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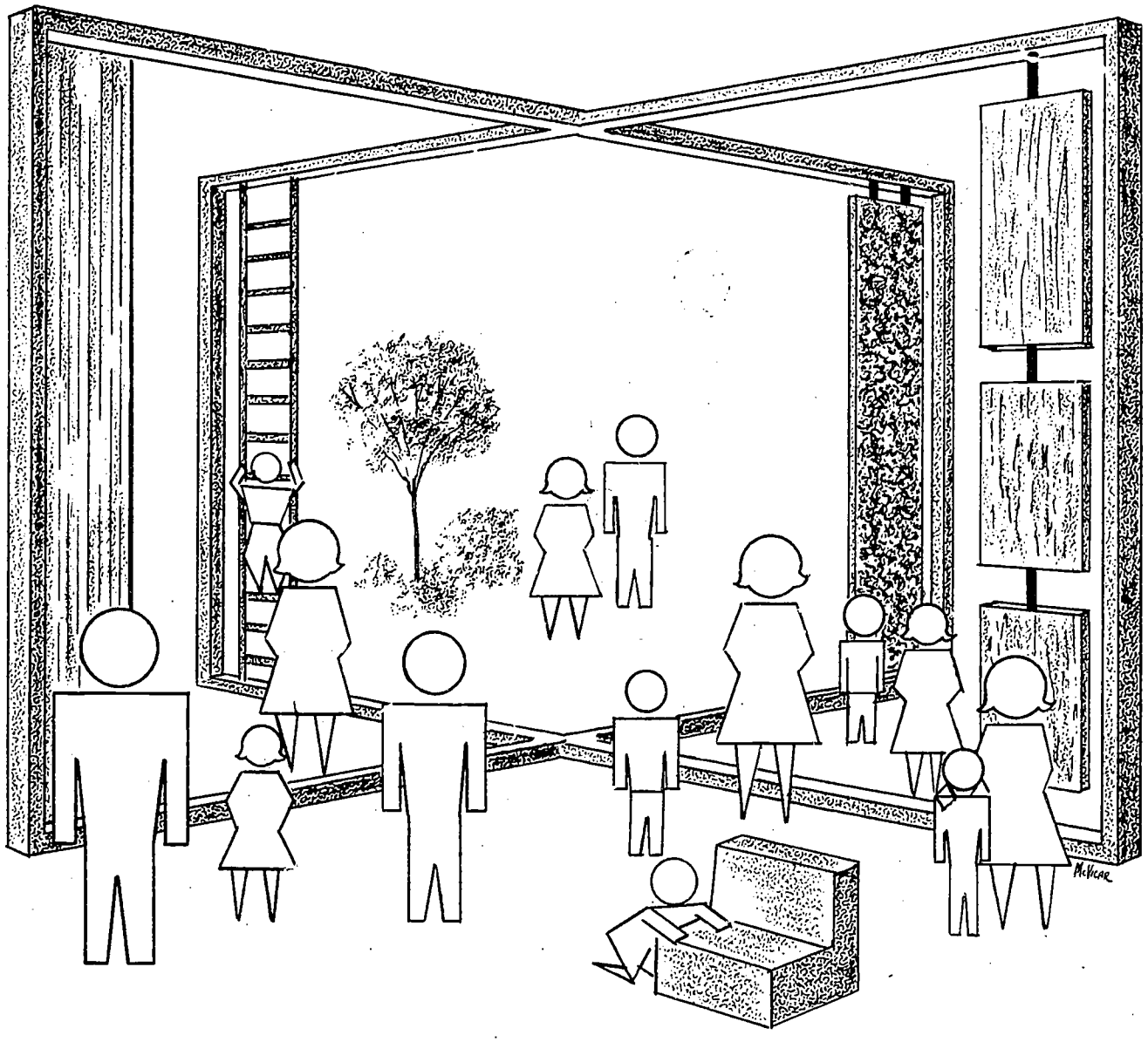
ABSTRACT

The monograph presents four papers on the significance of the physical environment in residential facilities for retarded individuals which describe initial efforts to improve the physical characteristics of an institution serving a severely and profoundly retarded, as well as multiply handicapped, population. R. Scheerenberger considers the effects of the physical environment on the behavior of both residents and staff and notes implications for respect for human rights and dignity. A new interior design program for the institution is described by A. Hobbins to include home-like surroundings and promotion of greater sensory-perceptual experiences. K. Bongers explains the institution's romper room program for children under 7 years of age which stresses integration of sensory-motor learning experiences and has required that special equipment be designed. The final paper, by R. Blakeley, encourages the development of a physical environment which will optimize development and minimize negative effects of institutionalization. (DB)

Physical Aspects of Residential Living



Central Wisconsin Colony and Training School

Madison, Wisconsin

Physical Aspects of Residential Living

1972

CENTRAL WISCONSIN COLONY AND TRAINING SCHOOL

Introduction

There is a growing awareness of and sensitivity to the need for creating physical environments within a residential facility which will lend full support to the total development of retarded residents. The intent of this monograph is to describe several initial efforts in improving the physical characteristics of one residential facility serving primarily a severely and profoundly retarded, multiply handicapped population. The papers are concerned with the significance of the physical environment as well as projects which have been completed or are being developed as they affect both interior and exterior surroundings.

Physical Dimensions of Residential Living

R.C. Scheerenberger

Every aspect of residential living possesses the potential to influence -- positively or negatively -- the development and behavior of each resident. One very critical dimension of residential living is the physical environment. Yet, frequently it is considered only in terms of health and safety, maintenance, traffic patterns, and maximal utilization of space at minimal cost. These are very important administrative considerations. When, however, they are viewed independently of residents' needs and programs, or when final decisions are based solely or primarily on such factors, the resultant physical facility usually proves to be inadequate in terms of human development.

On the other hand, professionals are not always capable of communicating to an architect or other concerned persons information essential to the creation of an environment which satisfies residents' physical and psychological requirements. Consider the plight of the architect who recently reported, "The present concept of institutional care only seems to consider the physical welfare of the mentally subnormal child and will not give a lead to the architect called upon to provide more than just a mere shell which is functional from the technical point of view (Gunzberg, 1968, p. 57).

The intent of the present discussion is to consider briefly the importance of the physical environment as it reflects upon respect for human dignity and rights as well as it may influence resident development and staff effectiveness. Though the discussion is not intended for any particular subpopulation, it will tend to

emphasize a concern for the young, severely and profoundly retarded.

Basic Commitment to Retarded Residents

The philosophy which underlies the direction and activities of a residential facility also governs the development of its physical environment. Fundamentally, any retarded person who requires residential care should be recognized as first a human being with human needs, and he has the right to have these needs fulfilled. The President's Committee on Mental Retardation clearly identified this function of residential care:

> The prime purpose of residential services for the mentally retarded is to protect and nurture the mental, physical, emotional, and social development of each individual requiring full-time residential services. Inherent in this commitment is the responsibility to provide those experiences which will enable the individual to develop his physical, intellectual, and social capabilities to the fullest extent possible . . . and to live a personally satisfying life within the residential environment (1970, p. 1).

With regard to the environment, the President's Committee observed that the facility:

> . . . should provide a warm, stimulating social setting, devoid of any form of dehumanizing conditions. The retarded should be helped to live as normal a life as possible in safety. Small groupings designed to promote maximal social and emotional growth appropriate to the retarded persons should be effected. The living quarters should provide maximal opportunity for privacy, with closets, lockers, etc., for personal possessions. Living quarters should be consistent with cultural norms, with due regard to health, safety, and conformity to the accepted community standards . . . . Existing facilities as well as proposed facilities should attempt to establish a total environment -- physical, psychological, and social -- that will provide effective programming for small groups of individuals in a highly personalized atmosphere (1970, pp. 7-8, 9, 10).

According to the International League of Societies for the Mentally Handicapped (1969, p. 2), "The mentally retarded person has the same basic rights as any other citizens of the same country and same age. . . . He has the right to protection

from exploitation, abuse, and degrading treatment".

Both positions reflect a responsibility which makes it incumbent upon each residential facility to provide that environment which is most appropriate for human growth and development. Certainly, no sanction is given to the "warehousing" phenomenon which typifies many of today's institutions.

One of the most common, and totally inappropriate characteristics of the physical environment involves the confinement of a large number of residents to a limited, relatively impersonal area (i.e., 15 or more residents living together, sharing a common dormitory and day room). Grunewald, in his monograph on the dynamics of residential living as influenced by the environment, places considerable emphasis on 'the principle of the small group':

> Many workers have observed the positive effect on a severely retarded individual when he was removed from a large ward of 20-30 persons to a small group of 10 or less (5 to 8 would be preferable). Suddenly the retardate's reaction becomes predictable and one sees that he can recognize and grasp reality . . . . From these observations we deduced that an influence for favorable development is to be found partly in the small number of interpersonal relations forced upon the retarded thus making them potentially stimulating rather than frustrating, and partly in the home-like atmosphere and equipment of the room and of the unit to which the room is connected (1971, p. 4).

A variety of research with small groups of normal persons in confinement have identified a number of characteristics which also typify the behavior of retarded persons living in many of our residential facilities. Smith (1969), for example, did an extensive review of the research literature dealing with small groups in confinement, including controlled isolated-group experiments, military service in isolated duty stations, submarine-service habitability, aerospace assessments, and reports of expeditions and explorations. The results based on normal, adult human subjects consistently revealed an inability of such persons to tolerate con-

finement. Within a relatively short period of time (usually 10 to 15 days), subjects became hostile, rude, uncooperative, passive, irritable, depressed, compulsive, and lethargic. They defied rules and regulations, adopted a "survival of the fittest" attitude, and developed a tremendous need for territoriality. Conditions of confinement were further aggravated by heat, noise, and bad odors. In essence, while normal adults cannot tolerate confinement with other persons, we place retarded individuals into such environments every day with the full expectation and knowledge that they will remain in that setti: for an extended period of time.

Sensory-Perceptual Deprivation

The literature is redundant with animal studies concerning the adverse effects of sensory-perceptual deprivation. Reviews of such research by Beach and Jayne (1954), Hebb (1958), and Bronfenbrenner (1968) all demonstrated that animal subjects in deprived settings showed a reduced level of intellectual functioning, grossly affected problem-solving behavior, an inability to use visual and auditory cues appropriately, radically reduced normal exploratory behavior, and abnormal behavior and posturing.

In addition, many authorities believe that there are definite developmental periods when certain experiences are critical. Speman (Beach and Jayne, 1954, p. 260), for example, advances the "Theory of Induction" which, in essence, states that there are "brief periods in the behavioral development of animals during which the future of certain aspects of behavior is so strongly affected by contemporary environmental influences that have no such effect at other points along the life span".

In contrast to deprivation-oriented studies, other animal experiments have

been concerned with the effects of an enriched environment. These studies, all of which used rat and mice subjects, indicated that enriched early environmental experiences (e.g., playing with "toys" and environmentally-supported exploration) result in: (1) increased weight of the cerebral cortex, including the visual and somosthetic areas; (2) greater depth of the cerebral cortex; (3) an increased enzymatic activity (AChE); and (4) increased problem-solving ability (Rosenzweig, et. al, 1968, 1972, and Henderson, 1970).

Though the results of animal studies cannot be translated directly to either the residential environment or the mentally retarded as learners, one cannot ignore the results. The significance of their implications are obvious, and certainly there is sufficient evidence among studies concerning institutionalized retardates to lend credence to the fact that reduced functional ability is a consequence of environmental deprivation. According to Yarrow (1970, pp. 279-280), "the importance of adequate sensory stimulation to the development of cognitive abilities in young children has been well documented. Data from experimental studies on animals involving restriction in stimulation can be integrated meaningfully with data on infants and young children in institutions. The findings of developmental retardation in children who have been exposed to institutional environments are paralleled by findings of sensory impairment in animals deprived of stimulation."

Casler (1968), in his excellent review of the literature, also contends that environmental deprivation will account for such rhythmically-oriented stereotype behavior as head banging, rocking, and whirling among retardates in a residential facility. He further supports Bender's observation that brain-damaged children suffer especially from isolation and environmental deprivation.

The physical environment and its stimulus properties must be considered and studied for even the infant resident. Research by Fantz, (e.g., 1963) and others have demonstrated unequivocally that the newborn is sensitive to visual stimuli and will respond differentially. For example, Friedman et. al (1970) studied the response patterns of newly born infants (24 to 90 hours old) and found that they attended visual stimuli and revealed both habilitation and a definite tendency to respond to novel stimuli when introduced.

This sort of behavior has been demonstrated among the mentally retarded. Miranda (1970), for example, studied the performances of 16 Down's syndrome infants (mean CA 33.6 weeks, SD 2.8 weeks) and 20 normal infants (mean CA 31.6 weeks, SD 1.4 weeks). She found that both groups attended visual patterns and both groups revealed recognition memory for patterns displayed.

The environment, however, must also exercise control over the nature and degree of stimulation. Too much stimulation can have the same effect as too little. Studies by Brackbill have shown that excessive stimulation will reduce the arousal level of infants. In one project (1970), she and her associates studied 24 normal infants with a median age of 27 days. The infants were bombarded with continual stimulation involving four different modalities -- auditory, visual, proprioceptive-tactile, and temperature. The net effect was that infants cannot tolerate high levels of stimulation. The results were that infants spent an average of one out of every twenty minutes in quiet sleep under condition of no stimulation, but over nine minutes under continual stimulation. Increasing the number of stimuli resulted in an increase in quiet sleep accompanied by decreases in crying, heart rate, irregularity of respiratory rate, and motor activity. The authors concluded that "it appears

that the change in arousal level produced by continuous stimulation is not an adjunct of some cognitive, cortically mediated function . . . but is instead the product of a primitive, subcortical mechanism" (1970, p. 272). Similar results were reported by Brackbill and her colleagues in an earlier study (1970), Birns, et al (1965), and Irwin (1941).

The retarded appear to be similarly affected, even though the research evidence is very limited. Brackbill (1970) replicated her study with an anencephalitic infant, 90 days of age, with the same results as reported previously.

It is not uncommon in residential facilities to find that the day room for young retarded children has a noise level so high that it increases hyperactivity among certain residents while forcing others to withdraw into themselves.

Staff Effectiveness

There is a growing number of authorities who believe that early sensory-perceptual experiences among young children is the most critical aspect of development. They rate these experiences over those associated with human love, contact, and attention. Casler (1968, p. 612) summarized the position of such persons with the following statement -- "the human organism does not need maternal love in order to function normally . . . (1) during the early months of life, social stimulation is probably nothing more than perceptual stimulation, and (2) even in post-infancy, perceptual needs probably predominate over social needs".

This sort of argument probably will prove as profitable as the nature - nurture controversy. Let us assume that sensory-perceptual experiences and individual love and affection are both critically important.

Interestingly, no research could be located concerning the affects of the phys-

ical environment upon the inter-relationships of staff and residents. Warren and Mondy, however, recently conducted a study involving 15 attending adults observing more than 800 samples of behavior of 49 ambulatory institutionalized retardates with a mean CA of 106.3 months and a mean SA of 22.2 months. Their results revealed that attending adults "failed to respond at all to either appropriate or inappropriate behavior. The result of such failure to respond, of course, was to allow behavior patterns to develop in a non-systematic fashion" (1971, p. 454). This sort of failure in adult attending behavior is rather common in residential facilities in spite of the quality of personnel or their training. It appears, at least to this author, that it is impossible for one or two cottage personnel faced with 20 children in a day room where the noise level approximates 80 decibels to develop a close inter-relationship with individual residents and be in an effective position to introduce proper reinforcement procedures. If we wish staff to respond to youngsters in the same manner as they would in their own homes, it would appear that changing the physical environment to meet such requirements is essential.

In addition, it is not uncommon in many residential facilities for a resident to be removed from his living area to receive some form of individualized instruction or special therapy. During that brief interval in the child's daily activities, he frequently performs at a most adequate level. Most of the benefits accrued in specialized training, however, are lost when the child returns to his living area. In other words, if the resident's living area, in terms of its physical and psychological environment, does not support individualized treatment and training efforts, the effects of these efforts are seriously vitiated. The resident's unit or living area is his home, and it must function as such in the best sense of the term.

Summary and Conclusion

This paper has attempted to explore the significance of the physical environment of a residential facility as it reflects upon respect for human rights and dignity and its potential influence on the behavior of both residents and staff. Considerable research needs to be done in a number of areas related to the physical environment and its stimulus properties. We do not know what experiences should be offered, in what sequence, at what age. Neither do we have adequate information concerning ideal intensity levels at which sensory-perceptual experiences should be introduced.

On the other hand, we cannot wait for the evidence. We must make every concerted effort to provide a home-like atmosphere and to enhance the physical environment in order to facilitate the development of the retarded regardless of age or level of retardation. Norris (1969, p. 46) offers several excellent guidelines:

> Retarded children need opportunity to explore, to experiment, and to create... the retarded child responds well to a lively, colorful stimulating environment. . . retarded children need an atmosphere of structured informality in which they are offered intensive adult support, the opportunity for social involvement and withdrawal, for physical movement, for intellectual and esthetic stimulus. Like mankind in general the retarded child is happy when he is creating, when he is modifying the world in which he lives.

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Interior Design Program

A.Hobbins

The interior design program at Central Colony reflects the continuing concern of staff to meet the total needs of the residents. With this in mind, the program is intended to enhance the living experiences and total development of residents by creating an environment oriented toward their needs in the following ways:

(1) Development of home-like surroundings in which daily routines will facilitate independence.

(2) Promotion of greater sensory-perceptual experiences through appropriate colors, textures, and composition.

(3) Expansion of opportunities for resident social development through a variety of comfortable areas where more natural human relationships may develop, where a degree of informal privacy can be attained, and where staff programming can have greater flexibility with fewer limitations imposed by the physical facility.

(4) Provision of other "real life" settings that permit a much higher degree of participation and involvement by the residents, e.g., library/instructional materials center, theater, and craft center.

Coincidentally, two other groups of people also benefit from better surroundings: staff and visitors. Being human, the staff can perform best when conditions are most conducive to the methods, means, and goals in mind. Likewise, visitors appreciate relaxed, familiar settings as they are introduced to relatively unfamiliar circumstances.

Basic Concepts

Building materials originally used in finishing a hospital-like facility such as Central Colony were chosen for reasons of low maintenance and indestructibility. The rationale behind this decision was based on the attitude that residents were too

destructive for normal home-style furnishings such as rugs, curtains, wallpaper, and lamps.

With the recent emphasis on total programming and advanced methods of treatment, new ideas for finishing materials and interior design naturally followed. Incorporated in the design features are all means to encourage the resident to think and act for himself without endangering himself or others. For example, before any of the new projects, there was no chance for a child to switch a lamp on and off and witness the accompanying results. All lights were controlled by staff at master switch locations. It is this cause-and-effect relationship, so common in everyday life, that the design program is attempting to promote.

In contrast, life in the original Colony wards, with their shiny, hard surfaces, harsh lighting, and lack of comfortable furnishings deprived residents of all ages of the many small details that enrich the daily lives of those of us who do not live in a residential facility. Today, it is Central Colony's premise that to be institutionalized does not mean to be dehumanized.

The initial aim of the program has been to provide each ward with at least one area of comfortable, stimulating, home-style living. These areas are planned carefully to enrich present programs.

Since the design program's inception fifteen months ago, six areas have been redesigned and furnished. Several of these projects have encompassed new programs, e.g., activity rooms and a children's library.

In addition to the functional self-help factor referred to previously, many other aspects are considered. Colors are chosen to enhance the three dimensional qualities of forms, thereby helping children with perceptual difficulties. Selective

use of patterns and textures in wallcovering provides further appeal to the senses as does the use of carpeting in quiet sitting areas. Again, the cause-and-effect relationship becomes obvious: the quiet, carpeted area is not for rough-housing -- it is for talking, watching television, or playing quiet games (as would be in a normal home).

The mentally retarded child needs repeated situational experiences in a behavioral setting to help his awareness and understanding. "High-low" concepts can be facilitated through the use of shelving; mirrors provide for visualizing motor patterns; conventional lamps enable light-to-dark contrasts.

These examples can be interwoven into discussions with staff as plans are developed for new areas to be remodeled. Flexibility of layout is maintained to allow for changes that inevitably arise from continued use of an area.

Procedure

The actual process of planning an area by the designer always follows the program review and includes:

(1) Initial "blue sky" meeting with all members of the ward staff present, if possible. Goals of the particular unit are stated, furnishings and equipment discussed, color preferences noted, and the similar.

(2) Meetings are held with the chief engineer of the Colony to evaluate the physical aspects of the plan.

(3) Detailed floor plans, a finishing schedule, and preliminary ordering specifications indicating vendors, sizing, colors, and pertinent fire restriction information are developed.

(4) Further meetings are held with ward staff to consider changes and additions to the plan.

(5) Final art work and specifications are drawn up and printed for circulation to prospective organizations and individuals for funding.

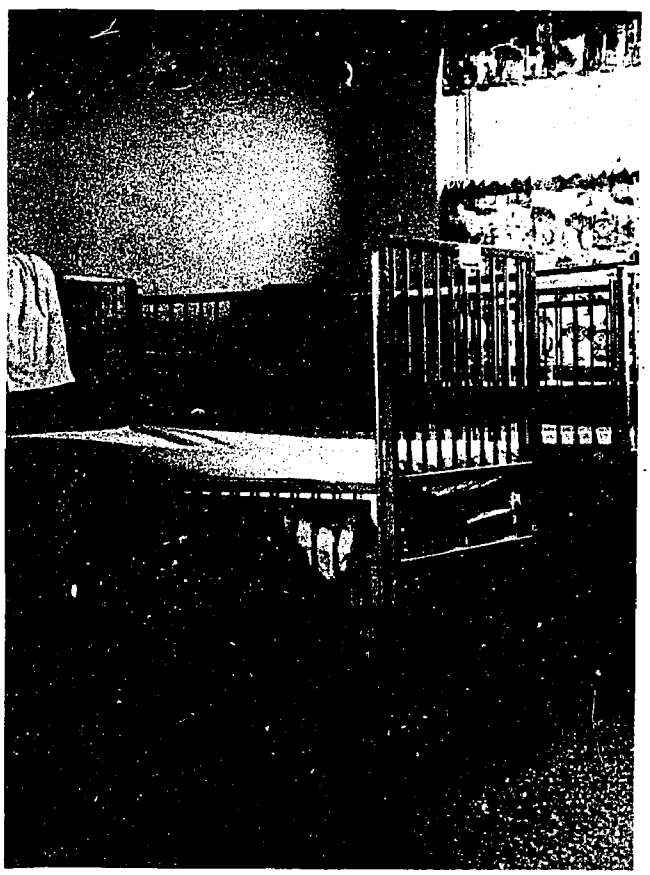
(6) Actual ordering of furnishings.

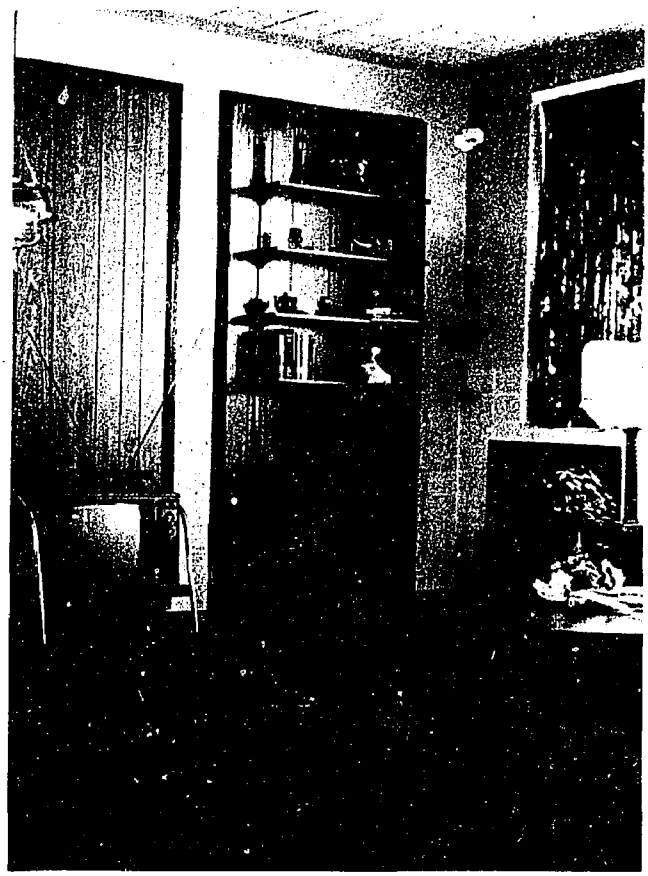
(7) Meetings with volunteer groups for fabrication of drapes and other such assisting efforts.

(8) Arrangement of furnishings and general follow-through to coordinate and execute remaining aspects of plan.

Example

The photographs illustrate the rather dramatic changes which have occurred in one area. This particular project, which was the Colony's first, was intended to provide a more home-like atmosphere for 12 young moderately and severely retarded residents believed capable of eventually living in a foster home. Staff was concerned that Central Colony's large tile and terrazzo dormitories and play rooms,





while sturdy and easy to clean, did not offer the comfort or privacy or stimulation of color and texture found in a normal home. The project's goal was to introduce

colors, textures, interesting shapes, and furnishings which would increase the residents' responsiveness to environmental stimuli and enable them to enjoy a more normal life style. The success of the project in terms of facilitating behavior essential to adjustment in a foster home or natural home situation has been significant.

Summary

It may be stated that the people involved are what make the plans successful as their input is based on knowledge and experience in working with the residents. This "participation" approach has resulted in a minimal number of mistakes.

For every new area now in use, there are several plans in the preliminary stages. As stated previously, not all of the plans envisioned are of a home-living nature. A design scheme for a new library-material center, now nearing completion, will become a focal point of a Children's Community Center for year-round use within the Colony. This plan will see a good portion of one of the infirmary building's basement turned into a multi-use facility consisting of a theater, gym, self-help kitchen-dining room, craft and game center, dance floor, barber and beauty shop, all facing on a decorated indoor mall. This large undertaking is designed in such a way that single modules can be started as funds become available.

The Colony's goals are clear, some projects are completed, others are in process or in the planning stage; and, as is true nearly everywhere these days, progress is limited only by the availability of funds. To date, remodeling funds have come almost exclusively through donations from business clubs and associa-

tions, charitable organizations, and individuals. The motive for giving is as sound as the Colony's objectives to improve the living conditions of its residents. As long as a gap remains between what the Colony needs to do and what is able to do, there will be those groups or individuals who will respond.

The SMILE Romper Room

K. Bongers

The effects of sensory deprivation on children are well documented. There is a growing awareness that residential facilities do not provide a child with the necessary environmental experiences for optimal physical, social, intellectual, and emotional growth. Birch (1970, p. 395) expressed the importance of environmental experimentation in his opening remarks to the 80th Annual Meeting of the American Pediatric Society:

> The primary problem of children in the course of their growth and development is the need to be provided with the conditions and the opportunities for obtaining from their environments those raw materials, nutritive as well as experimental, that are essential for normal development and differentiation.

Since early childhood is the period of most rapid growth and of greatest susceptibility to environmental influences, the need for increased programming and environmental changes for residents in this age group is most critical. According to Ayres (1962, pp. 17-22), a child must be able to motor plan before he can relate purposefully or effectively with his environment.

Program Goals

During 1971, program planning committees were formed at Central Colony to review present ward programs and to plan ideal programs for each area taking into consideration the residents' total developmental needs. The committees included direct care staff from the wards and professionals from related services. The ideal program subsequently was reviewed by a central Program Review Committee, which included representatives from direct care staff, professional services, and

administration.

The four wards housing the majority of the children under seven years of age defined the following activities as necessary to reach goals of self-actualization:

(1) Increased activity levels.

(2) Structured multi-sensory activities to improve perceptual-motor performance.

(3) Opportunities to express curiosity and interaction with environment.

(4) Activity programs which demand purposeful performance (i.e., environmental experimentation, mobility, and spontaneous play must be present).

(5) Programs to enhance discriminative tactile functions and diminish protective responses to tactile inputs.

The SMILE Romper Room

The SMILE (Sensory-Motor Integrated Learning Experience) Romper Room Program was proposed to accomplish the above programmatic objectives. It was suggested that a little-used visitors' lounge in close proximity to the four wards be converted to a multi-sensory play area. The program proposed to serve 170 children. While 13 youngsters were ambulant, most were found to be severely physically handicapped in addition to being mentally retarded. The complexity of the problems they presented demanded that special equipment be designed.

The carpeted, passive area of the Romper Room contains a water bed, texture framed mirror, foam chair, scoot boards, and a net covered inner tube filled with pebbles (see Exhibit I). Small doors must be opened in order to operate battery-powered door bells, lights, and motors. The manipulation box has several interchangeable panels that offer color and shape discrimination, texture blocks, and mounted educational toys. A variety of scents unfamiliar to the children (e.g., oil

of anise, cinnamon, and peppermint) are used for increased olfactory experiences and as alerting mechanisms.

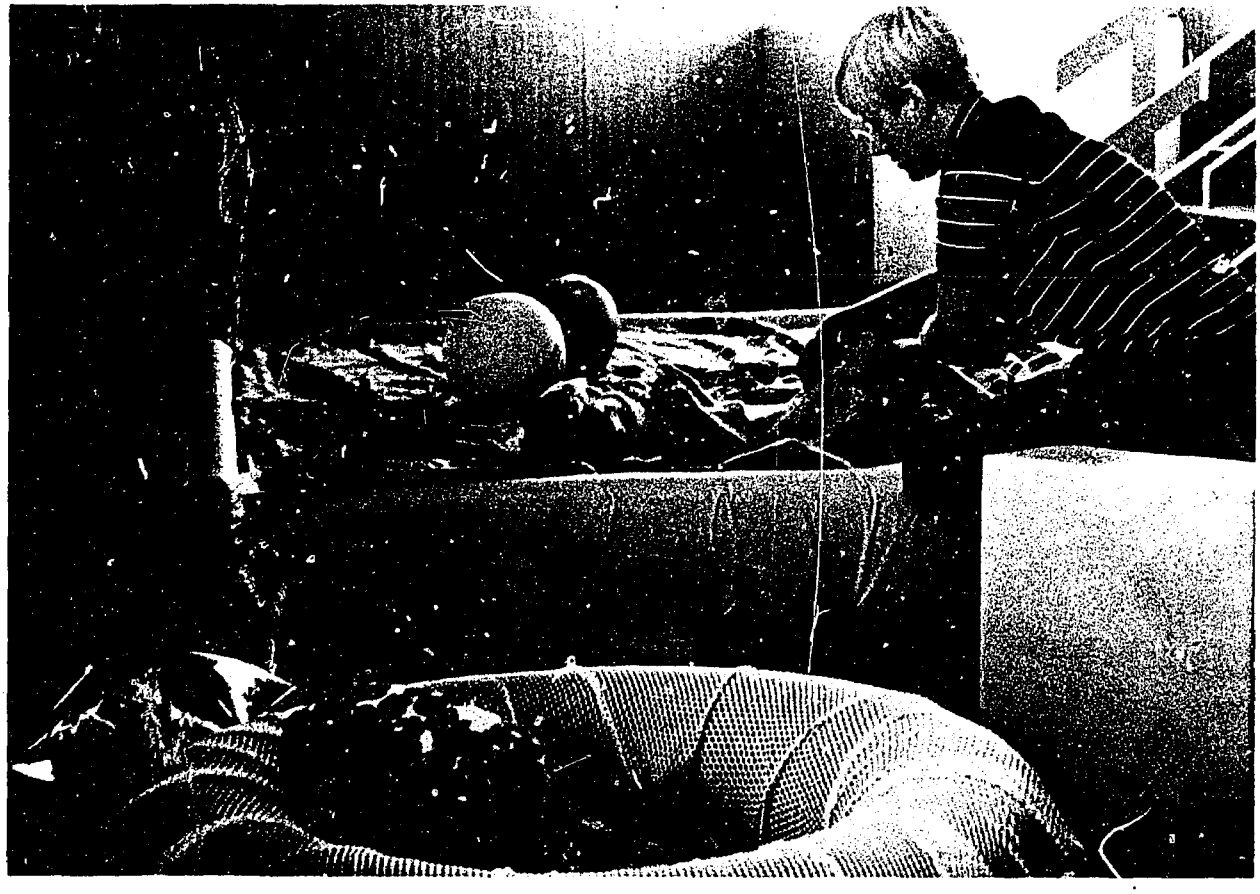


Exhibit I

The gross motor activities section has a shag-carpeted platform at window height that allows the children to look out three-foot high windows normally inaccessable to them. The railing has removable colored plastic panels. The children reach the platform by moving up carpeted stairs or ramp. They may exit via stairs, ramp, or slide. A cave enclosure lies underneath with three different shaped openings. Inside are small windows and chains and ropes to make bells ring. Next to the platform are several air vents that are constantly circulating air.

Ribbons and balloons have been attached, encouraging many children to pull themselves up to a standing position.

A six-foot wood structure was constructed to offer additional learning experiences (see Exhibit II). This frame supports a hammock, a climbing net, a rope ladder, and special net swings that enable children with minimal trunk and head control to experience normal activities. The structure is so versatile that only the corner posts and top and bottom frame are permanently attached. Blocks holding the rings for the hanging equipment may be removed and moved anywhere. Additional posts may be added as needed in the bottom frame. All posts and the bottom

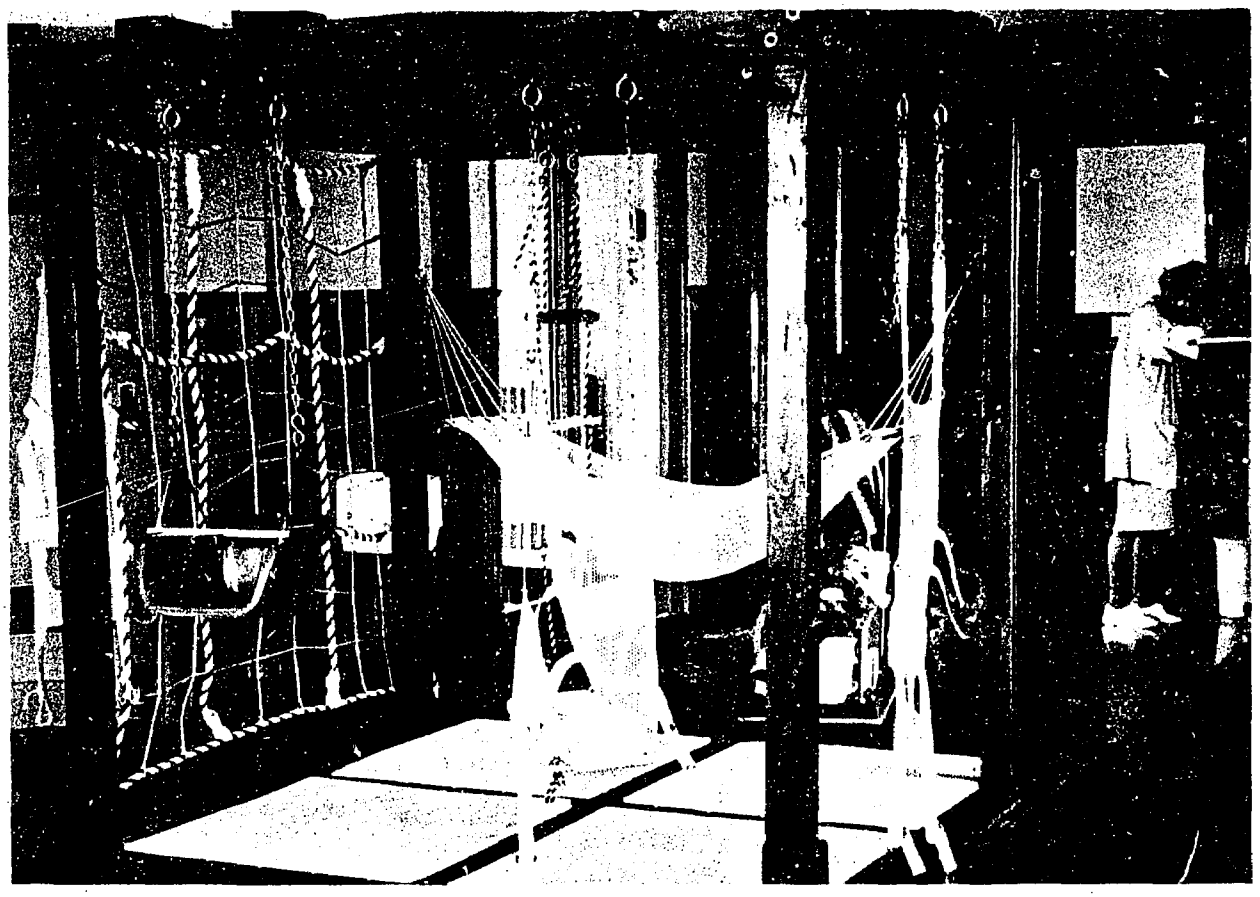


Exhibit II

frame have routed grooves to accommodate one-half inch plywood panels up to five and one-half feet long. These temporary panels may have alternating holes for a ladder or may be used as walls for a playhouse.

A variety of people were involved in the design and construction of project equipment. The structure was designed in collaboration with personnel from the Landscape Architecture Department, University of Wisconsin. All other equipment was designed by the author. Construction was done by staff of the Resident Activity Department with assistance from Engineering. Central Colony's Sewing Room made the swings, hammock, and mats. Funds for the project were donated by a charitable organization.

Results

The SMILE Program has been in existence for five months. The Romper Room has been well received by the children, staff, and parents. The activity level and size of many of the other residents would not permit exact duplication of much of this equipment in other areas. Program and equipment modifications are possible, however, and several areas are planning to begin similar programs.

Several observations have been made with regard to the childrens' responses to their environmental experiences in the Romper Room:

(1) The ambulant child who is more free to make his own choice in equipment tends to spend more time on the stairs.

(2) There is a marked reduction in the unproductive behaviors often seen on the ward.

(3) The water bed is an effective way to relax a spastic child.

(4) The children are more active; their play is more purposeful and exploratory.

The SMILE Romper Room is coordinated and staffed by the Resident Activity Department but is available for use by all personnel, including foster grandparents, aide mothers, nurses, parents, and volunteers. Staff accompanying children fill out a brief checklist describing equipment used during visits. Data are obtained on the frequency of equipment use, relations of equipment used to activity level of the child, and staff involvement. Individual records are kept on each child's visit and the inputs he experienced.

References

Ayres, A. J. Approaches to the Treatment of Patients with Neuromuscular Dysfunction. Dubuque, Iowa: William C. Brown Book Company, 1962, 17-22.

De-Institutionalizing With Environment

R.Blakeley

Can residential facilities be de-institutionalized? The designed physical environment, deliberately appealing to the senses, may well yield a significant part of the "yes" answer.

The move away from "custodial care" for the mentally retarded reflects research showing a downward slide in mental ability during residential care. Since it is impossible to totally phase out "institutionalization", the influences of environment can be used to modify the physical facilities for the benefit of the residents. Such modifications should help "de-institutionalize" both new and existing facilities.

The Full-Potential Environment

Since the physical environment affects physical, emotional, and cognitive development, the hypothesis is that for any given situation the physical environment can become a positive factor in the development of the individual. Each situation (home or residential facility) will define the parameters of the individual's full potential development, but there is an optimum physical environment for each situation which will encourage developing this potential.

This environment will be referred to as Full-Potential Environment (FPE). The FPE, by definition, must be diverse enough to stimulate the development of all body senses, including seeing, hearing, smelling, feeling (including temperature), tasting, and sensing the body in space.

The FPE also must provide a multiplicity of options in terms of activities and their requisite spaces. Activities range from individual to cooperative, quiet to noisy, passive to active, and physical to mental. Space considerations range from intimate to expansive, static to dynamic, subdued to stimulating, monocromatic to polycromatic, sterile to diverse, and simple to complex. The combination of activities and spaces must embody sufficient diversity to stimulate the individual's senses to grow and develop, e.g., colors, textures, forms, lines, smells, tastes, and changes in temperature.

This FPE must be available everywhere in an individual's everyday environment. It must sustain interest over time and encourage healthy interaction between persons.

FPE can be divided into two categories, residential and excursion:

The residential FPE is that environment where an individual lives; it is his or her home, where he or she eats, sleeps, plays, learns, bathes, and is both indoor and outdoor.

The excursion FPE is an environment that provides a special attraction located some distance from the residential FPE. It may include swimming, running, camping, boating, animal watching. It may also have an indoor and an outdoor context.

The concern of a landscape architect falls primarily in the indoor play and the outdoor context and the interface between indoors and outdoors.

During the spring of 1971, 15 students from the Department of Landscape Architecture at the University of Wisconsin analyzed the environmental needs of the individuals who live at Central Wisconsin Colony. Their specific study areas, limited to three by time restrictions, dealt with:

(1) A residential outdoor environment for four to eight-year-old ambulant and semi-ambulant children.

(2) A concentrated "play" environment (excursion) for all the residents.

(3) A "woods, fields, marsh" environment (also excursion) for all the residents.

The residential FPE, immediately adjacent to two living units of 24 children each, provided options in terms of activities and spaces for the normal growth and development of each child. There were small and large spaces, hills to climb and roll down, complex structures with steps, platforms, slides, firepoles, rope climbs, rope swings, tire swings, intricate sprays for waterplay, sand for digging, plants for tasting, smelling, feeling, caves for exploring (see Exhibit I). The emphasis was on providing diverse activities and spaces to stimulate and challenge each individual.

Exhibit I

The excursion play environment provided activities similar to the residential FPE, but was intended for use by all of the people who live at the Colony. This "playground" was larger, more complex, and designed to withstand rigorous use by persons of all ages (see Exhibit II).

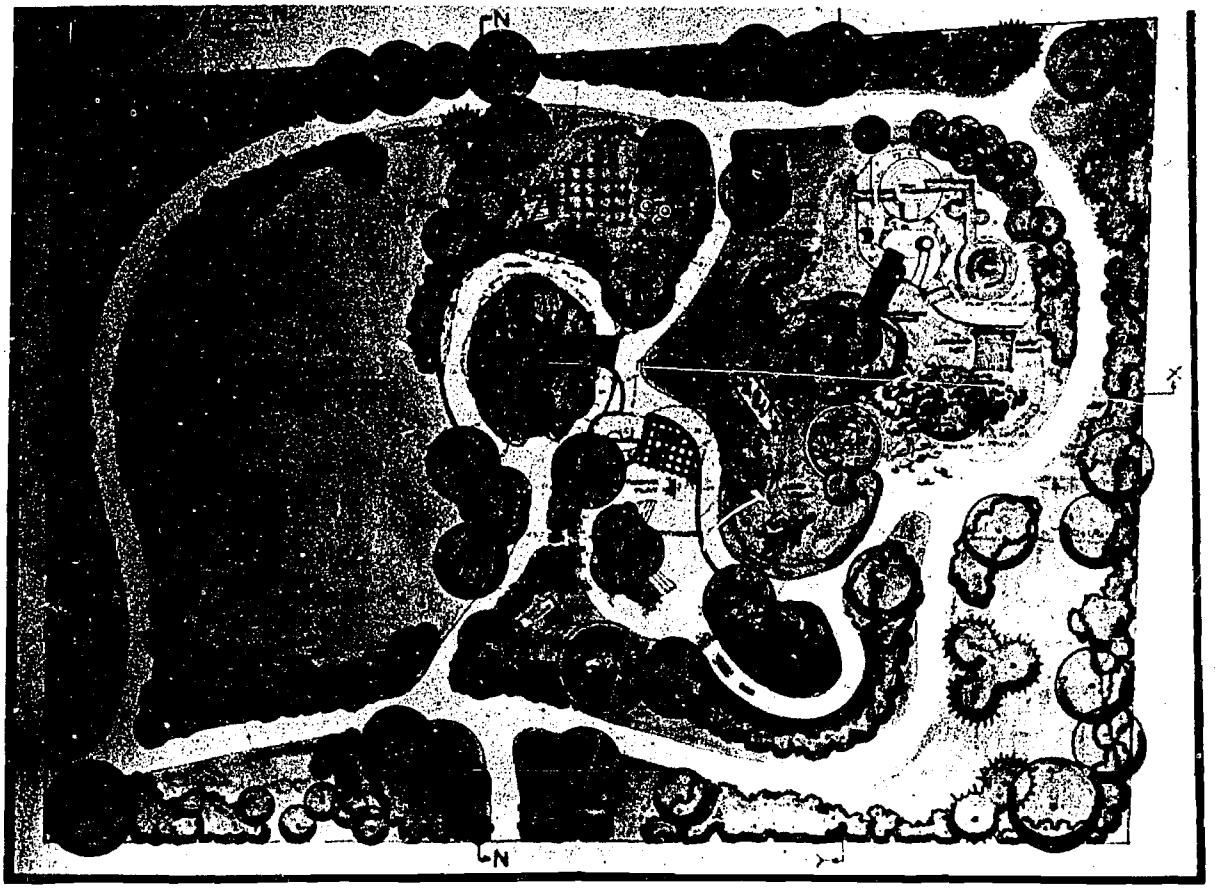


Exhibit II

The "woods, fields, marsh" excursion FPE provided the opportunity for residents to have within short walking or "train ride" distance an environment with the kind of outdoor experience found at typical state parks and nature study preserves. The activities envisioned include camping, swimming, picnicing, hiking, and boating, plus the added experiences of nature study such as bird and animal watching and feeding, berry picking, nut collecting, and experiencing the changes of the seasons (see Exhibit III).

Exhibit III

Further study of Central Wisconsin Colony has led to additional conclusions. Residential FPE should be designed and built for all the residents regardless of age, sex, or degree of disability. Age and degree of disability may affect the specific residential design of a given facility, and consequently design devices might necessarily vary. But both residential and excursion environments would promote experiences not presently available. These are necessary additions for any residential facility desiring to move toward a lessened institutional "aura".

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