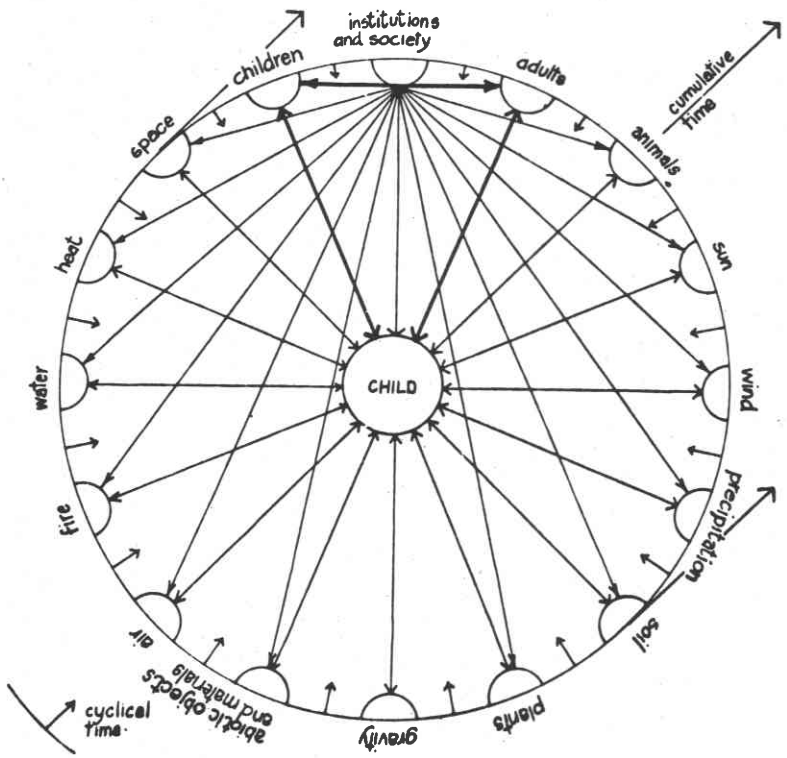

Figure 1.—The ecology of childhood (derived from *Billings 1970*).
The individual child has interrelationships with two sets of factors:
***Social:* Interactions with other children, adults and social institutions which lead to generational cultural continuity or change.**
***Natural:* Interactions with biotic and abiotic objects materials and phenomena in play and learning places.**
Planning, Design, and Education can directly influence children-environment interaction by intentional physical change, or influence the "controlling institutions" by changing values.

can move to shelter (if available) or make their own (if materials are provided).

Since it is adults-as-society who are ultimately in control, "institutions and society" is given a one-way connection to all other factors. Individual adults can limit or extend children's experience as indicated. Factors also have independent relationships with each other (not shown). Many such relationships can be modified by design—leading to changed relationships with children; e.g., high buildings frequently blot out the supply of sunlight to plants, depriving children of the experience of vegetation.

The primary pattern of life evolves in the realms of space, time, and social relations. The social processes of play are represented by the "child"-"children" link.

The *time* factor is present in many forms. There is a long-term temporal scale of *cumulative* cultural change and individual development; there is the *sequential* process of maturing, of moving through different stages; there are the *cyclical* changes of seasons, of day and night; and the repetitive dynamics of weekday and weekend, close to a child's daily life. Time is expressed in movement and speed, which are central to a child's continuous behavior. Space and time are so closely interwoven in a child's life that they must be considered as the single factor: *space-time.*

A child's pace is entirely different from an adults. This gives leisure planning a primary task of ensuring that children have an opportunity to live in their own space-time; divorced from the tightly scheduled materialistic adult world. It is critically important that children have escape places of their own, where time is suspended, so they may explore the nature of themselves and the physical world.

Space, for the sake of symmetrical elegance, is shown as merely one factor on a par with the others. In reality, space is the experiential locus of all other factors. The factors shown have been chosen for their presumed universal significance in childhood experience. I hope that the level of generality chosen for each factor defines it as a separate entity. If the subsumed levels are mentally included, a universe of organism/environment potentiality is represented—a diversity accommodating the child's process of learning, growth, and mutual adaptation.

The factors can be subdivided into three major groups:

- *objects:* visible, holdable, differentiated "things".
- *materials:* amorphous, undifferentiated "stuff".
- *natural phenomena:* manifest properties of environmental *processes,* rather than substances; e.g., the weather.

An obvious phenomenon is "gravity", a natural limiting condition that is always present to be explored, played with, and pushed to its limits: "how high can *you* jump? Tree climbing, tree forts, rock throwing, ball playing and all varieties of swinging, sliding, jumping, and climbing are further expressions. "Wind" is another phenomenon important enough to include, although in fact it is only one of many expressions of the material we call "air". In combination with the phenomenon known as "precipitation", air has many phenomenological faces: just think of all the varieties of mist, fog, drizzle, and downpour—including smog. The sun adds a further dimension of heat and light; diffused, scattered, or obscured by clouds, trees, buildings, etc.

Other factors can be classed as *materials;* "water" is a good example. Although changes of stage give it many properties, as noted above, it nonetheless exists as tangible, tastable, touchable, stuff-on-the-ground. "Soil" or "dirt" is similarly a basic material. It too has a phenomenological role, as in the topographic system of drainage and erosion. In essence, "fire" is a phenomenon, but in the experiential world of children it can also be "used" as a play material. In addition, a fire can be perceived as an object: a place to sit around—a social setting.

The child's world often seems to be composed largely of a universe of *objects,* although only one or two classes are shown diagramatically. "Plants" and "animals" are included from the natural world, as things kids respond to directly. A child's behavior, and presumably his/her perception of the world, appears very often to be "object-oriented". Thus, the "abiotic" category (I prefer to call it "peoplemade" rather than manmade) is the rubric for a multitude of "things": cars, toothbrushes, shoes, houses, bits of wood, nails, and so on; including the tools used to modify, transform and reassemble such materials: hammers, saws, shovels, etc. The distinction between "tools" and "objects" is fre-

quently absent from childrens' behavior. This lack of functional object definition lies at the heart of a childs' intuitive relationship with the physical world. For convenience we can refer collectively to natural objects, materials, and phenomena as *natural resources.*

PLACE AS QUALITY

Places arise from the stable combination of space, objects, materials, and phenomena. Place is the nexus of quality. Children are place-oriented organisms; thus places, together with the pathways connecting them are the habitat systems of childhood. From a design point of view it is worthwhile to highlight the four major classes of place-making variables:

- Fixed features: Spaces and fixed objects.
- Loose parts: Objects and materials that can be manipulated or moved around. (Term first coined by Simon Nicholson, *1971).*
- Natural phenomena: The given natural dynamics.
- Populations: The surrounding communities (both human and non-human) which instill a pattern of social dynamics within the space, as a result of being attracted (incited) by resources and phenomena within it.

Most designed spaces, with the exception of adventure playgrounds, weigh heavily on the side of permanent fixed features rather than manipulable/interactive resources. Once a place has an equitable fixed/loose balance, the spectrum of play patterns broadens considerably *(Moore 1974 a).* Natural settings, again, do this most effectively.

Since most *institutional* arrangements for children fall far short of providing conducive social settings, kids are more inclined to find places for themselves in unofficial hidden-away corners. There are a multitude of potentially secret places, especially in older and lower-density areas. At higher densities, where space is more tightly organized, and also in newly built areas designed by so-called systematic, rational methods, the probability of finding or creating private nooks and crannies is negligible. Roger Hart, in a study of children's play patterns in Wilmington, Vermont, documented how children use unkempt, rough, overgrown spaces, rather than the highly manicured suburban landscape *(Hart 1974).*

The ubiquitous attraction of natural resources and their contribution to childhood quality are undeniable. The challenge for planning and design is to find ways of incorporating far more of these natural "found place" qualities into official public space. Here is a list of criteria, all of which can be applied to the utilization of natural resources in the planning and design of places for children:

Flexibility. A terrain that to a degree can be changed and moved around to generate new patterns of relationship.

Permanence. Elements that remain unchanging, to provide familiarity, security, and identity; e.g., large rocks, mature trees.

Change. A variety of elements that will indicate changes in season, climate, and life in the community.

Open-endedness. Situations that users can manipulate and build onto for their own reasons.

Manipulability. A choice of materials and objects that users can work with manually—sand, dirt, water, vegetation, and assorted objects.

Diversity and choice. A guiding principle that applies to everything: colors, smells, textures, shapes, sizes, sounds, objects, materials, interactions, people, climate, time, space, movement, change, and so on.

Ambient microclimate. Elements that protect users from excessive wind, rain, sun, shade, and noise. An environment that provides year-round comfort. Vegetation is invariably an effective modifier of climate, because it is so varied and therefore provides a greater range of climatic choice. It has a less cut-and-dried effect than manmade structures. Trees are hard to beat as shade elements; spreading deciduous species that shed their leaves to let the winter sun through are especially good.

Social interaction. A variety of places for different sizes of groups, to facilitate social and working relationships. Undoubtedly, natural settings are especially conducive to interaction.

Privacy. A choice of situations where individual users and groups can be left alone in peace—especially places where children can get away from adults and intrusive stimuli.

Safety. The complete avoidance of situations that could result in *serious* injury.

People-plant interaction. A spectrum of

places where users can make contact with the growing/living environment to varying degrees, depending on the amount of vegetative protection provided. They should range from limited-access fragile environments to open rough ground covered with the hardiest impact-resistant plants.

Wildlife habitats. The provision of shelter and food sources for small animal life—birds, insects and other organisms. Vegetation, rocks, logs, marshes, and ponds can support the modest scale of wildlife that children find attractive; e.g., beetles, salamanders, snails, sowbugs, ants, fish, shrimp, worms, caterpillars, tadpoles, ladybugs, butterflies, spiders, and so on.

People-made/nature mix. Children respond with greater imagination to the intimate fine-grained combination of people-made and objects and natural materials.

Indoor-outdoor relationships. A variety of juxtapositions between buildings and the outdoors, with transitions ranging from slow to abrupt. The use of intermediate spaces such as terraces, decks, verandas, and pagodas is recommended. Architecture and landscape should be articulated as varied interpenetrating systems; sometimes contrasted, sometimes ambiguous; always working together for the benefit of overall quality.

Scale, size, shape, enclosure, and continuity. These basic dimensions of spatial design must be varied, juxtaposed, contrasted, and orchestrated to produce a coherent whole encompassing a range of spatial experience. *Scale* refers to the relative size of something; *size* refers to the actual dimensions; *shape* refers to the geometrical characteristics; *enclosure* is the sense of being contained by space; and *continuity* means the ability to move through space from one point to another.

Intrinsically, natural resources provide a far greater range of scale of possible interaction than people-made environments, and present it more coherently. The range extends from the microcosmic collecting of grass seed, to climbing and playing in trees, to large-scale exploration. A more varied spatial and textural setting is achieved with vegetation, which has a complexity and subtlety beyond that possible using solely people-made elements.

Vegetated enclosures give a "boundary depth"—a less intimidating territorial ambiguity. The division of space by natural resources can produce an infinite variety of shapes. The result is a better social ecology, with more room for social maneuverability. This is a definite advantage to children. The precise boundaries produced by fences give an advantage to adults, making it possible to keep children more tightly controlled. A prime example is the school yard surrounded by chain-link fences.

Third dimension.—Think of spatial experience in all three dimensions. Children are particularly attracted to moving up and down, as well as through space. Consider the climability of all elements, including trees.

Explorability/experimentation.—This criterion is really the sum total of several others, but it is inserted to emphasize the overall effect of natural resources on child-environment interaction.

Affiliation/identity.—Many children seem to find natural environments more comfortable than people-made ones for social activity *(Moore and Wochiler 1974).* The higher the rate of use, the higher the sense of attachment. Natural objects that have a clearly differentiated identity, such as trees, large rocks, ponds, streams, etc., seem to produce a strong image in the mind of the user, judging from children's cognitive maps.

Continuity.—The importance of interconnectedness in the motor-related environment has been noted by several researchers and was verified in the Lenox-Camden Experiment *(Moore 1966).* Continuity is achieved by joining elements together so that "play circuits" can occur. Movement experience can be greatly improved by the incorporation of vegetative and other natural resources. A simple comparative example is the difference in feeling between a path that is a bland strip of asphalt and one where planting has been used to create sequences of texture, smell, light, shade, and color.

Access.—The basic need for access per se is not much affected by the presence of natural resources; but since access for children is normally via foot paths or bikeways, quality is increased by using topography and by following natural features such as creeks. In designing pathway systems one should bear in mind that the experience of the journey is as important as the arrival.

Also let me say that it makes no sense to

provide natural-resource areas for children unless they are readily accessible—an issue frequently not taken seriously enough in urban open-space planning.

Conservation.—A point to emphasize is that it is far easier to incorporate play into an existing natural scene than vice versa. The incorporation of natural resources into bland urban play areas is a management challenge at best. Better to conserve natural resources in the first place, by conscious planning.

Application.—These criteria can contribute to, but not produce, a design solution. Hopefully, they provide some systematic guidance; it is up to the designer's consciousness, imagination, and skill to create an environment that will embody high-quality human experience. Each site, community, and planning process is unique. This necessitates a wide margin of choice, interpretation, and combination of elements to fit many different circumstances.

Much depends on the designer's willingness to team up with the user-clients *(Nicholson and Schreiner 1973, Moore 1975).* Social science isn't going to. Under Schumacher's *(1973)* broadside, the myth of value-free science seems to have finally succumbed. It's time for those whose job it is to deal directly with the messy world to ignore the intimidations of social science and get on with their own high-utility systematic investigations—where it counts. For a solid base of empirical work is urgently required.

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PHOTO BY STEVE SWARTZ

"Children in cities can become adapted to almost anything—polluted air, treeless avenues, starless skies, aggressive behavior, and the rat race of overcompetitive societies" - Elwood L. Shafer

Research Needs for Programs That Provide Natural Environments for Children

by ELWOOD L. SHAFER, *Principal Recreation Research Scientist, USDA Forest Service, Washington, D. C.*

ABSTRACT. The major emphases of selected Symposium papers are underscored, and some personal thoughts are presented on how childrens' understanding of natural environments will eventually affect the quality of this Nation's environment. Special emphasis is given to research needs for insuring the establishment, protection, and management of natural environments for children in urban environments.

INTRODUCTION

INTERACTIONS among children, the natural environment, and where and how these children live are fundamental determinants of this Nation's quality of life. My objectives are to underscore the importance of natural environments for urban children, and to suggest research needs for community, city, state and Federal programs that provide those environments.

THE IMPORTANCE OF NATURAL ENVIRONMENTS

This area of research has high priority for several reasons: Today, about 75 percent of the Nation's children live in densely populated areas. In just a few short years, these same children will be using the democratic process to make decisions about environmental issues that are of major concern to this country and the world. If a large proportion of today's children are not aware of and do not appreciate how their lives depend on natural environments, how, as adults, will they be able to help make intelligent decisions about the use, management, or protection of air, water, soil, flora, and fauna—their basic life support systems?

Children in cities can become adapted to almost anything—polluted air, treeless avenues, starless skies, aggressive behavior, and the rat race of overcompetitive societies. But in one way or another, the child has to pay later for the adjustment he or she makes to undesirable conditions. (The cost includes, for example, increases in chronic diseases and decadence of human values.) Urban children are often inclined to take nature for granted, to accept it without curiosity or question. Children become aware of events and things only when they come close to them or when an event affects the child spiritually or physically and penetrates the consciousness as an out-of-the ordinary, significant experience.

Furthermore, the earlier a child experiences and values his natural environment—sees with awe the first spring flower, or responds to the alluring, magical promise of a wooded glen—the deeper and more enduring will be his faculty for perceiving and experiencing his relationship with and dependence upon nature.

But nature has been thrust so far out to the edge of modern life that many times children are obliged to live without it altogether. Furthermore, in our zest for helping—or pushing—our children up the ladder of success, we often neglect an important aspect of their growth: we often do not provide the en-

vironments that children need for the idle times of introspection, rumination, and fantasy that are vital to the development of a rich personality. I believe that nature can provide the backdrop not only for contemplative thought, but also for the healthy play and exercise that are so vital to their physical well-being.

To paraphrase Winston Churchill, "We shape our environments, and afterwards our environments shape us." By preserving, maintaining, developing, and protecting natural environments in urban areas for children to use for recreation, we can create a variety of conditions that call forth active and creative responses during a child's early years, responses that may be far more important for intellectual and emotional growth than economic factors or passive exposure to cultural artifacts.

Looking forward to the not-so-distant day when perhaps 9 out of 10 of the Nation's children will live in cities, we should pursue with all our vigor and imagination those ideas that mean for all of them and us a more healthful and worthwhile life. Natural environments where children can satisfy their longing for recreation, quiet, privacy, independence, initiative, and open space, are not frills or luxuries, but real biological necessities.

Furthermore, we face not only the problem of how to provide green space for urban children, but also how to bring about the degree of institutional change that such provision calls for. The answer is not "blowin' in the wind," nor will it come with the dawning of the Age of Aquarius. Indeed, if we rely on such panaceas, we will more likely experience the groaning than the greening of America for today's urban children. The developing tensions of our society cannot wait that long.

We must work with speed and competence to build into our institutional systems the possibilities for a fuller expression and expansion of the values of natural urban environments. Changing some of our old priorities and practices in urban development is a task for the tough-minded and competent. Those who come to it with the currently fashionable mixture of passion, poetry, and platitudes only add to the confusion.

RESEARCH NEEDS

A top priority challenge for management research is to devise ways to get large numbers of potentially delinquent urban youth (14 to 19 years old) involved in summer work programs that relate directly to natural environments—either in or near the city. Elements of the natural environment provide the overall framework in which such programs would operate, and something that youth can relate to in a meaningful, tangible way. The assumption here is that if we provide aesthetic natural environments where youth can do meaningful tasks, there will be the short-term benefit of a decrease in crime in the cities during the summer, and the long-term benefits of children's better understanding and respect for themselves and others. Granted, the assumptions are largely intuitive at this point. Feasibility studies are needed to determine the probable costs; the kinds and distributions of local, state, Federal, and private areas and facilities available or capable of being renovated; and the direct and indirect benefits that would likely accrue to society and to the individual participants. In other words, the research challenge is to devise a strategy, estimate the costs, and document the support systems that would be required to obtain specified benefits from large-scale summer work programs in natural environments for youth.

Another challenge is research related to the public policy issues that provide or don't provide adequate green space for children. A key problem is: How shall we organize, control, and coordinate public and private policies for the development of green space for urban children so as to provide maximum opportunities at least cost? Or to phrase the question another way: What kind of quasi-public structure would best meet the needs for effective use of green space for children?

Next, what equitable and effective kinds of taxation and zoning would best support an urban land-use policy that would provide adequate natural environments for urban children?

Another research question: What means of public involvement work best in developing green space for urban children?

In what areas is compromise most acceptable in conflicts between the use of natural environments for children versus other social needs?

How can urban children's needs for green space be integrated with other urban land-use goals?

As you can see from this brief but somewhat comprehensive list of research questions that evolved from the sessions I attended, the related research tasks seem monumental and extremely challenging. No one said, however, that the research required for programs to provide natural environments for children was going to be easy. This symposium has laid the foundation for beginning the needed research. To complete the task, we need to heed the advice of Mother Scott (an 83-years-young blues singer and Washington Grey Panther who performed during one of the sessions), "No matter how tough the problem, be the labor large or small, if a task is once begun, keep on goin'."

PHOTO BY WALT BLAIR

"Environmental education programs for children are often based on what we think adults need to know. This is a worthy goal; however, the approach to attaining it must be tailored to the child's changing level of comprehension" - George H. Moeller

Research Priorities in Environmental Education

by GEORGE H. MOELLER, *Program Coordinator, Pinchot Institute of Environmental Forestry Research, USDA Forest Service, Northeastern Forest Experiment Station.*

ABSTRACT. Although natural processes operate in urban areas, they are difficult to observe. Much discussion during the symposium-fair was devoted to finding ways to improve urban children's environmental understanding through environmental education programs. But before effective environmental education programs can be developed, research is needed to: test the effectiveness of various approaches to teaching environmental education in relation to differences among children; help define testable program goals that relate to a child's level of comprehension; develop better methods of training teachers and administering environmental education programs; and identify ways to use elements found in the urban environment to foster an understanding of environmental concepts.

ONCE UPON A TIME, not so very long ago, the relatively undisturbed natural environment lay at the doorstep of the "urban" resident. To experience nature, all that was required was to stand on ones toes and peak over a stone fence, hedge, or city gate. By necessity, an understanding of natural processes was an integral part of life. Little had to be done to formally "educate" the maturing child about his place in the natural world. Very often survival depended on how well "environmental education" lessons were learned.

The urban resident of today, even after climbing to the top of the highest skyscraper, may get only a fleeting glimpse of nature. The same natural processes are still operating all around him but they are harder to see because they are less dramatic and their effects less immediate. The contemporary urban resident has become increasingly divorced from the natural framework of trees, forests, fields, and natural processes that were an integral part of the developmental environment of earlier generations. The effects that this separation from nature may have on todays urban children, in terms of their psychological development, self-concept, and preparation for responsible citizenship, are not known.

The trend toward increasing urbanization cannot be reversed. But as demonstrated during sessions of this symposium-fair, a great deal can be done to foster the urban child's understanding of natural processes. These processes still operate in cities, but they are much less obvious than in years past. We can no longer expect children to understand their place in the natural world intuitively, without assistance.

Because of the trend toward separation from natural processes, some kind of environmental education has become a basic need for the urban child. Without background knowledge and understanding of the natural world, and a concept of their place in that world, urban children will not be prepared to make the complex environmental decisions that they will be forced to make as responsible adults. Environmental education should not be treated as a luxury in modern education systems. Environmental education is vital to man's ultimate survival as well as to maintaining and improving the present-day quality of life *(Pullias 1968).* It is of utmost importance that environmental educa-

tion programs be carried out universally and that they be carried out properly.

The introduction of environmental education programs into the Nation's schools is progressing at an unsteady rate. According to a recent report of the National Center for Educational Statistics, United States Office of Education, "18 percent of the 23.9 million elementary school pupils, and 9 percent of 17.2 million secondary school pupils" were enrolled in environmental courses in 1970 *(Science, Mathematics, and Environmental Information Center* 1972). Most environmental education programs were in suburban and rural school systems. In a study conducted by the National Education Association *(1970),* only 11 percent of the Nation's schools with enrollments of 1000 or more (schools that account for 90 percent of all public school pupils) were found to carry out environmental education programs that met the National Education Association's criteria. While a few areas of the country have excellent records of achievement in developing environmental education curricula, most have had no central leadership or coordinated effort. Environmental education programs are most often the result of one teacher's awareness, enthusiasm, and dedication.

This lack of support is indeed sad. It is extremely important that environmental education programs be universally introduced in the Nation's public schools—particularly in urban schools. The favorable environmental attitudes that result from such programs would help people make the wide range of environmental decisions they face in everyday life, but the greatest benefit might be realized at the polls *(Schoenfield 1971).* Just as every citizen is affected by environmental degradation, all have the opportunity to take part in the national decision-making process through their votes. Efforts of government agencies, private enterprise, and conservation groups cannot succeed in achieving and maintaining a wholesome environment without the firm support and understanding of the citizenry *(Conservation Foundation 1963).* As a National Audubon Society report *(1967)* so well expressed it, "People will not safeguard what they do not know, let alone what they do not understand. They will not protect or treat kindly what they do not appreciate".

During the past 2 days it has been my pleasure to listen to 34 speakers—educators, practitioners, and theoreticians—who shared their experience and knowledge about the development of environmental education programs. The active participation of Washington, D.C., elementary school children added a sense of reality to these discussion sessions. Topics ranged from the relationship between nature appreciation and child development to practical techniques for introducing children to environmental concepts. I will attempt to summarize what I perceived as some of the major problem areas for environmental education research that were suggested during the discussion sessions. I must, however, caution that what follows is only a partial listing. Continual evaluation and much more input are needed if we are to organize a research package on which to base the design of comprehensive environmental education programs.

In her remarks at the first session of this symposium-fair, Margaret Mead stated, "We don't know what children do at different stages. The child as a universal concept is largely a myth". She argued that the needs of children vary—across cultures, regionally, between urban, suburban, and rural areas, and even from neighborhood to neighborhood. Although these differences are recognized, we tend to develop standardized approaches to teaching about the environment. Research should be done to evaluate the effectiveness of various approaches to teaching environmental education in relation to sociocultural and regional differences among children.

Environmental education programs for children are often based on what we think adults need to know. This is a worthy goal; however, the approach to attaining it must be tailored to the child's changing level of comprehension. As pointed out during the symposium-fair, an adult philosophy cannot easily be reconciled with that of a child. In most sciences we have a pretty good idea about what needs to be known and how to measure learning progress quantitatively . But a child's progress in understanding environmental concepts cannot easily be measured because goals are stated in adult terms and we do not have precise measuring devices. A child may be taught to differentiate different kinds of tree leaves, but we must ask ourselves if this achievement represents a successful environmental educa-

tion effort. Environmental education involves more than the transfer of knowledge—it involves the child's comprehension of his place in the natural world around him. If environmental education is to achieve an adult goal, it is necessary to break down this goal into subgoals that correlate with the child's level of comprehension. Research should be undertaken to help define these goals.

First, however, the goals of environmental education need to be operationally defined. Unless this is done, it will be impossible to evaluate the progress of an environmental education effort. Part of an operational goal definition for environmental education needs to be knowledge transfer. But, as pointed out in the previous paragraph, knowledge acquisition does not necessarily bring greater environmental understanding. A more desirable goal of environmental education is to foster favorable environmental attitudes—a longer lasting dimension of personality. Once goals have been operationally defined, research can develop methods of measuring change in environmental attitudes that result from exposure to environmental education.

Teaching about the environment is a relatively new undertaking. The environmental educator should have a background in biological and social sciences as well as in the philosophy of education. Educational programs to provide this background are now just being organized. Although there is great enthusiasm for teaching environmental education, little is known about the combination of talents needed to teach it effectively. When research has identified these talents, it can help design programs for educating the environmental educator. Basic research is also needed to study the process of environmental education—who should teach it, how should it be taught, and what materials and methods are best to foster an understanding of environmental concepts.

A related issue is that little agreement has been reached on whether environmental education should be taught as a distinct subject or whether all teaching should be done environmentally. Although this question has no absolute answer, research into the process of environmental information exchange would help to identify consequences of alternative approaches to teaching environmental concepts.

The administrative organization of systems for exchanging environmental information also needs research. For example, what are the roles of nature centers, schools, and other supportive institutional services (libraries, television, periodicals, the greater "community", etc.) in an integrated environmental education program? A symbiotic relationship may develop among these institutions that will lead to a more efficient environmental information exchange system. A related research problem is the need to determine how environmental education programs can best be incorporated into existing educational systems.

How should environmental education be taught? The materials available for teaching environmental educaton vary widely, as do instructional techniques among educators. Yet little research has been done to determine the informational needs of environmental educators in different institutional and geographic settings. During these sessions, many innovative approaches to teaching environmental education have been discussed. Very few of these have had their influence on children's environmental attitudes quantitatively evaluated. Basic research is, therefore, needed to identify the educational techniques that are most effective in influencing children's environmental attitudes.

Research is needed to find out how children grasp environmental concepts. This research must take into consideration the children's different conceptual abilities at different ages, their past and present experiences, and their home and surrounding environments. Particular emphasis should be placed on developing programs in relation to children's ability to conceptualize and grasp environmental concepts.

The preceding discussion of research needs relates generally to all environmental education efforts. The special circumstances that confront environmental educators in urban areas—lack of opportunity to experience nature, lack of incentive to do so, etc.—require that some research be conducted specifically within urban areas. Even though the modern city masks and dominates nature it still offers many opportunities for environmental education. Research can help to identify these opportunities. We often try to transpose urban children from their home environments to the country, hoping that the exposure to nature will change their attitudes when they return home. This practice is

based on the assumption that if we can get children to the country, they will somehow assimilate all of the values of nature. Urban children spend most of their lives in the city, and most will remain there for their entire lives. Therefore, the city is the best place to teach them environmental concepts. For example, what better place is there than the city to study water and air pollution? Research can help to identify and catalog opportunities for environmental education in urban settings. Where appropriate teaching materials cannot be found, reasonable substitutes can be located. Research can help to identify materials in urban areas that could be used to teach the environmental processes that are now taught only in rural settings.

A critique of research needs in environmental education would not be complete without mention of the difficulties involved. Existing research tools will have to be adapted and new tools developed. New experimental designs will have to be invented and tested. Research techniques for studying children's attitudes will have to be refined. The administrative problems often encountered in conducting research in highly structured institutions such as the public schools will have to be overcome. The cooperation and support of school administrators is absolutely necessary for success of an environmental education research effort.

I have outlined just a few of the major research needs that were suggested during the environmental education sessions at this symposium-fair. The list is far from complete. But if research attention can be devoted to at least a few of the problem areas defined here, environmental education will be much closer to accomplishing the goals set forth by Caldwell *(1970)*:

> "To improve the human environment, both men and politics must be improved. Men make politics; political institutions influence human behavior; but behavior is also influenced by attitudes, beliefs, and values. Purposeful shaping of the environment involves the purposeful shaping of outlooks on life. The quality of the future environment depends, therefore, upon the shaping of attitudes, beliefs, and values through present education".

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APPENDIX A
SYMPOSIUM-FAIR PROGRAM

MONDAY, MAY 19

5:00 - 6:00 P.M. **RECEPTION**

Background music by JESSE PESSOA, Brazilian harpist.

6:00 - 7:30 P.M. **WELCOME DINNER**

7:30 - 7:45 P.M. **GREETINGS!**

Toastmaster: E. L. SHAFER, USDA Forest Service. RODNEY TILLMAN, Dean, School of Education, The George Washington University. ROGER LOCANDRO, Dean, Cook College, Rutgers University. WILLIAM H. SMITH, President, Consortium for Environmental Forestry Studies, Pinchot Institute. REXFORD A. RESLER, Associate Chief, USDA Forest Service.

8 - 9:30 P.M. **EVENING EVENT**
Opening Talk: MARY CONWAY KOHLER, Director, National Commission on Resources for Youth.

"The Weeds Asserting Themselves"—KATHLEEN SPIVACK. Poets and children look at the natural environment.

TUESDAY, MAY 20

9 A.M. - 5:00 P.M. *The Value of Natural Environments in Human Development*
Coordinators: ROGER HART AND MAYER SPIVACK
The day's discussions began with personal reflections on early childhood. Two papers were discussed by a panel constituted to assist in generating discussion.

9:00 - 9:45 A.M. "Early Childhood Playscapes from Memory" — introduced by FLORENCE LADD.

9:45 - 10:30 A.M. "Experience and Appreciation" — YI-FU TUAN.

10:30 - 12:00 Noon *Panel Discussion*
ALAN GUSSOW, Friends of the Earth, Congers, New York.
ROGER HART, Environmental Psychology Program, City University of New York, Graduate Center.
FLORENCE LADD, environmental psychologist, Harvard University.
KARL LINN, landscape architect and psychologist, Louisville, Kentucky.
MARGARET MEAD, cultural anthropologist, American Museum of Natural History, New York.
HAROLD SEARLES, M.D., psychoanalyst, Washington, D.C.
PAUL SHEPARD, teacher and writer, Pitzer College, Claremont, California.
MAYER SPIVACK, Director of Environmental Design and Analysis Unit, Laboratory of Community Psychiatry, Harvard Medical School.
YI-FU TUAN, Department of Geography, University of Minnesota, Minneapolis.

1:30 - 2:00 P.M. "The Role of Place in Human Development"—PAUL SHEPARD.

2:00 - 5:00 P.M. *Panel Discussion*

8:00 - 10:30 P.M. *Film Presentation and Discussion*
"Myth of Naro", "Bitter Melons", and other sequences filmed by TIMOTHY ASH and JOHN MARSHALL, Documentary Educational Resources, Center for Documentary Anthropology, Sommerville, Massachusetts.

WEDNESDAY, MAY 21 *DAY'S OVERVIEW*

9:00 - 12:00 Noon FOUR PARALLEL DISCUSSION SESSIONS
I. Theory and Research
II. Education
III. Community Approaches
IV. Children's Design and Planning

12:00 Noon - 2:30 P.M. PICNIC LUNCH at Mt. Vernon College.

A participatory recreation program was offered by New Games Foundation, San Francisco, California.

2:30 - 5:00 P.M. FOUR PARALLEL DISCUSSION SESSIONS (Continued)

8:00 - 9:30 P.M. EVENING PROGRAM

"Being Present", an evening with PETER CHERMAYEFF, architect, and JANE CHERMAYEFF, painter, co-producers of *Elephant, Lion, Zebra, Cheetah,* and *Giraffe* films. Musical "Jam Session" by volunteers, coordinated by RAY LORENZO.

I. THEORY AND RESEARCH ON CHILDREN AND THE NATURAL ENVIRONMENT

Overall Coordinator: RUTH HAMILTON ALLEN

9:00 - 9:30 A.M. "Children's Conception of the Natural World", Introduction to an ongoing workshop. ELEANOR DUCKWORTH, the Atlantic Institute, Halifax, N.S., Canada.

9:30 11:00 A.M. *Teenagers and the Natural Environment: Challenge and Tranquility*
Coordinator: RACHEL KAPLAN

Research on the effects of summer outdoor programs and the psychological values of wilderness experience.

"An Outdoor Challenge Program as a Means of Enhancing Mental Health"—ROBERT A. HANSON, Community Mental Health Center for Alger and Marquette Counties, Marquette, Michigan.

"Summer Outdoor Programs: Their Participants and Their Effects"—RACHEL KAPLAN, Department of Psychology, University of Michigan, Ann Arbor.

"Tranquility and Challenge in the Natural Environment"—STEPHEN KAPLAN, Department of Psychology, University of Michigan, Ann Arbor.

11:00 - 12:00 Noon — *Research with Urban Youth*
Coordinator: RUTH HAMILTON ALLEN

"City Kids in the Absence of . . . "—FLORENCE LADD, Department of City Planning, Harvard University.

"Urban Youth in Natural Environments: A Field Study of Social Ecology, Behavior, and Social Networks in Six Camping and Conservation Programs"—RUTH HAMILTON ALLEN, Council of Governments, Washington, D.C.

2:30 - 3:30 P.M. — "WILD: Wilderness Incentive Learning Development Project"—JOHN PARTINGTON, Assistant Professor, Department of Psychology, Carlton University, Ottawa, Ontario, Canada.

3:30 - 5:00 P.M. — *Experiencing Nature*
Coordinator: DAVID SEAMON

"Revering Natures 'Unassuming Things': Wordsworth's and Goethe's Experience of the Natural World—Implications for Modern Men and Women"—DAVID SEAMON, Clark University, Worcester, Massachusetts.

"The Value of Natural Settings in Self-Environment Mergence"—NATALIA KRAWETZ, Environmental Psychology Program, City University of New York.

Commentary by:
EMILIE O'MARA, Environmental Psychology Program, City University of New York, Graduate Center.
YI-FU TUAN, Department of Geography, University of Minnesota.

II. *EDUCATION*

Overall Coordinator: BEVERLY DRIVER

9:00 - 11:00 A.M. — *Possibilities and Challenges of Environmental Education for Urban Children and Youth*
Coordinator: BEVERLY DRIVER, Rocky Mountain Forest and Range Experiment Station, USDA Forest Service, Fort Collins, Colorado.

"Possibilities and Challenges of Environmental Education for Inner-City Children"—RONALD GREENWALD, Environmental Education, USDA Forest Service, Washington, D.C. and ERNEST MACDONALD, Environmental Education, Pacific Northwest Region, USDA Forest Service, Portland, Oregon.

"Integrating Environmental Education into Urban Kindergarten through Twelfth Grade Curricula"—PAUL NOVAK, Environmental Education Program, University of Michigan, Ann Arbor.

"Review, Critique, and Synthesis"—PAUL YAMBERT, Department of Forestry, Southern Illinois University, Carbondale, Illinois.

11:00 - 12:00 Noon — *Innovative Public School Approaches*
Coordinator: BEVERLY DRIVER

"Field Trips for Urban Children"—MARION CARPENTER and CAROL ROBBINS, Wave Hill Center for Environmental Studies, Bronx, New York.

"Urban, Suburban, and Rural Children Explore Local Communities"—CASEY MURROW, Environmental Studies Coordinator, Deerfield Valley Elementary School, Wilmington, Vermont.

"A Child Shall Lead Them: The First Urban Soil Survey"—ERNEST L. MOODY and HORACE SMITH, USDA Soil Conservation Service, Washington, D.C.

2:30 - 3:30 P.M. "Gardening in the Public Schools"—PETER WOTOWEIC, Supervisor, Horticultural Education, Cleveland, Ohio, Public Schools.

"Encounters with Ecology on the School Grounds of the District of Columbia Public Schools"—SYLVIA K. SHUGRUE, Coordinator, Beautification and Ecology Program, Washington, D.C. Public Schools, and WILLIAM T. WEBB, JR., Communications and Community Relations, Washington, D.C., Public Schools.

3:15 - 4:45 P.M. *Natural Science Centers: A Critical Assessment*
Coordinator: JOHN RIPLEY FORBES, Natural Science Center for Youth Foundation, New Canaan, Connecticut.

A Panel Discussion and critical assessment of children's natural science centers, children's sections of natural history museums, and community nature centers.

CATHERINE PESSINO, The Natural Science Center, American Museum of Natural History, New York City.

ECKLEY MACKLIN, Program Coordinator, West Rock Nature Recreation Center, New Haven, Connecticut.

SALLY MIDDLEBROOKS, "The Nature Shop", Boys Club of New York, Harlem, New York.

FLETCHER A. SMITH, Program Manager, Outreach Services, Anacostia Neighborhood Museum, Smithsonian Institution, Washington, D.C.

4:45 - 6:00 P.M. *Teacher Materials Development*
Coordinator: DAVID HOUSTON

"The Wonders of Nature"—EDWARD SHARON, State and Private Forestry, USDA Forest Service, Albuquerque, New Mexico.

"The Game of the Environment: An Illustrative Approach to Teaching Environmental Relationships"—DAVID R. HOUSTON, Northeastern Forest Experiment Station, USDA Forest Service, Hamden, Connecticut.

"Measuring Environmental Attitudes of Elementary School Students"—JOHN C. BENJAMIN, National Park Service, GEORGE H. MOELLER, Northeastern Forest Experiment Station, USDA Forest Service, and DOUGLAS A. MORRISON, SUNY College of Environmental Science and Forestry at Syracuse University.

III. *COMMUNITY APPROACHES TO ENVIRONMENTAL QUALITY FOR CHILDREN*

9:00 - 10:30 A.M. *Adult's Views of Urban Children's Environments*
Coordinator: LOIS MARK STALVEY

"Children's Health in Urbania"—L. RIDDICK LYNCH, Department of Health Sciences, Jersey City State College, Jersey City, New Jersey.

"The Urban Child: Getting Ready for Failure"—LOIS MARK STALVEY, Philadelphia, Pennsylvania.

"Encouraging Teachers to Understand the Neighborhood Environment of their Children"—ELLEN JACOBS, Preschool Education, Sir George Williams Campus of Concordia University, Montreal, Canada.

10:30 - 12:00 Noon *Washington, D.C., Teenagers Views of their Natural Environment*
Coordinator: A. LAVERNE DICKERSON

Teenagers from the Washington, D.C., High schools (under the auspices of the YMCA) presented a video tape of their perceptions of their environment as a stimulus for discussion.

"Growing Along with Your Environment"—STUART DENNISTON, BERNARD SPRIGGS, and CARLOS REYES, Washington, D.C.

"Cityscape"—JOSEPH MASSENBERG, JR., MARIKO MOORE-KAWAGUCHI, and ROXANNE DOYE, Western High School, Washington, D.C.

2:30 - 5:00 P.M. *Children's Urban Gardens: A Tool for Environmental Enlightenment*
Coordinator: CHARLES LEWIS

"People-Plant Interaction Program of the American Horticultural Society"—CHARLES LEWIS, Horticulturalist, Morton Arboretum, Lisle, Illinois.

"Vegetable Gardens: A Tool for Environmental Education"—BARBARA SHALUCHA, Director, Hilltop Garden Program, Department of Botany, University of Indiana.

"Gardening with Children in the Inner City"—VIRGINIA BEATTY, Urban Specialist, Chicago Horticultural Society, Chicago, Illinois.

"Washington Youth Gardens"—WILLIAM C. HASH, Director, Washington Youth Gardens Program, Department of Recreation, Washington, D.C.

IV. *CHILDREN'S ENVIRONMENTAL RESOURCES AND THE ROLE OF DESIGN AND PLANNING*
Overall Coordinator: ROBIN MOORE

9:00 - 10:00 A.M. "Children's Imagination, Play, and Games"—BRIAN SUTTON-SMITH, Developmental Psychology Program, Teachers College, Columbia University.

10:00 - 10:30 A.M. *Introduction to the Child-Designed "Our City" Walking Tour*

Children of STEVENS ELEMENTARY SCHOOL, with SIMON NICHOLSON, The Open University, Oxford, England, MARK FRANCIS, RAY LORENZO, and ROGER HART.

10:30 A.M. - 4:00 P.M. *Children's Environmental Resources in Urban, Suburban, or Rural Settings*

Coordinator: ROGER HART

"Preadolescent's Access to and Use of the City's Resources"—STEPHEN CARR, Arrow Street, Inc., Cambridge, Massachusetts.

"The Use of Natural Elements by City Children: A Case Study in Participatory Research"—MARK FRANCIS and RAYMOND LORENZO, Urban Design Program and Department of City Planning, Graduate School of Design, Harvard University.

"Children's Environmental Resources in New York City"—ALAN SOMMERMAN, GWEN HAMLIN, and FRED WHEELER, Environmental Psychology Program, Graduate Center, City University of New York.

"Children's Use of the Environment in Baltimore"—PENNY WILLIAMSON, Baltimore City Planning Department.

"Children's Outdoor Activities in a Suburban Residential Setting"—JIM AIELLO, Department of Geography, Syracuse University.

"Children's Environmental Resources in a Small New England Town"—ROGER HART, Environmental Psychology Program, Graduate Center, City University of New York.

4:00 - 5:00 P.M. *Making Things and Places in Natural Spaces*

"Green Fun"—MARYANNE GJERSVIK, artist, photographer, and author, Riverside, Connecticut.

"Children's Buildings in a New England Village"—ROGER HART, Environmental Psychology Program, Graduate Center, City University of New York.

"Children's Sand Buildings"—PAT LOHEED, Girl Scouts of the United States of America, Boston, Massachusetts.

THURSDAY, MAY 22 *DAY'S OVERVIEW*

9:00 - 12:00 Noon FOUR PARALLEL DISCUSSION SESSIONS
I. Theory and Research
II. Education
III. Community Approaches
IV. Children's Design and Planning

1:30 - 6:00 P.M. FOUR PARALLEL DISCUSSION SESSIONS (Continued)

8:00 - 10:00 P.M. RECEPTION (Including oldtime country dancing with fiddles, banjos, flutes, and dulcimers, staged by CLAIR REININGER. JESSE PESSOA, harpist, played on the Terrance from 8:00 to 9:30 P.M.

I. *THEORY AND RESEARCH ON CHILDREN AND THE NATURAL ENVIRONMENT*

Overall Coordinator: RUTH HAMILTON ALLEN

9:00 A.M. - 12:00 Noon — *Children's Perceptions of the Natural World*

Coordinator: BEVERLY DRIVER

"Perceptual Bases of Outdoor Recreation Choice by Teenagers: Relationships Between Cultural and Environmental Attributes"—GEORGE PETERSON, Department of Civil Engineering, Technological Institute, Northwestern University, Evanston, Illinois.

"Urban Children's Innate Capacity, Not Ability, to Respond to Natural Environments"—BEVERLY DRIVER, USDA Forest Service, Fort Collins, Colorado, and PETER K. GREENE, Recreation Resources, Colorado State University.

"Seeing is Being"—PHILIP R. MERRIFIELD, Department of Educational Psychology, New York University.

"Urban and Rural Children's Perceptions of the Environment"—BRIAVEL HOLCOMB, Department of Geography, Rutgers University.

"Use and Perception of the Environment: Cultural Developmental Processes"—MARTIN CHEMERS and IRVING ALTMAN, Department of Psychology, University of Utah.

1:30 - 3:00 P.M. — *Research Methods for Observing Children in Natural Environments*

Coordinator: RUTH HAMILTON ALLEN

"Observational Methods for Child-Behavior Study"—BILL M. SEAY, Department of Psychology, Louisiana State University.

"Observations in Public Settings"—ROBERT G. LEE, Department of Forestry and Conservation, University of California.

Commentary: ANNE ROBERTSON, Department of Psychology, The Child Study Center, Yale University.

3:00 - 4:45 P.M. — *Nature and Children's Media*

Coordinator: THOMAS MORE

"Attitudes to Woods and Forests Carried in Children's Books"—GWEN HAMLIN and NANCY DUNCAN, Environmental Psychology Program, City University of New York, and the Department of Geography, Syracuse University.

"Attitudes toward Wildlife in Children's Literature"—THOMAS MORE, NEFES, USDA Forest Service, Amherst, Massachusetts.

"City and Country in Children's Books"—LEONARD MARCUS, Editor, Dover Books, New York.

"The Treatment of the Natural World in Popular Children's TV"—YONA NELSON-SHULMAN, SHEREE WEST, and GWEN HAMLIN, Environmental Psychology Program, Graduate Center City University of New York.

4:45 - 5:45 P.M. — *Research Priorities: Reflections and Summations*

II. *EDUCATION*

Overall Coordinator: BEVERLY DRIVER

9:00 - 10:00 A.M. *Changing Philosophies and Attitudes to the Role of Outdoor Environment in Child Education and Development*

Placing contemporary developments in context. From the classical European writings through the American Transcendentalists to the 1970's revival and beyond.

Coordinator: CALVIN W. STILLMAN, Department of Environmental Resources, Cook College, Rutgers University.

"Rudolf Steiner"—JIM PEWTHERER, Rudolf Steiner Farm School, Harlemville, New York.

"Frederich Froebel"—ROGER HART, Environmental Psychology Program, Graduate Center, City University of New York.

Commentary: NEIL JORGENSEN, Wheelock College, Boston, Massachusetts.

10:00 - 10:45 A.M. *The Tip of the Iceberg*

How to establish a pilot program in environmental education at the early childhood level, where it is really most important. Multimedia presentation. ROBERT LEWIS, Wildwood School, Aspen, Colorado.

10:45 - 11:15 A.M. *Environmental Education is Fun*

HAROLD STUFFT, Principal, and students, parents, and teachers of the William Tyler Page Elementary School, Silver Spring, Maryland.

11:15 - 12:00 Noon *Developing Curriculum Materials with Teachers*

CLIFFORD ANASTASIOU, Director, Vancouver Environmental Education Project, Vancouver, British Columbia.

1:30 - 3:00 P.M. *Living and Working Experiences for Urban Children*

JIM PEWTHERER, Rudolf Steiner Farm School, Harlemville, New York.

LAWRENCE MICKOLIC, Fresh Air Fund, New York.

ELIZABETH BARKSDALE and ERNIE BELL, Camping Program, Department of Recreation, Washington, D. C.

FRANK PRIDEMORE, Superintendent, Cotoctan Mountain Park, National Park Service, Thurmont, Maryland.

LEON J. FISHKIN, "Johnny Horizon Program," National Park Service, Washington, D. C.

3:00 - 5:00 P.M. *Living and Working Experiences for Urban Teenagers*
Coordinator: A. LAVERNE DICKERSON

"Team-Building Among Children: Confronting Passive Behavior Through Outdoor Experience" —FREDERICK W. MEDRICK, Director, Rocky Mountain Center for Experiential Learning, Denver, Colorado.

"The Youth Conservation Corps (YCC) and the Natural Environment"—A. LAVERNE DICKERSON, NEFES, USDA Forest Service, Washington, D. C.

"Green is for Growing"—MARY RHOMBERG, Girl Scouts Council of the Nation's Capital, Washington, D. C.

"Creating Change"—NICK PAWLEY, Outdoor Learning Center, Inc., Ottawa, Ontario, Canada.

5:00 - 5:45 P.M. *Educational Priorities: Reflections and Summations*

III. *COMMUNITY APPROACHES TO ENVIRONMENTAL QUALITY FOR CHILDREN*

9:00 - 10:30 A.M. *European Approaches to Environmental Education in the City*

A report on changes in environment education, particularly community-based activities in the United Kingdom.

ANTHONY FYSON, Co-editor, BEE (Bulletin for Environmental Education), Town and Country Planning Association, London, England.

10:30 - 12:00 Noon *Teenager Participation in Changing the Urban Environment*
Coordinator: MARY CONWAY KOHLER, The National Commission on Resources for Youth, New York.

Groups of high school students and their advisors from six environmental projects from the New York and Washington, D. C. metropolitan areas presented their projects, which represented a wide variety of urban community activities. The projects ranged from producing a magazine dedicated to the local urban history and culture, to using a retired lightship as a base for monitoring the marine environment, to teaching ecology to visiting school children and the public. This presentation provided an opportunity to exchange ideas with the target group of this conference—youth.

1:30 - 2:15 P.M. *Children as Working Partners in a Self-Reliant Urban Neighborhood*

A discussion of the integration of learning, play, and work in the production of food, energy, and "good" goods.

DAVID MORRIS and NEIL SELDMAN, Institute for Local Self-Reliance, Washington, D. C.

2:15 - 3:00 P.M. *Science as Part of the Everyday Life of Children in the City*

KARL HESS, Community Technology Warehouse, Washington, D. C.

3:00 - 4:30 P.M. *Community/School Approaches to Environmental Action*

NANCY WOLF, Environmental Action Coalition, New York.

Communities and Schools Working with Children to Build Environments

TONY SHARKEY and SHARON HAYMAN, Creative Teaching Workshop, New York.

4:30 - 6:00 P.M. *Community Priorities: Reflections and Summations*

Discussion led by DONALD KLEIN

IV. *CHILDREN'S ENVIRONMENTAL RESOURCES: THE ROLE OF DESIGN AND PLANNING*

9:00 A.M. - 12 Noon *Natural Spaces in Cities: The Role of City Planning and Design*
Coordinator: ROBIN MOORE

"International Approaches"—POLLY HILL, advisor on Children's Environments to the Canadian Central Mortgage and Housing Authority, Vice-President of the International Playgrounds Association, Ottawa, Ontario, Canada.

"Changing School Yards: A Vehicle for Environmental Education" - ROBIN MOORE, Department of Landscape Architecture, University of California, Berkeley.

"The Potential of Abandoned Lots and Other City No Places"—JAN SCHWARZ, Brooklyn, New York.

"How Some City Playgrounds Work, or Don't Work, and Why"—NANCY LINDAY, Street Life Project, New York.

"Working with Community Resources to Change Children's Environments"— STEEN ESBENSEN, Office for Children, Boston, Massachusetts.

Panel Discussion: FLORENCE LADD, MARK FRANCIS, RAY LORENZO and DAVID RAPHAEL, Graduate School of Design, Harvard University, and IRENE CHOKO and ANNE-MARIE POLLOWY, Ecole d'Architecture, Universite' de Montre'al.

1:30 - 3:00 P.M. *Providing Recreation Opportunities Within Cities*
Coordinator: RUTH HAMILTON ALLEN

"The Value of Zoos"—NEIL CHEEK, Texas A & M University.

"The Value of Washington's Parks"—BART TRUSDALE, Education Program, U. S. Department of the Interior, Washington, D. C.

"Large City Public Recreation Green Space in the U.S.A."—WILLIAM HARTWIG, MICHAEL FOSTER, and A. LAVERNE DICKERSON, Department of Human Kinetics and Leisure Studies, George Washington University, and NEFES, USDA Forest Service, Washington, D. C.

3:00 - 5:00 P.M. *Natural Spaces in Cities: Priorities, Reflections, and Summations*
Discussion led by LYNNE GAY, Cambridge, Massachusetts.

FRIDAY, MAY 23 *IMPACT SESSIONS*

9:00 - 10:00 A.M. I. *Nature and the City: Implications for Handicapped Children*

A panel with expertise on the special problems facing handicapped children reviewed the discussions of the previous 3 days and debated their implications for handicapped children.

ROBERT CIPRIANO and DONALD E. HAWKINS, Department of Human Kinetics and Leisure Studies, the George Washington University.

DENNIS A. VINTON, Department of Health, Physical Education, and Recreation, University of Kentucky.

10:00 - 11:00 A.M. II. *Research Priorities*

Social and behavioral scientists reviewed the proceedings of the Symposium-Fair and suggested new research priorities.

WILLIAM BURCH, Forest Sociology, School of Forestry and Environmental Studies, Yale University (Theory and Research)

ELWOOD L. SHAFER, Forest Environmental Research, USDA Forest Service, Washington, D. C. (Community Approaches).

EDWARD STONE, Landscape Architect, USDA Forest Service, Washington, D. C. (Design and Planning).

GEORGE H. MOELLER, NEFES, USDA Forest Service, Upper Darby, Pennsylvania (Education).

11:00 A.M. - 12 Noon III. *Desired Change and Strategies for Change - Education*

Implications of the conference for changes in education practices.

11:00 - 12 Noon (Cont.) A. LAVERNE DICKERSON, NEFES, USDA Forest Service, Washington, D. C.

ANTHONY FYSON, Co-editor, BEE (Bulletin for Environmental Education), London, England.

12 NOON - 1:00 P.M. IV. *Desired Change and Strategies for Change - Environmental Design and Planning*

POLLY HILL, Advisor on Children's Environments to the Canadian Central Mortgage and Housing Authority, Vice-President of the International Playgrounds Association, Otawa, Ontario, Canada.

POLLY HILL led a discussion of the previous 2 days' perspectives on children's environmental resources in different types of environments and various innovations in design and planning with children.

ONGOING WORKSHOPS AND FIELD TRIPS

WEDNESDAY AND THURSDAY, MAY 21 and 22

Coordinator: ALAN KNIGHT, Biospheres, Boston, Massachusetts

"The Development of the Child's Conceptions of the Natural World - The Work of Jean Piaget and collaborators"—ELEANOR DUCKWORTH, The Atlantic Institute, Halifax, N. S., Canada.

"Innovative Approaches for Increasing Environmental Awareness"—STEVE VAN MATRE. Department of Leisure and Environmental Studies, George Williams College, Downere Grove, Illinois, and PAUL YAMBERT, Department of Forestry, Southern Illinois University.

"Environmental Autobiography and Environmental Experience Workshops"—KENNETH HELPHAND, Department of Landscape Architecture, University of Oregon, and DAVID SEAMON, Department of Geography, Clark University.

"City Nature Field Walks"—MARION CARPENTER and CAROL ROBBINS, Wave Hill Center for Environmental Studies, Bronx, New York.

"Child-Designed City Trips"—Washington, D.C., School Children with SIMON NICHOLSON, The Open University, Oxford, England, ROGER HART, Environmental Psychology Program, Graduate Center, City University of New York, and MARK FRANCIS and RAY LORENZO, Graduate School of Design, Harvard University.

"Craft Techniques"—The Anacostia Neighborhood Museum, Smithsonian Institution, Washington, D. C.

"Developing Curriculum Materials with Teachers"—CLIFFORD ANASTASIOU, Vancouver Environmental Education Project, University of British Columbia.

CHILDREN'S RESOURCE AND DISCOVERY ROOM

Coordinated by MARK FRANCIS and RAY LORENZO, Graduate School of Design, Harvard University

EVENTS

The Children's Resource and Discovery room served as a center for kids and their friends visiting and participating in the conference. It provided a focal point for a number of scheduled workshops with various Washington, D. C. elementary schools. A partial list of the workshops includes:

A selection of interactive exhibits from the "Discovery Room for Children", coordinated by PEGGY MAHOOD, National Museum of Natural History, Washington, D. C.:

"Nature as a Source for Creative Activity"—CLIFFORD PETERSEN, Indianapolis, Indiana.

"Teaching Nature through Song and Poetry"—ECKLEY MACKLIN and GARY AXELROD, West Rock Nature Recreation Center, New Haven, Connecticut.

"Nature-Related Games and Color Books Developed for the National Park Service"—DON FIELD and GARY MACHLIS, National Park Service and the College of Forest Resources, University of Washington.

"Making Things with Natural Elements"—MARYANNE GJERSVIK, Riverside, Connecticut.

"Innovative Approaches for Increasing Environmental Awareness"—STEVE VAN MATRE - Department of Leisure and Environmental Studies, George Williams College, Downers Grove, Illinois, and PAUL YAMBERT, Department of Forestry, Southern Illinois University, Carbondale.

"Kids Building Kids' Environments"—SHARON HYMAN and TONY SHARKEY, Creative Teaching Workshop, New York.

A selection of games from the children's Natural Science Center—CATHERINE PESSINO, American Museum of Natural History, New York.

FILMS

WEDNESDAY and THURSDAY, MAY 21 and 22

These films were selected for viewing at the Symposium-Fair by STEVEN TOWNSEND, Graduate School of Design, Harvard University.

Where Can City Kids Find Adventure? (15 minutes), by the Central Mortgage and Housing Corporation.

Tadpole Tale (16 minutes), by Universal Education and Visual Arts.

A Sense of Place (1 hour 45 minutes), by ALAN GUSSOW, Friends of the Earth.

Where Do Creative Children Play? (15 minutes), by the Central Mortgage and Housing Corporation.

Sky Above (9 minutes), by Pyramid Films.

The Cow (10 minutes), by Church Films.

Nature in the City (13 minutes), by Journal Films.

A Garden for Everyone (12 minutes), by Contemporary McGraw-Hill Films.

Windy Day (10 minutes), by Film Images.

EXHIBITS

"Our Environment"—Exhibits prepared by PATRICIA A. COAN, teacher, and her fifth grade class from Stevens Elementary School, Washington, D. C., and CASEY MURROW, Environmental Studies Coordinator, and students from Deerfield Valley Elementary School, Wilmington, Vermont. In addition, SYLVIA SHUGRUE coordinated exhibits from numerous other area schools.

"The Nature Center"—American Museum of Natural History, New York.

"Washington Youth Gardens"—Department of Recreation, Washington, D. C.

"People-Plant Interaction Program"—American Horticulture Society.

"Children, Nature, and Environmental Education in the Parks of D. C."—BART TRUESDALE, National Park Service, Washington, D. C.

"The Use of Natural Elements and City Waste Materials for Children's Building"—SHARON HYMAN and TONY SHARKEY, Creative Teaching Workshop, New York.

Melwood Horticultural Training School, Upper Marlboro, Maryland.

Anacostia Neighborhood Museum, Smithsonian Institution, Washington, D. C.

Youth Conservation Corps and Job Corps—USDA Forest Service and U. S. Department of the Interior.

YMCA—ANTHONY BOWEN, YMCA, Washington, D. C.

Vancouver Environmental Education Project—Display of their innovative teacher-generated materials for environmental education.

PROGRAM COMMITTEE

RUTH HAMILTON ALLEN, Council of Governments, Washington, D.C.

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MARY CONWAY KOHLER, The National Commission on Resources for Youth, New York.

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KARL LINN, Louisville, Kentucky.

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A. LAVERNE DICKERSON, Local Organizer
ROGER HART, Program Coordinator
KARL LINN, Symposium Manager; Staging of Ceremony and Environment
MAYER SPIVACK, Evening Events
CALVIN STILLMAN, Symposium Director
GEORGE MOELLER, Proceedings Coordinator

SPECIAL COMMITTEES

CHILDREN'S PARTICIPATION

MARK FRANCIS, Graduate School of Design, Harvard University

SIMON NICHOLSON, The Open University, Oxford, England

SYLVIA K. SHUGRUE, Beautification and Ecology Program, Washington, D.C. Public Schools

YOUTH PARTICIPATION

RALPH BEREN, National Commission on Resources for Youth

ANNA CARLSON, National Commission on Resources for Youth

MARY CONWAY KOHLER, National Commission on Resources for Youth

EMILY ENSOR, U. S. Department of the Interior

CHILDREN'S RESOURCE AND DISCOVERY ROOM

MARK FRANCIS, Graduate School of Design, Harvard University

RAYMOND LORENZO, Graduate School of Design, Harvard University

PEGGY MAYHOOD, Discovery Room, National Museum of Natural History

WORKSHOPS AND FIELD TRIPS

ALAN KNIGHT, Biospheres, Boston, Massachusetts

COMMUNICATIONS

ELLEN ANDERSON, Fairfax, Virginia

PHIL DEBRABANT, the George Washington University

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CAROL ETZOLD, Cook College of Rutgers, the State University

NEIL FITZPATRICK, Washington, D. C.

L. R. MARKS, Los Angeles Schools and Editor, ECOGRAM

JULES MARQUART, Farmington-Oakland Teacher Corps Program

WENDY HUSSEY, Department of Geography, Clark University

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MARSH KARLSON, Bannerian, Boston, Massachusetts

DAVID WILHELMI, Lettering, Boston, Massachusetts

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MARCIA CARDILLO, banners and weavings, Cambridge, Massachusetts

BRAD SABELLI, set design, The George Washington University

SARAH FREDERICK, environmental arts, Louisville, Kentucky

DONALD KLEIN, group dynamics, Elliot City, Maryland

ELAINE OSTROFF, choreography, Brookline, Massachusetts

LOANED ART OBJECTS AND PLANTS

Banners by NORMAN LALIBERTE and students, courtesy of ACCESS, Santa Barbara, California.

NORMAN LALIBERTE and his students at Newton College, Massachusetts, designed banners to symbolize the elements of the environment. This special project was commissioned by the American Institute of Planners for its 50th International Conference, titled "The Next 50 Years: The Future Environment of a Democracy."

Plants, courtesy of the U. S. Botanic Gardens, Washington, D. C.

Tree Sculpture, PAULETTE BRIMIE, Drama Department, University of California, Santa Barbara

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APPENDIX B
LIST OF SYMPOSIUM - FAIR PARTICIPANTS
MAY 19-23, 1975

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1977. **Children, nature, and the urban environment: proceedings of a symposium-fair.** Northeast. For. Exp. Stn., Upper Darby, Pa.
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A report on the symposium-fair held 19-23 May, 1975 at the C. H. Marvin Center, the George Washington University, Washington, D.C., containing 33 papers. Sections are devoted to defining the role of natural environments and human development, research on urban children and the natural environment, and community and institutional response to fostering desirable relationships between nature and development of urban children.

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