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Social Ecology:

Multidimensional Studies of Humans and Human Milieus

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Table of Contents

SOCIAL ECOLOGY: MULTIDIMENSIONAL STUDIES OF HUMANS AND HUMAN MILIEUS[1]

Introduction

Current interest in the physical and social aspects of planning for both large (e.g., cities and "new towns") and small (e.g., industries, psychiatric hospitals, correctional institutions) environmental systems is remarkable. Jordan notes that more books treating man and his environment from a holistic and ecological viewpoint have appeared within the past four years than appeared during the prior three decades. Within the broader society this interest is largely due to technological advances, whose "side effects" raise critical issues about the delicate ecological balance existing in "spaceship earth." Major human problems such as general environmental deterioration, particularly water, air, and noise pollution, the probable effects of increasing population and population density, and issues of resource depletion, specifically in relation to food materials, are being extensively discussed.

New developments in psychiatry and the behavioral sciences are reflecting these concerns. This chapter introduces social ecology as a relevant field of interest for psychiatry, presents major methods by which human milieus have been characterized, and draws implications for the clinical and applied problems with which psychiatry and its allied professions must deal. Whereas social ecology is equally concerned with human adaptation and

human milieus, the chapter focuses primarily on newer conceptualizations of social environments since this aspect of the field is least familiar to psychiatrists. Further, assess-merits of milieus must necessarily precede assessments of the impact of these milieus on human functioning.

Thus, the focus here is more on milieu than on man, although the essential aspects of milieus are their effects on human adaptation. The major methods by which coping and adaptation have been assessed in man have been reviewed elsewhere. Six major methods by which human milieus have been characterized are presented here. Human aggression and violence serve as the adaptive (or maladaptive) responses by which the relevance of these six methods to practical concerns of psychiatrists is illustrated. Overall implications extend from enhancing the accuracy of predicting individual behavior, to new methods for facilitating and evaluating social change in small living groups, to more varied and more comfortable interdisciplinary roles for psychiatrists. These areas are clearly at the “frontiers of psychiatry.”

Social ecology is conceptualized here as the multidisciplinary study of the impacts that physical and social environments have on human beings. Its primary concern is with the assessment and optimization of human milieus. It is linked to traditional concerns of human ecology, both in its emphasis on the measurement of objective physical characteristics of environments—e.g., temperature, rainfall, air pollution, and noise levels—also the shapes, sizes,

and physical arrangements of buildings; and in its emphasis on the short-term evolutionary and adaptive consequences of these environments. It is linked to traditional concerns of the behavioral sciences, particularly psychology and sociology, both in its emphasis on the importance of the social environment and in its explicit consideration of environmental impacts on psychological variables such as self-esteem and personal development. Finally, it is also linked to traditional concerns in psychiatry, medicine, and epidemiology in its explicit focus on the identification of dysfunctional reactions (e.g., illness, accidents, anxiety, depression, anger, etc.) and their relationship to environmental variables.

For example, social ecology is concerned with the effects of air pollution (an ecological variable) on human moods, with the effects of ecological (e.g., size) and social (e.g., cohesiveness) environmental characteristics on individual development, and with the effects of both structural (staffing ratios, cost) and social (clarity of expectations, strictness of rules and regulations) environmental characteristics on the outcome of psychiatric treatment. Each of these is an ongoing concern in an existing field of inquiry. It is the range and interconnection of variables generally studied in isolation that gives social ecology a diverse, robust, and socially relevant focus. The field thus provides a distinctive “point of entry” by which human milieus and their impacts on human functioning may be conceptualized.

At least three basic assumptions are central to this area. (1) Human behavior cannot be understood apart from the environmental context in which it occurs. The implications of this oft-stated assumption have rarely been effectively pursued, e.g., accurate predictions of behavior or of treatment outcome simply cannot be made solely from information about individuals: information about their environments is essential; (2) Physical and social environments must be studied together since neither can be fully understood without the other, e.g., both the architectural design and the psychosocial treatment milieu may significantly influence patient and staff behavior; and (3) Social ecology has an explicit value orientation in that it attempts to provide knowledge relevant to promoting maximally effective human functioning.

Methods for Conceptualizing Human Milieus

An important aspect of social ecology is its primary focus on conceptualizing methods by which human environments may be characterized, and, as mentioned above, it is this aspect of the field which is most strongly emphasized here. Psychiatry and the behavioral sciences have themselves recently shown greatly increased interest in social milieus. This interest has arisen in part because of dissatisfactions with trait conceptualizations of personality, in part because of low correlations obtained between measures of personality traits and various validity criteria,

and, in part, because of growing evidence that substantial proportions of the variance in behavior are accounted for by situational and environmental variables.

The literature criticizing the empirical legacy of several decades of work with trait models of personality has been most cogently summarized by Mischel. Major corroborative studies include those by Ellsworth et al. who concluded that psychiatric patients' behavior in the hospital was not predictive of their behavior in the community; by Moos who showed that observations of hospitalized patients in a group therapy setting may not even generate valid predictions about the behavior of the same patients in either free time or individual therapy situations on the same ward; and by Raush and his associates who found that ward settings evoked characteristic patterns of social actions (i.e., settings were more or less evocative of dependency) and that the interactive effect of person and setting contributed far more information about behavior than either knowledge of the setting or knowledge of the person alone. From the point of view of the assessment and prediction of individual behavior, these and other findings present a compelling argument for the utility of environmental assessment methods. In addition, many studies have demonstrated that substantial differences may occur in the behavior of the same individuals when they are in different milieus.

This development has occurred mainly in psychology. However, an important parallel development has occurred during the past two decades in psychiatry, i.e., the psychosocial environment of psychiatric treatment has become of increasing concern. A concomitant of this emphasis is a reevaluation of the traditional disease model with its assumption that psychopathological disturbance resides only within the individual. The impetus for this change is partly due to relevant theoretical contributions emphasizing the interplay between ego functions and external reality, and partly to detailed observations and naturalistic descriptions indicating the importance of the treatment environment in facilitating or hindering treatment goals.

New programs designed to use the social milieu as a treatment modality have been organized. The approaches are exceedingly divergent, but they all basically stem from the common hypothesis that the immediate psychosocial milieu in which patients function is a crucial aspect of the treatment process. These developments have now resulted in the construction of several different methods by which treatment environments can be systematically characterized and compared.

The third major impetus for interest in conceptualizations of social milieus is an outgrowth of the recent “third revolution in psychiatry,” which is also occurring in a relatively parallel manner in psychology and the other

mental health professions. We are being asked to help design physical and social systems that will maximize the probabilities of human growth and facilitate effective functioning and human excellence. Since disorders of human functioning are at least partly rooted in social systems, new information leading toward the effective modification of institutions to promote the constructive handling of life stresses is being given increasingly high priority.

In addition, general dissatisfaction with the relatively weak effects of traditional individual and group treatment has promoted interest in naturally occurring therapeutic conditions in society. Anastasi has indicated the complexity of the problem by pointing out that environments cannot be ordered along a single favorable-unfavorable continuum, since, for example, an environment favorable to the development of independence and self-reliance may differ from one that is favorable to the development of social conformity or abstract thinking.

Each of these developments raises the common problem of how human environments can be conceptualized and assessed. Six major methods by which characteristics of environments have been related to indices of human functioning have recently been identified.

1. Ecological dimensions that include both geographical and meteorological and architectural and physical design

variables.

2. Behavior settings, the only units thus far proposed that are characterized by both ecological and behavioral properties.

3. Dimensions of organizational structure.

4. Dimensions identifying the collective personal and/or behavioral characteristics of the milieu inhabitants.

5. Dimensions related to psychosocial characteristics and organization climates.

6. Variables relevant to the functional or reinforcement analyses of environments.

The six categories of dimensions are nonexclusive, overlapping, and mutually interrelated. The overview presented is necessarily incomplete and sketchy, but it serves to illustrate the broad range of dimensions relevant to this area. The common relevance of these six types of dimensions is that each has been conceptualized and shown to have an important and sometimes decisive impact on individual and group behavior.

Ecological Dimensions

Down through the ages there has been the recurrent notion that geographical and meteorological characteristics (e.g., temperature, rainfall,

topography, etc.) may significantly shape the culture, character, and activities of societies. Environmental determinists believe that there are specific connections between environmental characteristics, such as mountainous terrain, soil conditions, humidity, etc., and personality traits such as strength of character, assertiveness, bravery, and laziness. For example, one study found an association between different types of subsistence economy and differential importance given to the development of certain character traits. Societies whose economies entailed the accumulation and care of food resources tended to stress the development of such personal traits as responsibility and obedience, whereas hunting and fishing societies tended to emphasize achievement and self-reliance. Such conclusions are, of course, tenuous, since intricate patterns of potential mediating factors are always present.

It has been suggested that climate may be one of the major factors in economic development throughout the world, the optimum climate being the temperate climate within which most of the world's current industrial powers lie. Further, many people feel that their efficiency is impaired by extremes of heat and cold, and one of the arguments in support of air conditioning is that it improves worker efficiency. Climate has been associated with gross national product per capita, with political uprisings, rebellions, and revolutions, with the occurrence of homicides, with specific indices of affective interpersonal behavior, and with variations in organizational

participation among metropolitan housewives.

Some of the other variables implicated in the determination of behavior include extreme cold, barometric pressure, cyclonic and anti-cyclonic storm patterns, and oxygen, nitrogen, carbon dioxide, and ozone concentrations in the atmosphere. For example, Mills reports that statistics in Tokyo show that people are more forgetful on days of low barometric pressure as indicated by higher frequency of packages and umbrellas left on buses and streetcars.

The weight of the evidence suggests that geographical and meteorological variables may be more important in the determination of group and individual behavior than has been thought. Man is increasingly creating his own geographical and meteorological environment, and trends in this area are thus concerned with the possible relationship of man-made variables, such as radiation and air pollution, to mood changes and to mental and physical symptoms.

Other aspects of the man-made environment, especially dimensions relevant to architectural and physical design, are also important. Behavior necessarily occurs in a specific physical context that may impose major constraints on the range of possible kinds of behavior and serve to determine particular aspects or patterns of individual action. A substantial amount of research has been done in this area. For example, behavioral maps can be

arranged in a matrix showing the frequency of different types of activities in different available locations. Psychiatric wards have been analyzed in terms of variables such as behavior density (the frequency of all types of activities at a particular place), diffuseness (the range of different activities occurring at a place), and activity profile (the frequency of specific types of activities occurring at a place). Research in ergonomics, human engineering, and human factors has been concerned with the relation of selected environmental variables, such as heating, lighting, noise level, ventilation, and the layout and design of machines to behavioral measures of work efficiency, comfort, social interaction, interpersonal perception, and exploratory behavior. For example, Maslow and Mintz demonstrated that interpersonal perceptions could be highly sensitive to variations in the physical environment. They found that judgments of psychological states (weary, zestful, irritated) based on photographed faces differed in three physically different rooms. Basic reviews of this area may be found in Craik, Kates and Wohlwill, Proshansky et al., and Sommer.

Unfortunately, there is as yet no adequate dimensionalization or typology of the variables of architectural and physical design. Kasmar has developed an environmental description scale that assesses perceptions of physical characteristics of rooms along dimensions such as physical organization, lighting, size, temperature, ventilation, etc. At a more global level, Lansing et al. have characterized planned residential environments (e.g.,

Columbia, Maryland; Reston, Virginia) along dimensions such as dwelling-unit density, accessibility of recreational facilities, percent of homes with sidewalks nearby, etc. The next major advance in this area will probably be a creation of several alternative typologies of variables that will be utilized in order to systematically study social problems such as physical environmental factors affecting residential choice and migration, the adaptational cost of urban noise and ghettos, etc.

Behavior Settings

The work of Roger Barker and his associates in ecological psychology is important and unique. They conceptualize behavioral ecology as being concerned with molar behavior and the ecological context in which it occurs. Barker has carefully analyzed and categorized the behavior settings of a small Midwestern community. He points out that these behavior settings, e.g., drugstore, garage, play in junior high school, basketball games, etc., are naturally occurring phenomena, i.e., they are not created by an experimenter for scientific purposes. The important point about behavior settings is that they are stable extra-individual units that have great coercive power over the behavior that occurs within them.

Behavior settings have been shown to have pervasive effects on individuals, not only in terms of the specific behavior "demanded" by the

setting (e.g., reading and writing in classrooms) but also on other behavior and on affects experienced by individuals. Barker and Gump have done an extremely intriguing analysis of the different demands of undermanned and optimally manned behavior settings and have shown that these produce characteristic differences in their inhabitants. For example, students in small schools with relatively few associates within behavior settings, in comparison with students of larger schools with relatively many associates, report twice as many pressures on them to take part in the programs of the school settings, actually perform in more than twice as many responsible positions in the settings, and report having more satisfaction related to the development of competence, to being challenged, to engaging in important actions, to being involved in group activities, to being valued, and to gaining moral and cultural values. Some of these findings have been replicated in large and small churches.

Thus, the specific relevance of behavior settings is that they are of considerable importance in the determination of several aspects of individual behavior and experience (specifically, the development of competence and self-esteem) which are of interest to mental health practitioners. Behavior setting surveys should be carried out in different types of institutions, e.g., mental hospitals, correctional units, universities, urban ghettos, etc. The range and variety of behavioral settings in central city, suburban, and rural areas must be quite different, and from Barker's results it would be expected

that this would have important effects on both the behavior of their adult inhabitants and on the developing competencies of the children growing up within them.

Dimensions of Organizational Structure

Many investigators have attempted to assess and discriminate among organizations utilizing relatively objective dimensions, such as size, staffing ratios, average salary levels, organizational control structure, etc. A typical example is work on the properties of organization structure in relation to job attitudes and job behavior. Organizations vary widely in their structural characteristics and, thus, an important question is whether differences in organizational structures are related to different behavioral and attitudinal indices of the organization members. Porter and Lawler found that dimensions such as the size of the overall organization, the number of levels in the organization relative to its total size, the size of the organizational subunits and the average number of subordinates a manager is responsible for supervising were significantly related to one or more attitudinal or behavioral variables, e.g., need satisfaction, absenteeism, turnover rate. Recent articles that review various aspects of this work, most of it concentrating on industrial and business organizations, include Lichtman and Hunt, Pugh, and Roberts.

Similar work has been done in educational institutions, mainly colleges and universities, in which attempts have been made to relate traditional indices of institutional quality (faculty-student ratio, percentage of faculty with Ph.D. degree, number of books in the library per student, etc.) to various indices of student achievement and personal development. In other relevant work, the three most well-investigated dimensions have been size, turnover rate, and population density or crowding, particularly in relation to social pathology. Several recent attempts have been made to further conceptualize crowding effects in human environments such as urban ghettoes and large cities.

Personal and Behavioral Characteristics of the Milieu Inhabitants

Various factors related to the characteristics of individuals inhabiting a particular environment, e.g., average age, ability level, socioeconomic background, educational attainment, may be considered to be situational variables in that they partly define relevant characteristics of the environment. This general idea is based on the suggestion made by Linton that most of the social and cultural environment is transmitted through other people. It implies that the character of an environment is dependent, in part, upon the typical characteristics of its members.

This approach may be illustrated by Astin who has recently developed a

new technique for characterizing environmental stimuli in colleges and universities, the inventory of college activities (ICA). The ICA provides information about the average personal and behavioral characteristics of the college environment by listing the following items: (1) Questions about activities in college, such as whether or not the individual flunked a course, became pinned or engaged, got married, participated in a student demonstration, changed his or her major field; (2) the median number of hours per week the student spent in different activities such as attending class, studying for school assignments, reading for pleasure, watching TV, watching athletic events, sleeping, playing games; and (3) the kinds of organizations in which the student was a member, such as fraternities or sororities, college athletic teams, marching band, religious club, service organization, etc. Remarkable diversity was found among the environments of 246 colleges and universities included in this study. Thus, the proportion of students who engaged in any particular activity (e.g., dating, going to church, drinking beer, voting in a student election) often varied from no students in some institutions to nearly all students in others. Astin feels that this considerable diversity indicates that the college and university environment has great potential for differentially influencing the experience and behavior of the individual student.

For illustration, he assumes that a new student enrolls in an institution with high academic standards in which certain environmental stimuli occur

relatively frequently: classroom examinations, discussions among students about grades, studying, intellectual arguments among students, and debates between faculty and students. The new student would be exposed to these and related stimuli and might thus feel anxiety about possible academic failure (a change in immediate subjective experience), increased fear of or hostility toward fellow students, increased feelings of competitiveness and/or feelings of inferiority. Presumably the student might be affected differently if he attended a different college. In terms of short-term behavioral effects, the student may increase the time he devotes to study, reduce the time he devotes to social activities, and perhaps increase his intellectual aggression. He may consequently experience greater feelings of loneliness and isolation. Finally, there may be alterations in his self-concept and/or relatively permanent changes in behavior that may persist beyond college (e.g., devoting a great deal of time to the job or competing constantly with others). Astin and Holland and Holland have done other highly relevant work in this area. Holland assumes that vocational satisfaction, stability and achievement depend on the congruence between one's personality and the environment (composed largely of other people) in which one works. He has proposed six model environments to characterize the common physical and social environments in our culture, and six personality types or personal orientations as identified by the type of vocation to which a person belongs. Since both the environmental models and the personality types are derived

from the same basic six concepts (realistic, intellectual, social, conventional, enterprising, and artistic), it is possible to classify people and environments in the same terms and, at least theoretically, to assess the degree of person-environment congruence and its effects. Thus, there are some highly promising approaches in this area.

Psychosocial Characteristic and Organizational Climate

Until recently most of the work in this area involved rather detailed naturalistic descriptions or anthropological vignettes of the functioning of different types of institutions such as psychiatric wards, colleges, and universities, etc. This was valuable work in that it indicated the importance of the immediate psychosocial environment in the determination of behavior and in that it suggested various types of dimensions along which psychosocial environments might be compared. The newer organization theorists have presented detailed analyses of organizations that specifically imply certain psychosocial or "event-structure" dimensions along which organizations might be compared.

A number of perceived climate scales have been developed in the last few years in order to attempt to more systematically measure the general norms, value orientations, and other psychosocial characteristics of different types of institutions. For example, Stern follows the Murray need-press

theory and points out that descriptions of institutional environments are based on inferred continuity and consistency in otherwise discrete events. If students in a university are assigned seats in classrooms, if attendance records are kept, if faculty see students outside of class only by appointment, if there is a prescribed form for all term papers, if neatness counts, etc., then it is probable that the press at this school emphasizes the development of orderly responses on the part of the students. It is these conditions which establish the climate or atmosphere of an institution. A substantial amount of work utilizing this general logic has been carried out in colleges and universities, elementary schools, junior high and high school classrooms, and industry.

Moos and his associates have studied nine different types of social environments relatively extensively and have developed perceived climate scales for each of these environments: (1) psychiatric wards; (2) community-oriented programs of psychiatric treatment, such as halfway houses, day hospitals, or community care homes; (3) correctional institutions, including those for both adult and juvenile offenders; (4) military basic-training companies; (5) university student residences, such as dormitories, fraternities, and sororities; (6) junior high and high school classrooms; (7) social and therapeutic groups; (8) work milieus; and (9) families.

Moos conceptualizes three basic types of dimensions that characterize

and discriminate among different subunits within each of these eight environments.

1. Relationship dimensions, which are quite similar in all eight environments, assess the extent to which individuals are involved in the environment and the extent to which they support and help each other. The basic dimensions are involvement, support, and expressiveness.

2. Personal development dimensions assess the basic directions along which personal development and self-enhancement tend to occur in the particular environment. The exact nature of these dimensions varies somewhat among the eight environments studied, depending upon their basic purposes and goals. For example, in psychiatric and correctional programs these dimensions assess the treatment goals, e.g., autonomy (the extent to which people are encouraged to be self-sufficient and independent) practical orientation (the extent to which the program orients an individual toward training for new jobs, looking to the future, setting and working toward concrete goals) and personal problem orientation (the extent to which individuals are encouraged to be concerned with their feelings and problems and to seek to understand them). An autonomy or independence dimension is also identified in military companies. University residences (e.g., competition, academic achievement, intellectuality) and junior high and high school classrooms (e.g., task orientation, competition) include other dimensions that are conceptualized as belonging in the category of goal orientation.

3. System maintenance and change dimensions are relatively similar across the eight environments studied. The basic dimensions are order and organization, clarity and control. An additional dimension in work environments is work pressure, whereas a dimension of innovation is identified in educational, work, and small group environments. There is evidence that these types of dimensions are related to important criteria such as patient morale and indices of coping behavior and different objective indices of treatment outcome.

Techniques by which to assess the organizational climate characteristics of social milieus are important in the identification of salient environmental dimensions. Their specific relevance here is that they identify dimensions that have demonstrable effects on individual and group behavior. They are useful in the measurement of personality-environment congruence, in cross-cultural comparisons, and in helping define directions for environmental change. The striking similarity of the specific dimensions and their categorization across different investigators and organizational environments indicates that one or more widely useful typologies may soon emerge.

Functional or Reinforcement Analyses of Environments

The methodology of functional analyses of environments is an outgrowth of a social learning perspective. Basically, the social learning

theorist takes it as a given that people vary their behavior extensively in different social and physical environments. In this view, people vary their behavior from one setting to another mainly because the reinforcement consequences for particular kinds of behavior vary. Thus, the social learning theorist attempts to analyze and identify those stimuli and stimulus changes which produce and maintain behavior and behavior change. People are expected to behave similarly in different settings only to the extent that those settings are alike (or perhaps are perceived to be alike) in their potential reinforcing properties.

Relevant approaches include those of Schoggen and of Wolf. Schoggen conceptualized the environment to be active and directed with respect to the developing child and identified environmental force units (EFU) which were defined as any action by an environmental agent that occurred vis-a-vis the child and was directed toward a recognizable end state with respect to the child. His results indicated that EFU occurred at a very frequent rate, that mothers were more often sources of EFU than fathers, and that there were wide individual variations among children in the percent of EFU initiated with the child and by others in interaction with the child. This may be a potentially important technique for studying both the differential shaping of behavior and methods by which specific goals of behavior change may be implemented.

Wolf listed the conditions in the environment that were likely to

influence the development of general intelligence and/or academic achievement. The types of environmental variables that were identified included: the climate created for achievement motivation, the opportunities for verbal development, the nature and amount of assistance provided in overcoming academic difficulties, the level of intellectuality in the environment and the kinds of work habits expected of the individual. Wolf developed a technique for assessing these variables and found that the correlation between the total rating for the degree of intellectual "press" of the environment and measured general intelligence was 0.69. He states that environments for the development and maintenance of such characteristics as dependency, aggression, and dogmatism could be delineated and measured. Many investigators' have presented analyses of institutional environments along these lines.

Functional or reinforcement analysis is relevant to the prediction of behavior in the sense that one can attempt to discover whether environmental maintaining conditions for a specific kind of behavior tend to change markedly. Also, the assumption is that behavior change can readily occur when there is environmental change. Generalization of behavior change should occur to the extent to which there is generalization of the reinforcement that induced the behavior change. Since any stimulus may have either discriminative or reinforcing properties (or both), functional analyses are highly idiographic and complex, though of great potential value for

understanding and changing behavior.

An Overview and an Example of Aggression and Violence

This brief overview illustrates the many different assessment techniques, types of variables, and potential environmental typologies. The -area is in its empirical infancy and it is still unclear how the different methods will eventually relate to each other. In the broadest perspective, environmental and stimulus variables may be conceptualized as reducing and shaping the potential variability of human behavior. In this sense, each of the six types of dimensions mentioned above are related. The geographical and meteorological environment to some extent shapes the environment of architecture and physical design, which in turn has demonstrable effects on the types of available behavior settings. In their turn, behavior settings constrain the potential range of organizational structure, methods of institutional functioning, and the personal and behavioral characteristics of individuals who choose to inhabit the behavior settings. Different behavior settings, organizational structures, and sets of milieu inhabitants give rise to different psychosocial characteristics and organizational climates. Finally, any of the above types of variables may, to some extent, affect the types of reinforcements that are likely to occur in a specific setting. Decisions about specific reinforcements that are valued may then, in a feedback loop, have effects on the resulting geographical and architectural environment. Any of

these levels of environmental variables may be influenced by any other level, although the relationship between some levels (e.g., personal characteristics of milieu inhabitants and organizational climates) may be closer than that between others (e.g., geographical and meteorological variables and organizational structure).

The categorization of environmental dimensions into six broad types may or may not have general utility. The categories are overlapping and certain variables can as easily be placed into one category as another. On the other hand, the conceptualization identifies some initial directions for an overall organization of this field. The potential clinical relevance of a coherent conceptualization of environmental and stimulus variables may be illustrated by utilizing aggression and violence as an example. The point is to illustrate a framework for the analysis of milieu effects, which is of critical importance not only for aggression but for the entire range of behavior with which psychiatrists must deal.

There is substantial evidence that various attitudinal and behavioral indices of anger, hostility, and aggression vary considerably over different settings, even for the same individuals. For example, Endler and Hunt found that consistent individual differences accounted for only between 15 and 20 percent of the variance in hostility, whereas setting differences accounted for between 4 and 8 percent and the various interactions (e.g., subjects by

situations) accounted for approximately 30 percent. Moos has corroborated these findings in a study of the reactions of patients and staff to a representative subsample of daily ward settings, e.g., individual therapy, small group therapy, community meeting. The relevance of this and other similar work is that there is an upper limit to the accuracy of predicting aggressive behavior from knowledge of the individual alone, and that different settings (all of which may have at least some anger-provoking elements in common) differentially elicit aggressive behavior from different individuals. The most important implication is that the identification of highly aggressive individuals may vary considerably, depending upon the situation in which they are observed, the individual by whom they are interviewed, etc. One cannot assume that individual differences on the strength of indices of aggression that are obtained in experimental situations will necessarily generalize to real life situations or even to other experimental situations.

Each of the six types of dimensions discussed above has a central impact in the determination of aggressive behavior of individuals and groups, e.g., the riots in Los Angeles and Chicago during the summer of 1965 were widely believed to stem in part from the discomforts of hot weather. Wolfgang has reported that the peak months for the occurrence of homicide are the hot summer months. Berke and Wilson point out that most major political uprisings, rebellions, and revolutions begin during the hot months. Griffitt found that interpersonal attraction responses were significantly more

negative under a “hot” condition (over 90° F) than under a “normal” condition (about 68° F). Lieber and Sherin have recently concluded that there is a relationship between phases of the moon and murder rates. They analyzed over 1900 murders occurring over a fifteen-year period in Dade County, Florida and found that the murder rate began to rise about twenty-four hours before the full moon, reached a peak at full moon, and then dropped back before climbing again to a secondary peak at the new moon.

The exact interpretation of these findings is unclear, although evidence for the effects of temperature on aggressive behavior is relatively consistent. There is less available evidence that architecture and physical-design variables have effects on aggressive behavior, although they do generally have effects on interpersonal transactions, and the body-buffer zone has been shown to be larger in violence-prone individuals.

Different types of behavior settings differentially elicit aggressive or hostile behavior. In an interesting clinical study, Raush et al. found that changes in hostility in hyperaggressive children were setting specific, e.g., one child showed a marked reduction in hostile responses toward adults in a structured group setting, whereas another showed these changes mainly during mealtimes. Gump et al. observed children in camp settings and found that the quality of interaction of the same boys in swimming and craft settings was quite different. Asserting, blocking, and attacking behavior was

significantly higher in the swimming setting, whereas helping reactions were higher in crafts. In a detailed study of the behavior of a nine-year-old boy, Gump et al. found that the boy showed a greater proportion of aggressive responses at home than at camp.

Many organizational structure dimensions have been related to the frequency of aggressive behavior, most notably indices of space and population density (crowding). For example, Swift" concluded that conflicts between children are more numerous when play space is more restricted. Other studies have found correlations between high-population-density areas and high crime rates for both juveniles and adults. Calhoun has presented experimental data linking population density and overly aggressive and conflict-oriented behavior in rats, and Sugiyama has indicated that high density leads to a general breakdown in the social order of wild monkeys and results in extremely aggressive behavior, hyper-sexuality, the killing of the young, etc.

In some intriguing analyses Galle et al. have found that four different components of population density (e.g., the number of persons per room, the number of rooms per housing unit) show highly significant correlations with asocial aggressive behavior, even when ethnicity and social class are controlled. Some authors are now beginning to pay specific attention to the factors by which the effects of population density and crowding may be

mediated. Extensive data linking various indices of anger, aggression, and conflict to organizational structure variables, such as size, staffing, the heterogeneity and stability of personnel, etc., are also available. Since measures of aggressive responses may be heavily affected by organizational structure dimensions, changes in these dimensions (e.g., an increase in amount of play space) may have dramatic effects.

Discussions of the effects of variables relevant to the last three methods of characterizing environments are particularly numerous and only selected examples can be given here. In terms of the personal and behavioral characteristics of the inhabitants of the milieu, perhaps the most relevant example is that of the "interpersonal reflex" or "behavioral reciprocity." Aggression begets aggression, and the proportion of hostile actions that are "sent" by an individual often parallels the proportion he "receives." For example, Purcell and Brady found that the interpersonal response of affection was preceded by the interpersonal stimulus of affection 80 percent of the time and by the interpersonal stimulus of aggression 0 percent of the time.

In a most intriguing study, Couch found that the response of interpersonal hostility was more highly correlated with the immediately preceding behavioral press than it was with a combination of personality need, concealment defense, and perceived press predictors. Thus, knowledge of the immediately preceding interpersonal stimulus was the best predictor

of interpersonal hostility. This finding should give all of us who attempt to make predictions from personality needs alone significant pause. Holsti and North, in careful analyses of documents authored by key European decision makers in the period of June 27 to August 4, 1914, indicate that these conclusions are not limited to individuals acting alone. They found that the correlation between the hostility expressed toward a nation and the hostility expressed by it was 0.46 for the Triple Entente (England, France, and Russia) and 0.68 for the Dual Alliance (Austria, Hungary, and Germany). Perceived hostility and actual violent behavior (i.e., actual troop mobilizations, etc.) were also highly intercorrelated (0.64).

There have been several demonstrations of the effects of social climate on aggression, particularly in groups and families. Perhaps the most intriguing work was done by Lewin et al. who found that the same group may change markedly (from apathy to aggression or vice versa) when it is changed to a new leadership atmosphere under a different leader. Lewin has also shown that an individual's conduct may change drastically in line with the social atmosphere of the group. He studied two girls and found that after transferring from one group to another, each girl rapidly displayed the level of conduct shown by the other girl before the change. He concludes that changing group climates should have important effects on changing individual aggressive behavior. McCord et al. related specific indices of home atmosphere to different types of crimes, and Anderson and Brewer have

shown that teachers create different classroom climates that have strongly differential effects on relevant indices of child behavior, e.g., dominating, resisting, nonconforming, etc.

Finally, the potential effects on aggressive behavior of both positive and negative reinforcement procedures (including imitation and modeling) are well known.'' Milgram's studies have shown that subjects who are not usually aggressive can be made to behave very aggressively under experimenter and group-pressure encouragement. Recent examples from world history seem to amply corroborate this. Bandura and Walters have also illustrated the specificity of aggressive behavior in their finding that parents who punished aggression in the home, but who simultaneously modeled aggressive behavior and encouraged it in their sons' relationships to their peers, produced boys who were not aggressive at home but who were markedly aggressive at school.

It should be noted that Moyer has conceptualized several kinds of aggression, each of which appears to have a specific neural and endocrine basis. He distinguishes among the kinds of aggression on the basis of the stimulus situations that elicit them, e.g., inter-male, fear-induced, irritable, territorial, maternal, and instrumental. Although the categories for environmental analysis are different, the underlying logic of Moyer's analysis is similar to that presented here.

Thus, the evidence indicates that ecological variables, behavior settings, dimensions of organizational structure, behavioral characteristics of milieu inhabitants, social and organizational climate, and reinforcement variables, all have important impacts on various indices of aggressive and violent behavior. Similar analyses may be carried out and similar conclusions probably hold for most other clinically relevant kinds of behavior. This analysis in no way minimizes the importance of individual dispositions in the sense that it is clinically obvious that some individuals are generally more prone to express certain kinds of behavior (including aggressive and violent behavior) than others. In addition, individual dispositions may have their effects in interaction with environmental conditions. On the other hand, the importance of this work on the development of taxonomies of environmental variables can hardly be overemphasized, particularly in its implications for both behavior prediction and behavior change. Knowledge of the probable behavioral and attitudinal effects of different environmental arrangements is at least as central an issue for psychiatry as knowledge about traditional personality theory and psychotherapy.

Implications and Applications

Social ecology provides an overall perspective on the salient dimensions of the physical and social environment and thus on dimensions that influence the development and maintenance of effective adaptation and coping

behavior, on the one hand, and "social-break-down reactions," including medical and psychiatric symptomatology, on the other. The approach provides some beginning conceptual and theoretical underpinning for community psychiatry and the community mental health movement, suggests guidelines for more thorough and complete descriptions of both individual clinical cases and overall treatment milieus, and has important implications for the facilitation and evaluation of social change, particularly in small group living settings. Social ecology expands the traditional framework of ecology to include issues of direct concern to psychiatry, i.e., the identification of environmental and milieu variables that have impacts on the maintenance of effective and ineffective behavior.

The six ways of describing human environments as discussed above provide an overall framework of general utility. The framework is relevant to clinical applications, particularly in community-oriented consultation. Psychiatrists are increasingly asked to diagnose and change social settings rather than to work separately with each of the individuals within those settings. Sensitivity to a broad range of environmental variables and their probable effects on individuals will help identify the causes of environmental "trouble spots," e.g., high dropout, turnover, sickness, or accident rate, and to suggest changes in them. Measures of environments aid in systematically comparing two or more milieus (e.g.. treatment programs, university dormitories) and are essential in evaluating the extent to which social change

attempts actually succeed. Treatment outcome cannot be evaluated without assessing the characteristics of individuals; the outcome of attempts to change the social systems cannot be evaluated without assessing the characteristics of milieus.

One example is the use of psychosocial and organizational climate-assessment techniques in the facilitation and evaluation of social change. Moos has presented a paradigm in which information about perceived psychosocial environments is utilized in planning and directing social change within those environments. The methodology includes four basic components.

1. The social environment of a program is assessed. All the individuals involved in the program (e.g., both patients and staff in a treatment milieu) give their opinions about the current functioning of the program on relevant dimensions.

2. Individualized feedback is given on the results of these assessments, with specific focus on the similarities and differences between various important groups, e.g., psychiatrists, nurses, and psychiatric aides. Agreements and disagreements on the goals and value orientations of different groups are also outlined. Emphasis is placed on the discrepancies between the "real" and the "ideal" social milieu and the implications for change that are thereby suggested.

3. Concrete planning of specific methods by which change might occur

along specified dimensions is then instituted. The methods by which decisions about change are made and by which change is implemented vary widely from one environment to another.

4. One or more reassessments are made of the characteristics of the social environment in order to provide information about the results of the change process. This type of feedback and discussion about the environmental characteristics of an ongoing social system makes it possible for individuals participating in the system to help plan, design, effect, and evaluate changes in it. Regular feedback of data regarding the characteristics of one's environment provides a way to monitor the evolution and function of a milieu over time and helps to articulate the relationship of the current environment to overall program goals.

Although less has as yet been done in this area, the systematic use of information about relevant treatment and community environments of patients will eventually make for far richer and more meaningful clinical case descriptions. The original Meyerian system included data about relevant biological, psychological, and sociological or life-situation characteristics for each individual patient. However, there has never been any way of systematically describing the environments in which people function. Current case descriptions usually include only general comments about life-stress events, e.g., death of a family member, job changes, retirement, major physical illnesses, etc., whereas they should include at least as much detailed

information about a patient's environment as they do about his personality and behavior. A specific example is the attempt to identify and describe basic "alcohologenic" properties of the community environments of patients with alcohol problems. The extent to which individual patients encounter "alcoholic stimuli," e.g., how many bottles of liquor are visible in his or her house, how many social functions does the patient attend where large quantities of alcohol are consumed, does the spouse of the patient drink heavily, does the patient have a number of close friends who drink heavily, etc., is at least as important in predicting future drinking behavior as individual background or personality characteristics.

The six types of environmental dimensions also provide guidelines for compiling program descriptions. Psychiatrists and other mental health workers are often responsible for writing descriptions of environments (e.g., treatment programs) for use by referring social workers, prospective patients, etc. Evidence indicates that published descriptions of environments do not usually accurately portray the salient characteristics of those environments. College catalogues often give no information about the academic backgrounds of entering students or about the informal social atmosphere, though these are characteristics of the environment that importantly affect a student's satisfaction and development. Similar conclusions may be made about published descriptions of psychiatric and correctional treatments. Otto and Moos asked independent judges to read

published descriptions of community programs and to give their impressions of the characteristics of the treatment environment. The judges' opinions were then compared with the opinions of residents and staff in each program. None of the descriptions presented a fully accurate picture of the treatment environment, although, as might be expected, some descriptions were much better than others. Each of the six environmental description methods gives a somewhat different perspective of a treatment program, and thus the use of all six should enhance the accuracy and completeness of program descriptions.

In this connection many investigators have suggested that different institutions know much more about the individuals they are attempting to recruit or place than those individuals know about the institution. Social workers and other program staff generally know far more about the characteristics of the individual patient than they do about the program or programs into which they wish to place that patient. Patients themselves generally know little or nothing about program characteristics. This imbalance of information may, in part, be responsible for the extremely high rate of premature termination of treatment. Studies of individual and group psychotherapy have indicated that information about these treatment modalities may be helpful to patients entering into them. Systematic information about treatment programs, especially those which are community-based, may similarly be of help to that growing proportion of

patients who wish to take a more active part in choosing the specific treatment program that might be most beneficial to them.

From a research perspective analyses of milieus may help to identify the specific environmental factors that relate to favorable or unfavorable treatment outcome and to predict outcome based on the differential impact of treatment settings on certain groups of patients. More detailed knowledge of components of social systems should enhance more adequate matching of patients with treatment settings that meet their needs and hence facilitate recovery.

It is well established that social milieus have important physiological and "health-related" effects. A systematic conceptualization of environments makes it possible to test more differentiated hypotheses about the effects of specific environmental dimensions on specific physiological indices. The potential importance of this area is indicated by the fact that the incidence of coronaries varies among environments as well as among types of individuals, and that the same psychopharmacological agent may have different therapeutic effects in different treatment settings. Finally, genetic and developmental studies are in need of much more differentiated information about environmental characteristics. The fact that home environments of individuals with certain chromosomal abnormalities are or are not "disharmonic" is simply no longer sufficient.

It is not yet clear exactly how the six different methods of environmental description will eventually relate to each other, but it is clear that they are each critical for the central tasks of understanding, predicting, and changing behavior. The optimal arrangement of environments may be the most powerful behavior modification technique currently available. Psychiatrists and other mental health specialists are now asked to consult on the probable behavioral and attitudinal effects of environmental changes, precisely because human beings can now control and change their own environments. Each institution in our society is attempting to set up conditions that it hopes will maximize certain types of behavior and certain directions of personal development. Families, hospitals, prisons, industries, secondary schools, universities, communes, and various groups, each arrange certain environmental conditions that presumably maximize certain effects. There is, of course, the greatest disagreement both about the effects that should be maximized and about which conditions maximize them. It can be cogently argued that these issues are so central to society that the most important task for psychiatry and the behavioral sciences is concerned with the systematic description and classification of environments and their differential costs and benefits to adaptation.

The field of social ecology, though currently somewhat vague and undifferentiated, presents a developing multidisciplinary focus around which psychiatrists, with their detailed knowledge of human adaptation and coping

skills, can fruitfully interact with other social science professionals who are primarily concerned with conceptualizing and constructing new environments. The potential for radically altering the day-to-day practice of psychiatry over the next decade or two is much greater than we now realize.

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Notes

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