

PROXEMIC BEHAVIOR: A CONCEPTUAL AND  
METHODOLOGICAL RECONSTRUCTION

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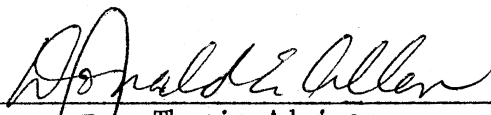
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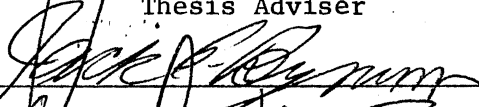
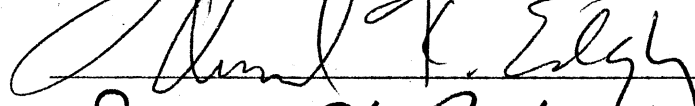
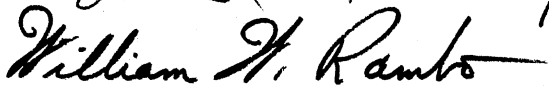
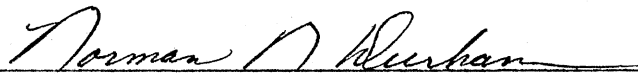
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## CHAPTER I

### INTRODUCTION

All living organisms observe some sense of territoriality, as Parsons (1951) fully explains in his consideration of one of sixteen categories for social action: allocation. Territoriality, whether learned or instinctive, refers to the structuring and control over space which is deemed necessary for survival (Lyman and Scott, 1971). Ardry (1966) provides the argument that territoriality is a natural rather than a cultural phenomena. It is not the purpose of this research to address this question. It seems obvious to the author, if territoriality is a natural phenomena, the subsequent structuring and utilization of spaces, proxemics (Hall, 1960), is a cultural phenomena, as reflected by the research of Little (1968) and Sommer (1968). They report cultural variations in the structuring and use of micro-space. Several researchers report variations of proxemic behavior by sex, race, and personality type (Blumenthal and Meltzoff, 1967; Booream and Flowers, 1972; Hobbs, 1966; Horowitz, 1964; Kuethe and Stricker, 1963; Kuethe and Weingartener, 1964; Leibman, 1971; Meisels and Canter, 1970; Pederson, 1973c, Sewell and Heisler, 1973; Stokols et al., 1973; Williams, 1971). It would seem, then, that this variation may stem from a natural propensity as Ardry suggests, but the manifestations of same appears to be a cultural phenomena.

The concept of territoriality was first introduced into sociological analysis in the mid-nineteen twenties under the label of the ecological school (cf., Lyman and Scott, 1971). Park et al. (1925) provide an early statement of this approach. It is one mainly concerned with the structuring of macro-space. Alihan (1938) provides a summary and bibliography of this school. (For a more recent statement see Quinn, 1950; Hawley, 1950; and Theodorson, 1961.)

Specifically, the study of territoriality originated in animal studies (Howard, 1920). The concept has been extended to human spatial behavior (Hall, 1963b, 1966). Hall (1936b:1003) defines human territoriality, or proxemics, as

the study of man's structuring and perception of space, and include a wide variety of spatial behavior from the structuring of micro-space - small amounts of space that are utilized in daily interaction - and macro-space - the physical layout of cities.

Simmel first introduced this structuring of micro-space. He notes:

In the regard to the 'significant' (i.e. 'great man') man, there is an inner compulsion which tells one to keep at a distance and which does not disappear even in intimate relations with him. The only type for whom such distance does not exist is the individual who has no organ for perceiving distance . . . The individual who fails to keep his distance from a great person does not esteem him highly, much less too highly (as might superficially be the case); but on the contrary, his importune behavior reveals lack of proper respect . . . The same sort of circle which surrounds a man - although it is value - accentuated in a very different sense - is filled out by his affairs and by his characteristics. To penetrate this circle by taking notice constitutes a violation of personality. Just as material property is, so to speak, an extension of the ego, there is also an intellectual's private property, whose violation effects a lesion of the ego in its very center (Parsons, 1961: 320).

Thus, Simmel illustrates that micro-proxemics is of paramount importance in both communication distance and personal integrity.

The nature of micro-proxemics appears to be both interactional and

behavioral. As indicated by the interactionist perspective (Blumer, 1969; Meltzer et al., 1975) society itself may be built upon the communications between and among individuals. If, as Simmel indicates, this interaction is partially governed by proxemic behavior it would prove beneficial to sociologists to ascertain the structuring of micro-space.

### Demarcating Personal Space

The term "personal space" was coined by Katz (1937) when he used the term as metaphor to a shell of a snail. Similarly, certain like aspects were implicit in Stern's (1935) "personal nearness" or "aura", Lewin's (1935) "life space" and Von Vexhull's (1957) analogy to a soap bubble. The attributes of territoriality, one aspect of proxemics, in non-humans have been described most comprehensively by Hediger (1950, 1955, 1965). Contained in these works is a distinction between flight distance (personal space) and social distance. Somewhat less systematic reports have been offered by Allen (1939) and Condor (1949).

Research in the area of human proxemics has increased tremendously in the past decade following such popular writings of Ardrey (1966, 1970), Calhoun (1962) and Lorenz (1967). Equally popular are the anthropological works of Hall (1959, 1960a, 1960b, 1963a, 1963b, 1964, 1966, 1968, 1974, 1977) and the works of Sommer (1959, 1961, 1962, 1967a, 1967b, 1968, 1969). (Sommer (1959:248) has distinguished personal space from territorial behavior along four (4) major criteria. The criteria are as follows: 1) personal space is portable whereas territory is relatively stationary, 2) the boundaries of personal space are invisible whereas the boundaries of territory are usually marked in some manner, 3) personal space at its center has the person's body whereas territory

does not, or need not, and 4) encroachment into personal space areas usually leads to withdrawal (Hediger's flight distance) whereas encroachment of territory usually leads to threats or fights. ) It should be noted here that personal space is distinct from, and should not be construed to be the equivalent of, territory nor social distance (the latter will be dealt with in detail in the following sections). Sommer's distinctions continue to furnish the rubric under which most research reports are organized (Hayduk, 1978).

The distinction between personal space and territoriality can be made conceptually clear, this is indicated by Sommer (1959) above, and can be seen by contrasting the work of Sommer (1969) and that of Lyman and Scott (1971). Yet in practical application these distinctions tend to obfuscate one another in specific research designs. An overlap between these spatial propensities often occurs in studies of seating arrangements, an example is offered. When a library user occupies a specific seat at a table, his territory may be marked by the placement of various personal items surrounding that seat. Contained within this territory is the personal space "bubble" that is carried around by the person. If the user temporarily leaves his seat, his territory and its markers are still intact and stationary, yet the personal space bubble is carried away with the user. As the person resumes his seat, personal space and territorial dimensions overlap once again. In these studies, consideration of both these aspects of proxemics would seem apropos (cf., Becker, 1973; Becker and Mayo, 1973; Sommer, 1961, 1962, 1967).

There are other research strategies in which this overlap would seem apparent. Studies in nonverbal communication (e.g., Birdwhistel, 1970; Duncan, 1969; Hall, 1960; Weitz, 1974), cognitive spatial mapping

(e.g., Bogardus, 1933, 1959; Kuethé, 1962a, 1962b, 1964) indicate a relationship to personal space. Personal space may be a form of non-verbal communication, an anchor point concerning cognitive spatial mapping, or a measurement technique of psychological distance. Goffman (1963, 1971), Stilitz (1969), Schefflen and Ashcraft (1976), and Schefflen and Schefflen (1972) address theoretical issues that include territoriality, personal space, nonverbal communication, cognitive mapping, and phenomenology. These works clearly demonstrate the interdependency of these areas in actual social interactions. These inter-area relationships, however interesting, are beyond the scope of research.

Also closely related to, and beginning to converge with, personal space is the area of crowding research. This convergence is occurring at the experimental and theoretical levels (e.g., Aiello et al., 1975; Anderson, 1972; Baldassare, 1975a, 1975b, 1975c, 1977, 1978; Baldassare and Teller, 1975; Baldassare and Fischer, 1977; Baron et al., 1976; Baron and Rodin, 1978; Bickman et al., 1973; Desor, 1972; Koneci et al., 1975; Lewis, 1971; Stokols et al., 1973). This seems only logical as perceptions of available space and the resultant experiencing of crowding must incorporate other spatial phenomena such as territoriality and personal space.

Personal space has been discussed as to how it is distinct from its companion areas. It will be treated here as Sommer (1959, 1969), Dosey and Meisels (1969), Hall (1966) and others have suggested: an area surrounding a person's body which is regarded as a private area. The sanctity of this area is usually protected as Hediger notes (1953) by flight. Personal space is not a shared social distance but a private personal distance.

### Statement of the Problem

The specific concern of this research is inconsistency of conceptual definition, operational definition and instrumentation. Each of the above mentioned areas is plagued with inconsistency that contributes largely to the lack of consistent findings in personal space research. This lack has been well documented (Baldassare, 1978; Haase and Markey, 1971; Little, 1965; Meisels and Cantor, 1970; Patterson, 1973; Pedersen, 1973a, 1973b, 1973c) and would serve no pendantic purpose here. Rather the focus of this research is the attempt to isolate those sources of inconsistency with the hope of clarifying the theoretical and methodological issues involved, i.e. conceptual/operational congruency.

As this research is primarily concerned with the assessment of methodological artifacts within personal space research, the expected contributions will be in that area. These data should illustrate the importance of operational procedures by illustrating the variant results obtained from non-standardized instructional sets, experimental task and instrumentation. Further, it is suggested that, due to the various spatial areas depicted by the instructional sets utilized, these data are consistent with Hallian (1966) conception of the human construction of micro-space.

The review following will be concerned with outlining the major theoretical perspectives forwarded in the area. Of primary interest will be the conceptual definitions offered by the various theorists. A theoretical model developed by Portrey and Bynum (1980) dramatizing the dynamic aspects of spatial structuring, as indicated by Hall, will be presented. Directly following the theoretical review will be a review of the methodologies under consideration. The operational procedures

will receive special attention. To illustrate conceptual/operational incongruity, a comparison of conceptual definition and operational procedures will be presented. The methodological procedure designed for this research will follow. The results section will present the data obtained and advance specific rationals for the statistical treatments employed. The discussion will deal with the methodological artifacts identified and relate findings to theory in the area.

## CHAPTER II

### REVIEW OF LITERATURE

#### Theories in Personal Space Research

Hayduk (1978) and Evans and Eichelman (1976) identify four (4) major theories in personal space research: 1) the Dean Argyle equilibrium theory, 2) the Dosey-Meisels protection theory, 3) the Duke-Nowidki social learning theory, and 4) the Nesbitt-Stevens stimulation theory. Others have recently attempted a reconceptualization of personal space (cf., Altman, 1975, 1976; Stokols, 1976) this work has been too imprecise and casual for inclusion with the more concise theoretical models of personal space. In addition to the four theories identified by Hayduk and Evans and Eichelman, a detailed account of the Portrey-Bynum electro-magnetic model, derived from Argyle-Dean, Dosey-Meisels, and Hall (1966) will be presented.

#### The Argyle-Dean Intimacy Equilibrium Theory

The Argyle-Dean theory (1965) is constructed upon four (4) salient characteristics in dyadic interactions. These characteristics are: 1) the amount of eye contact, 2) the interaction distance, 3) the intimacy of topics discussed, and 4) the amount of smiling. They see each of these characteristics as subject to approach and avoidance forces (Hayduk, 1978). The dynamic interplay among the four occurring before



a relatively stable interaction distance is reached. Eye contact providing the source for information gathering is an approach force whereas some psychological state, such as anxiety, may be an avoidance force. These antithetical forces somehow establish a medium point between staring and complete avoidance of eye contact. Each of the four establishes an equilibrium as the interact proceeds.

The Argyle-Dean theory deals with approach (presumably for interaction) and avoidance (guarding against the intrusion of personal space). Of primary concern is an interaction distance. The equilibrium model they present appears to deal with the four criteria as establishing a function intimacy, or interactional distance. What these authors fail to note is that perhaps the four criteria they postulate are functionally dependent themselves upon the interpersonal distance. As participants move closer, eye contact decreases, signalling an avoidance force (Aiello, 1972), guarding against personal space intrusion. Thus the interaction distance established is a function of a personal space distance of the interactants not a functional equilibrium established by the four criteria. It is precisely this protective dimension of personal space that helps to establish interactional distances, an aspect of spatial structuring Argyle and Dean fail to treat in their model.

The theory is built by transforming the set of four "independent criteria", by introducing intimacy (interactional distance) as another equilibrium. It is difficult to follow this line of reasoning as their discussion indicates these four characteristics are far from independent. By definition, each of the four are functionally dependent; changes in any produces changes in the others.

Support for the Argyle-Dean theory is mixed. Argyle and Dean (1965) (1965), Goldberg, Kiesler et al. (1969), Jourard and Friedman (1970), Exline et al. (1965), Patterson, Mullens and Romano (1971) and Baxter and Rozelle (1975) present positive results. Aiello (1972), Porter et al. (1970), McDowell (1972, 1973), Argyle and Ingham (1972), Russo (1975), Mahoney (1974), and Exline and Messick (1967) present at least partially negative results. Regardless of the mixed support and also some very serious methodological problems (cf., Haase and Markey, 1971; Portrey, 1979, 1980; Stephen and Rutter, 1970), this theory remains popular. Probably so, as Patterson (1973) indicates, because its propositions are both neat and simple.

As the Argyle-Dean theory rests upon the notion of an equilibrium model of spatial structuring, one must pose the question, as intimated earlier; equilibrium in response to what, too far, too close, too what? They do make mention of personal space but almost in passing, dealing exclusively with interactional distance. The proposition advanced in the present research is that in order to construct a more precise model of spatial structuring both aspects of micro-proxemics, the approach forces mentioned by Argyle-Dean and the avoidance forces of personal space, must be included.

The dual nature of micro-proxemic structuring is apparent in the conceptual definitions employed by the researchers attempting to study the propositions of Argyle-Dean. Depicting the interactive, approach forces, distance of micro-proxemics are the conceptual definitions of Argyle and Dean (1965), Argyle and Ingham (1972), Aiello (1972), Exline and Missick (1972), Exline et al. (1965), and Goldberg et al. (1969). Baxter and Rozelle (1975), Jourard and Friedman (1970), McDowell (1972,

1973), and Patterson et al. (1971) all identify the avoidance aspects of spatial structuring, while Porter et al. (1970) offers both definitions simultaneously. Each of these areas of spatial structuring are distinct spatially and functionally and should be treated as such within the research enterprise. As illustrated above, research reports appear to merge these two antithetical functions of spatial structuring, thus obfuscating the area.

### The Dosey-Meisels Protection Theory

This theory is based upon a single proposition consistent with that of Sommer (1969). As mentioned earlier, this proposition depicts personal space as a private, not shared in interaction, spatial area: "personal space may be conceived in the sense of a body-buffer zone, one . . . that can be used for protective purposes. This applied to threats to one's self-esteem (e.g., Semmel, 1949) as well as bodily harm" (Dosey and Meisels, 1969, p. 93).

This theory conceptually presents personal space as a dependent variable and perceived threat as an independent variable. However, the reverse ordering is just as plausible, as indicated by the review and critique of Argyle-Dean, but not implied nor discussed within the confines of the Dosey-Meisels theory. As presented, greater perceived threat produces larger personal space distances. For any particular degree of threat there is a threshold value for distance, all distances equal to or of greater value (distance) should be satisfactory (Hayduk, 1978). Given this proposition, if the protection function of personal space is viable, any subsequent measuring of personal space after a threat has been presented may reflect spatial areas somewhat larger than

actual personal space requirements. This is indicated in Dosey and Meisels discussion of threshold distances. Thus an accurate assessment of personal space dimensions seems problematic.

When considered, a number of studies have supported the protection theory, but by no means doing so totally (Booream and Flowers, 1972; Dobbs and Stokes, 1975; Daniel and Lewis, 1972; Guardo and Meisels, 1971; Meisels and Dosey, 1971). A number of arguments are needed to draw these studies under the rubric supplied by Dosey and Meisels. This precludes entertaining a general statement of support for the theory.

Note, as Argyle and Dean deal primarily with interactive distance, Dosey and Meisels treat personal space exclusively. If an adequate theory of micro-proxemics is to be forwarded, it must not pursue one aspect of spatial structuring at the expense of the other. These two theories indicate the conceptual conflict contained within micro-proxemic research. A synthesis must occur if progress is to be made in the area. Explicit conceptual definition of the aspect of spatial structuring under consideration must be presented. As operational procedures follow from conceptual definitions, it is clear that strict adherence to the conceptual definition will precipitate concise operations.

#### The Duke-Nowicki Social Learning Theory

The theory proposed by Duke and Nowicki (1972) is a limited one indeed. As Hayduk (1978) illustrates the theory starts from a restriction of Rotter's (1954) general theory of goal directed behavior. The specific restriction imposed involves locus of control as a form of

generalized expectation. These expectations are concerned with the individual's expectations that he can change certain life chances, probabilities. These probabilities and expectations are represented by an individual's score on a locus of control scale, indicating inner, self-control or outer, other, control. Duke and Nowicki hypothesize that for strangers there should be a relationship between interpersonal distance, not personal space, and locus of control scores but that this relationship will not be present among friends and/or acquaintances (Duke and Nowicki, 1972:128-129).

They attempted to confirm the above hypothesis with the construction of two (2) research designs that utilize their own paper-pencil interpersonal distance measure. Although Duke and Nowicki term the test a personal space measure, it is clearly not, referring directly to interpersonal distance, a shared space. In conjunction with the paper-pencil test, they employ the Adult Nowicki-Strickland Locus of Control Scale. If the above appears to be somewhat disjointed, it is understandable. These hypotheses cannot be logically derived from the theory as they present it. As mentioned earlier, locus of control refers to the degree to which a person perceives that he can change certain probabilities concerning his life situation, no matter what the particular value of these probabilities may be (compare, Duke and Nowicki, 1972: 127-129 with Rotter, 1954:107-165). They have confused locus of control with a specific set of expectancies, whereas locus of control refers to a general set of expectancies or probabilities. Arguments that stem from locus of control to actual spatial behavior demand specific knowledge of the distribution of reinforcement value of maintaining different distances, which is not provided, nor obtained, by Duke and Nowicki.

The hypothesis tested by these researchers appears to be independent of the theory, and are seemingly a minor variation of the theory of protection in general. This is interesting as Duke and Nowicki seem to deny this protective aspect of spatial structuring by virtue of the interactive definition of proxemics employed. Research support for the theory is provided by Duke and Nowicki above, and is very limited indeed.

### The Stimulation Theory

Many researchers have argued that crowding and personal space invasions are stress producing phenomena (e.g., Evans and Eichelman, 1976). Stress can be characterized in terms of physiological and/or psychological responses. Selye (1965) has proposed a bodily state model of physiological stress which manifests itself in a general adaptive syndrome (GAS). This syndrome is characterized by four (4) physiological responses: 1) the enlargement of adrenal glands, 2) the increase of 17-ketosteroids in the urine, 3) an increase in glucocortical levels in the blood and 4) an increase in heart rate, blood pressure and skin conductance (Appley and Tumbull, 1967; Moss, 1973; Selye, 1956).

Psychological stress (e.g., Lazarus, 1966) takes into account that stress in humans is less dependent upon the direct impact of some stimulus and more directly related to mediating responses of the person's interpretation of that stimulus (Dubos, 1965; Glass and Singer, 1972). Emphasis is placed upon the cognitive dimension of individual assessments of a particular situation. Increases in error and fatigue, increases in reaction time, self reports of stress, nervousness and anxiety are behavioral indices of stress (Evans and Eichelman, 1976).

Desor (1972:79) is primarily known for her work done in the area

of crowding and stress research (cf., Baldassare, 1978). She has provided a concise theory of crowding in her definition that being crowded is "receiving excessive stimulation from social sources." She presents the argument that the total level of stimulation from social sources is an appropriate phenomena for consideration until that time when experimentation specifies a more detailed variable. Notice here that Desor appears to be speaking primarily to a physiological response, rather than a psychological one.

The theory concerning personal space that approximates that which is presented above is offered by Nesbitt and Steven (1974) after their consideration of Hall (1966). Hall notes that persons react more intensely to one another at closer distances.

Following Hall and Desor, Nesbitt and Steven (1974:106) note:

Accordingly, in a high intensity environment, it might be expected that individuals would stand farther apart in an attempt to moderate the total amount of stimulation they are subjected to. In a deprived stimulus environment, individuals might stand closer together. The basis of the above argument is that extremes of environmental stimulation . . . are aversive and stressful.

Note, Nesbitt and Steven appear to be opting for some type of physiological stress response, as no mention of a psychological interpretation is made. This appears to be the case as it seems obvious that neither of these authors have frequented a public drinking establishment, where the opposite to what they suggest is apparent. In these social situations, the greater the level of stimulus, the closer persons stand or sit, conversely, the lower level of stimulation, the farther apart persons stand or sit. The former being the case just to make oneself heard. In the latter case, the farther one can stand apart and still contribute. Stimulation is consistent with Desor's and Duke

and Nowicki's treatment of stress, yet also contained are notions of individual interpretations and situational contingencies ignored by both.

The limited research concerning this theory is mixed. Desor (1972) and Nesbitt and Steven (1974) provide data that generally support stimulation as one variable influencing interpersonal distances. Seta, Paulus and Schkade (1976) indicate less than positive support.

In the study of stress effects of interpersonal spacing, several points need to be made. Already discussed is the discrepancy of physiological and psychological stress. Psychological stress must include interpretation and situational aspects, which is lacking in the research. Thus, seemingly, indicating a reliance on physiological stress measures which prove to be inadequate.

Responses to stress in an acute, short-term experience are not equivalent to stress situations over long-term experiences. The immediate question of laboratory data versus long-term field research is raised. Both may be indicating something about the effects of environmental situations upon spatial behavior, but it is quite possible that each paradigm is indicating something different about individual-environmental relations (e.g., Broadbent, 1971; Easterbrook, 1959; Kahneman, 1973; Keele, 1973; Freedman et al., 1972; Griffitt and Veitch, 1971; Glass and Singer, 1972).

Of the four theories presented, two are found to be inadequate because of inadequate formulation and/or lack of research: Duke-Nowicki and Nesbitt-Steven. The remaining two, Dosey-Meisels and Argyle-Dean, although better stated and supported, seem to present antithetical definitions of personal space. With this in mind the following section will



present, in detail, the electro-magnetic model of spatial structuring as developed by Portrey and Bynum (1980).

To make this conflict explicit, two model conceptual definitions are offered. Although each purports to define personal space, a clear distinction is made between the protective, private aspects of spatial structuring (personal space) and the interactive (shared social space) distance. Sommer (1969:26) supplies the conceptual definition of personal space to be employed throughout this research: personal space ". . . is an area with invisible boundaries surrounding a person's body into which others may not come". It is characterized as an "emotionally charged bubble that helps to regulate the spacing of individuals". Implicit here are the protective and private aspects of spatial structuring. The independent aspect of personal space is indicated by the notion that personal space helps to regulate the spacing of individuals. Thus interpersonal or interactive distance is a dependent variable which appears to be functionally related to personal space requirements. This is the reverse to what is suggested by Dosey and Meisels.

Little (1965:237) provides the conceptual model for interactive distance: "an area surrounding an individual in which the majority of his interaction with others takes place". Although Little indicates this area to be "personal space" it is clear that this is not so. This definition is at odds with the one previously stated. When referring to these distinct definitions the Sommer definition will be termed personal space (PS) and the Little definition, interactional distance (ID).

The electro-magnetic model is intended to dramatize the conceptual definitions of Sommer and Little and to further illustrate the concentric zone theory of Hall (1966). Hall clearly indicates the protective

and interactive functions of spatial structuring. By clarifying the issues involved it is hoped that researchers will be sensitized to the problems of conceptual and operational conflict to be discussed. Without conceptual clarity, we cannot hope for methodological consistency.

### Resolution of Conceptual Conflict

It is appropriate to introduce this section by recalling the common quest among theorists in all disciplines for conceptual clarity and unity. They have employed classification schemes, models and paradigms, and, where possible, refined their hypotheses into theories and laws to organize, summarize, and describe phenomena.

For example, Darwin (1886) and other biological scientists, when faced with the contradiction of living organisms and structurally different fossil remains from the same species, developed a theoretical statement that permits a longitudinal and evolutionary view of the species in question.

Examples of theoretical advances toward conceptual clarity and unity are also available in sociology: When confronted with the overlapping and often conflicting functions of social institutions, Parsons (1951) developed the idea of the social system in "dynamic equilibrium" with the manifest and latent functions of component institutions supporting and reinforcing one another.

Similarly, the study and understanding of deviant behavior has been greatly improved by recent etiological theories (Matza, 1964) that incorporate conformity--the "apparent" antithesis of deviance--into a more complete theoretical perspective that some individuals can easily alternate between conforming and deviant roles.

The issue paramount in this discussion, i.e., the seemingly antithetical conceptual definitions of personal space, may be resolved in the same way.

### Synthesis

The essential difference between the two conflicting conceptual definitions of proxemic-personal space behavior may be succinctly restated: Some theorists (e.g., Little, 1965) focus on the social imperative that draws individuals together into shared space where they assume spatial arrangements suitable for effective social interaction. Other theorists (e.g., Sommer, 1969) adopt the view that proxemic behavior involves a personal and private area around each individual that is guarded against intrusion by others.

On the surface these two perspectives do seem to be opposites, confounding our understanding of human space relationships. However, closer scrutiny leads to the suggestions that neither notion is a complete description of the phenomena under analysis that thus somehow invalidates the other. Rather, each concept, when stated separately, represents an incomplete, unidimensional emphasis that calls for synthesis into a conceptual whole.

The unification of the Little and Sommer concepts of personal space may be initiated by acknowledging that both mutual social attraction between individuals for the sake of interaction and the preservation of the sanctity of private space around individuals can readily be observed and experienced. Both phenomena naturally occur--spontaneously and simultaneously. However, rather than being contrary and dichotomous manifestations of capricious human nature requiring two

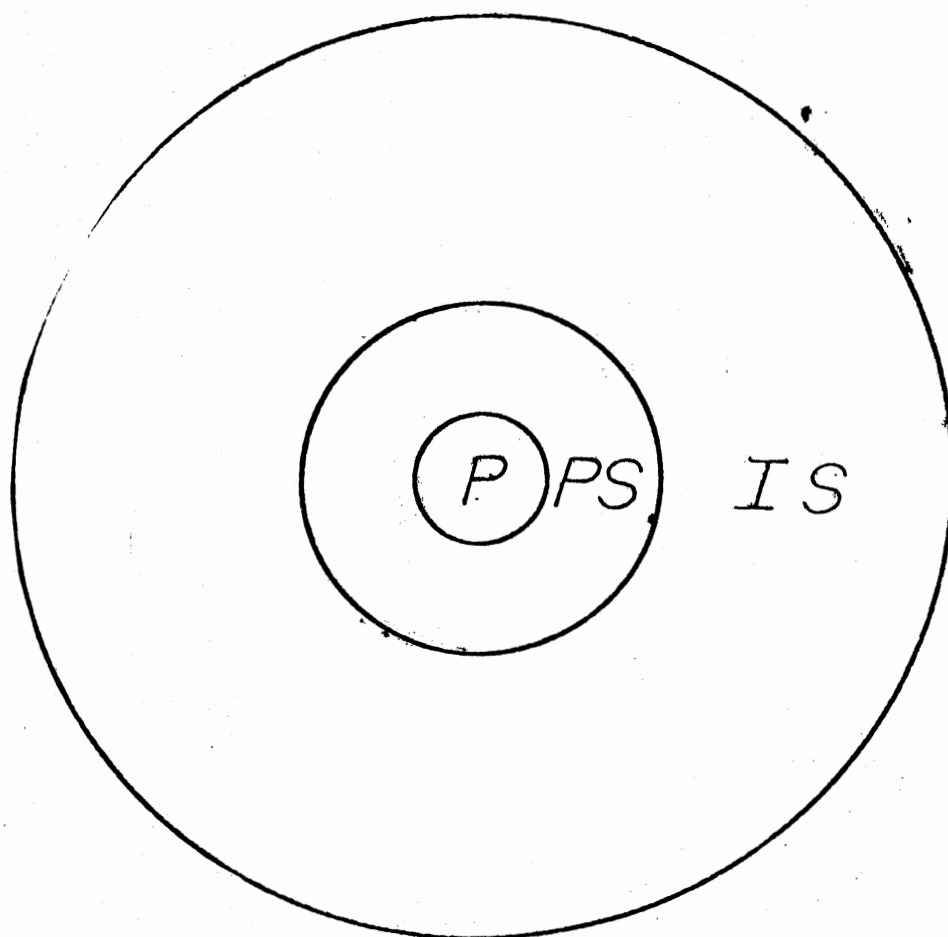
different explanatory concepts, this author perceives two closely related dimensions of proxemic behavior that are common to all humans. It is suggested here that a conceptual union similar to that achieved by Wirth (1964) when he described "Public Man" turned outward in response to his need for community and the same individual as "Private Man" turned inward in response to his need for reflection and rest. Both Public and Private Man, according to Wirth, are inherent in each of us, living in balanced harmony as long as both needs are satisfied. In most naturally occurring situations, an individual's spatial arrangements with others will reflect boundaries outside his personal space area. In other words, every individual simultaneously maintains a public space in which social interaction with others occurs, and a private, personal spatial area.

Implicit in this larger, compounded concept describing two forms of proxemic behavior is the understanding that social-interactional space and personal space do not often overlap. While the actual dimensions and boundary lines are determined by culture, specific situations, and other variables, an individual's personal space involves a much smaller area than his interactional space (See Figure 1).

#### A Guiding Metaphor

A common preliminary step among social scientists is the clarification and/or generation of theoretical concepts is the use of a guiding metaphor.

Guiding metaphores are created by analogizing. Forms useful in other contexts are applied to the problem at hand; they are forms that lead us to abstract certain aspects in terms of their interrelationships in the observed event. Thus, Whitehead uses the term 'organism' to refer, indifferently, to the interrelationship of parts among

**KEY:**

P = Person  
PS = Personal Space  
IS = Interactional Space

Figure 1. Interactive and Personal Space Areas

animate and inanimate objects, man and social event. In social science we use the term 'stratification' to refer to the persistent hierarchical division of societies by occupation, education, and the like—in short, by rights and duties assigned; the term is an adaptation of a geological concept referring to the layers of matter on the earth (Greer, 1969:142).

Human ecology theorists have often utilized guiding metaphors to clarify and communicate their emerging abstractions by translating them into the more familiar terminology and concrete symbols of what is already known. For example, Park and Burgess (1921) appropriated the established theoretical explanation of plant and animal ecology and applied it to their conceptualizations of the development of human communities.

Another metaphorical application is supplied by McKenzie (1926) who used existing knowledge from physics and astronomy regarding the solar system to help conceptualize and explain some major urban dynamics. He insightfully referred to the expanding metropolitan area comprised of business, industrial, and residential districts, interdependently grouped around a common center, as an "ecological constellation". McKenzie's analogy is especially useful in that it effectively synthesizes two apparently opposing principles: Just as a cluster of planetary satellites are placed and held in their orbits by the outward thrust of centrifugal force counterbalanced by the gravitational pull of their central sun, so too the suburbs and satellite communities are urban "spinoffs" from a larger, central city. Their total autonomy is limited by the social and economic domination of the nearby central city. Thus, characteristics of the solar system, when metaphorically imputed to urbanization as an "ecological constellation" supplies a conceptual nexus that helps explain both the emergence of satellite cities and

their continuing interdependence with the central city. McKenzie, like scholars in every realm of knowledge, underscored the fact that "metaphors are our principal instrument for integrating diverse phenomena and viewpoints without destroying their differences" (Brown, 1977:170).

A similar kind of metaphorical application can be extrapolated from physics to bring about a resolution to the seemingly conflicting conceptualizations of proxemic behavior outlined earlier. The theoretical explanation of the electro-magnetic field--containing both positive (attractive) and negative (repelling) lines of force complementing one another in a functional unity--is metaphorically well-suited to explain and harmonize the co-existence of social, interactive space and private, personal space.

The electro-magnetic field is always in a potentially attractive and/or repelling state, needing only to be energized by electricity (Barnothy, 1964:3). Similarly, by analogy, each individual is the center of a "social field" in which both attractive and repelling behaviorisms can be activated and observed. Consequently, the individual is potentially ready to guard the integrity of his or her personal space and available for interaction with others. The social field is "energized" or activated for attraction and/or repulsion when potential interactants utilize some social gesture, e.g., a physical approach to the individual, a word of acknowledgement or greeting, eye contact, and so forth.

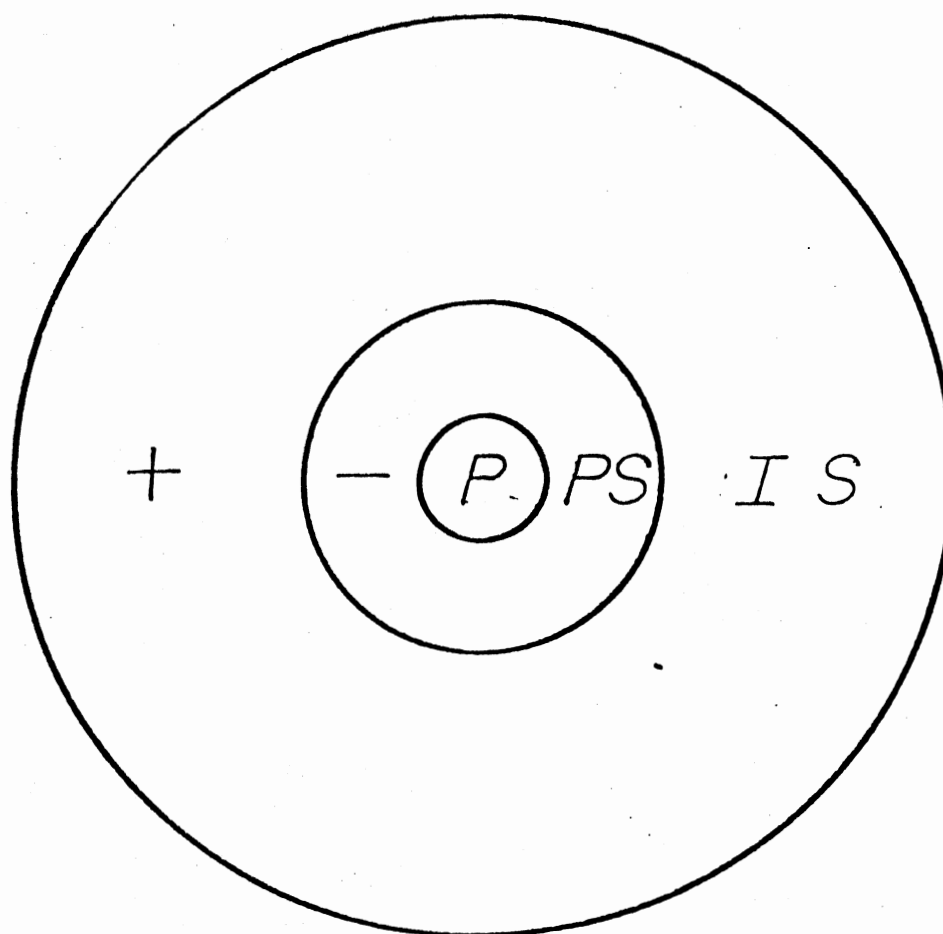
Once energized, as with the electro-magnetic field, each person not only generates force within his social field, but force is also exerted upon other interactants who function as "charge carriers" (Barnothy, 1964:9). The desirability for interaction of one party,

or both, is analogous to energy flow; the greater the desirability for interaction, the greater the propensity and likelihood that the two parties will be drawn together. The quantity (intensity) and quality (positive or negative) of social interaction that occurs is regulated by the quantity and quality of "social energy" flowing through one, or both, "conductors". This indicates that once the social field has been energized, the positive and negative poles have been created. By analogy, both "positive" and "negative" forces are activated within proxemic behavior (see Figure 2).

It is suggested that the metaphor of the electro-magnetic field supplies a synthesis of the two conceptual definitions presented earlier: social-interactional space (Little, 1965) and personal, private space (Sommer, 1969). The attractive or interactional field can continue as a spatial milieu for social bonding as long as the interactants remain at a comfortable distance (Pederson, 1973a, 1973b, 1973c). If this distance is reduced so as to threaten comfortable interaction for either participant, the repelling, personal space-field is operationalized. The result is that one or both parties take steps to increase the interpersonal distance. This is accomplished by physically increasing the distance between them or by various blocking techniques (Mahoney, 1974). As the distance is increased and comfortable social interaction is restored, the interactants are again subject to the positive attraction of the interactional field. Proxemic behavior, therefore, is not static. On the contrary, proxemic behavior may be described by a term borrowed from Parsons (1951) as a state of "dynamic equilibrium".

It must be noted here that the specific distances between



**KEY:**

P = Person

PS = Personal Space

IS = Interactive Space

- = Repelling Forces

+ = Attractive Forces

Figure 2. Interactive and Personal Space Areas;  
Including Attractive and Repelling  
Forces.

individuals are subject to many other variables such as the situational, emotional, and cultural contexts of the impending proxemic behavior, as well as the degree of affinity between the potential interactants.

Nevertheless, their proxemic behavior is structured by a subtle interplay between attractive and repelling forces which establish a delicate balance between the distance necessary for comfortable social interaction and the distance necessary to fulfill personal space requirements.

In addition, it is not axiomatic that personal social interaction must occur in all proxemically-structured situations. Many times in everyday life contiguous individuals find themselves in close, spatially organized situations such as standing in lines and seated in theaters where personal social exchange fails to develop. However, as contended here, even in these situations the attractive and repelling forces are still operational. As indicated, individuals will consistently resist violation of their personal space. At the same time, in proxemic situations where personal social involvement is not anticipated, these same persons will still space themselves from one another at a distance where effectual interaction and communication could occur if needed or desired. Thus, most individuals often find their interactional field overlapping with the interactional field of someone else, yet they experience no conversation or other forms of social exchange.

### CHAPTER III

#### REVIEW OF LITERATURE - METHODOLOGY

Most proxemic research exists in a disconnected array of independent studies - hopefully remedied by the concise formulation of theoretical definitions and models - that are often performed with questionable research methodologies (Baldessare, 1978; Haase and Markey, 1971; Little, 1965; Meisels and Cantor, 1970; Patterson, 1973; Pedersen, 1973a, 1973b, 1973c; Portrey, 1980). To further document the lack of consistency of findings, as the above reports have done, would serve no illustrative purpose. Rather, the focus here is to attempt to describe the methodologies employed, to isolate and identify sources for such inconsistency.

Hayduk (1978) identifies five (5) methodological techniques employed in assessing the spatial structuring of individuals: 1) unobtrusive observation, 2) stop distance, 3) chair placement, 4) felt board, and 5) paper-pencil tests. To be treated here is a more simplified classification, consisting of simulated procedures, including felt board and paper-pencil tests, experimental behavioral laboratory procedures, including stop distance and chair placement and finally naturally occurring distance studies containing unobtrusive observation. Of particular importance will be the operational definitions employed in conjunction with the specific conceptual definition offered by the

respective research reports.

It is argued that regardless of the specific methodological procedure employed, if the operational procedures are not adequately postulated, standardized, and derived from the conceptual definition offered, the results will be confounding. Rather than present this material in the body of the text, which would prove difficult to assess, this information is offered in the form of a table. Contained in the table will be four (4) items of particular importance to the study of micro-proxemics: 1) the conceptual definition, 2) the specific method employed as classified above, 3) the operational definition, and 4) an indication of consistency.

Prior to the presentation of the table, the methods and operational procedures are discussed, indicating the inconsistency mentioned previously.

#### Operational Definitions

The operational definitions employed in laboratory research are variant and at times at odds with the conceptual definition supplied by the study. These operational definitions consist of directing the subjects to perform some task where the investigator indicates some spatial arrangement. These instructional sets in simulated and behavioral laboratory research vary across and within studies. The most commonly employed sets are dissimilar enough to depict differing spatial areas.

There are three main instructional sets employed in proxemic research. To state each instructional set would prove ponderous and confusing. The sets will be dealt with generally and conceptually.

The three main sets refer to three given spatial arrangements:

1) where no specific spatial arrangement is mentioned, 2) a distance which is referred to as "as close as comfortable for conversation", and 3) that distance which is maintained in most social situations. Conceptually, sets two and three are referring to two distinct interactional distances: that distance which is maintained in "most social situations" represents a greater physical distance than that which is "as close as comfortable for conversation". The former depicting a more formal situation, the latter, a more personable situation. Thus a reduction in physical distance is expected. There is little distinction between the first set where there is no specific spatial arrangement mentioned, and the third set which is concerned with that distance in most social situations. That is, where no distance is mentioned it may be assumed that subjects respond to an optimal or average distance - that distance which is maintained in most social situations.

All the instructional sets discussed refer to an interactional distance and not a private, protected area of spatial structuring: personal space. Thus, research reports that employ the Sommer definition of personal space in conjunction with the instructional sets above are not congruent with respect to conceptual/operational issues. Further, studies that employ these two operational definitions are depicting two distinct interactional spatial areas. Given the inconsistent reference to a conceptual definition and the reporting of two spatial areas it is not surprising that the area is plagued by inconsistent results. Accordingly, the results of these studies would appear to construct a zone around an individual which is larger than the actual personal space requirements of individuals. The comparison of simulated

"personal space" research to other forms of proxemic research would prove fallacious.

Please note that none of the instructional sets, regardless of the conceptual definition employed, depict a personal space area around an individual. It is clear these studies that purport to measure personal space do not do so, considering the operational procedures employed.

The operational procedures discussed have been widely employed in both simulated and behavioral laboratory research. To repeat these same criticisms of behavioral laboratory research would be redundant. Suffice it to say that these same criticisms are applicable to behavioral procedures as well.

#### Laboratory Behavioral Procedures

The behavioral procedures consist of a set of tasks referred to as the Experimenter Movement Index (EMI) and the Subject Movement Index (SMI) (Williams, 1971). The EMI procedure requires the subject to be approached by an experimenter until the subject tells the experimenter to stop at some spatial orientation (as per the instructional set). The SMI procedure requires the subject to approach the experimenter and stop at some spatial orientation. These two tasks have been found to yield statistically differing spatial distances: the EMI condition producing smaller distances than the SMI condition (Williams, 1971). This may, however, be an artifact of the tasks. As the experimenter moves toward the subject (EMI) he is approaching at a constant rate. The subject must verbally give the command to stop. There must necessarily be a lag time between: 1) the subject's perception that the experimenter has reached the distance desired, 2) the verbal command to

stop, 3) the experimenter hearing the command, and 4) the experimenter stopping. This lag time would put the experimenter at a distance which is closer to the subject, given the spatial arrangement requested as per the instructional set. Conversely, in terms of the Subject Movement Index, the subject approaches the experimenter. He can anticipate his stopping distance and adjust his rate of approach to halt at the "true" distance requested. Thus, these tasks may be producing differing spatial areas due to the methodological artifact.

#### Simulated Personal Space Instruments

As with behavioral proxemic research, simulated proxemic research is plagued with inconsistent instrumentation. The experimental task varies in behavioral research while the field varies in simulated research. The present research will consider a commonly employed simulated procedure: the felt board (Levinger and Gunner, 1967). The term felt board refers to a figure placement task. The subjects are asked to place figures on a board (usually felt or plexiglass) at a given spatial arrangement - as per instructional set previously discussed. Thus, the inconsistency is not in the task specifically, but in the size of the board, or field, upon which the figures are placed, and the resulting scale between board size and figure size. Board sizes previously employed ranged from 8.5 inches by 11 inches (Kleck et al., 1968) to 4.5 feet by 6 feet (Guardo and Meisels, 1969). Figure sizes range from 3/8 inch (Kleck et al., 1968) to 10 inches high (Kuethe and Stricker, 1963). By varying the board size, the experimenter is essentially varying the size of the environment to which the subject is asked to respond. This perception of available space should affect the

resulting figure placement. Further, by varying the ratio of figure to board size that researcher also produces varying environments. Thus, the resultant figure placement: the larger the board producing larger figure placement distances than the smaller board, providing the scale remains constant, should reflect the room size effect of crowding research (Baum and Greenberg, 1975; Baum et al., 1974; Daves and Swaffer, 1971; Desor, 1971; Edney, 1972; Friedman, 1971). This procedure, although inadvertent, may have important implications for crowding research in general.

#### Behavioral-Chair Placement

The chair placement technique employed in behavioral studies requires the subject to actively place a chair with reference to some other. Indications of specific distance relationships are noticeably lacking. Instructional sets are usually on the order of "pull up a chair". One must assume, as with the felt board and object of placement control procedures, that the subject responds to an optimal distance. Presumably this distance is that distance persons maintain in most social situations.

Apart from this implicit notion is the overlap of personal space, territorial aspects and interaction distance. The chair placement may be equated with studies of seating arrangements as mentioned in the discussion demarcating personal space from its companion areas. It will be remembered that in these studies when the subject vacates his chair the territorial markers are left in tact while the personal space bubble is carried away with the user. As the person resumes his seat, personal space and territorial dimensions of spatial structuring overlap once



again. Implicit in these studies is the notion that personal space areas are smaller than that area demarcated by territorial markers.

The chair placement procedure also has a similar overlap. The chair itself functioning as a territorial marker in these behavioral laboratory studies. As the person places the chair at some distance, he is simultaneously staking out some territory and establishing interactional and personal space areas. It would seem apparent that this resultant chair placement would necessarily be larger than personal space dimensions and perhaps even larger than most interactional distances. Sommer (1969) indicates this to be the case in the analysis of furniture placement in homes. This distance in homes ranges from 7 feet to 9 feet. Thus, dramatizing the effect of combining spatial areas. Chair placement studies are clearly referring to a distance that is quantitatively distinct from either personal space or interactional distances.

#### Naturally Occurring Distance

As stated previously, implicit in the definition of personal space is the notion that persons will not space themselves in naturally occurring situations in such a manner as to violate those personal space boundaries. Precisely, it is the personal space requirements of individuals that helps to regulate this interpersonal spacing. Further, contiguous individuals need not interact, but perhaps space themselves in such a manner that would reflect an adequate interactional distance should interaction ensue. It would seem only logical that naturally occurring spacing studies that utilize the personal space definition are clearly not measuring that which they purport. Rather these studies

are tapping an interactional distance and are therefore incongruent concerning conceptual/operational definitions.

It is assumed that this distance in naturally occurring space would reflect a distance which is maintained in most social situations (Aiello and Jones, 1971; Batchelor and Gaithals, 1972; Bauer, 1973; Baxter, 1970; Dabbs, 1972; Dabbs and Stokes, 1975; Edney and Jordan-Edney, 1974; Jones, 1971; Knowles, 1972; Leibman, 1970; Nesbitt and Steven, 1974; Sommer, 1959; Thayer and Alban, 1972).

As Table I indicates (see legend page 45), the inconsistency noted is readily apparent. Of the one hundred sixty-two (162) studies presented, fifty-six proved to be consistent with respect to conceptual/operational considerations. Please note that only three studies (Dean et al., 1976; Fry and Willis, 1971; Portrey, 1980) were consistent with respect to the study of personal space. Dean et al. and Fry and Willis are personal space invasion studies. The study reported by Portrey was the only report that was a consistent laboratory procedure that attempted to operationalize personal space. Fifty-three studies were consistent with respect to interactional distance. Of these fifty-three studies, twenty-seven studies depicted a distance which is maintained in most social situations, eight studies referred exclusively to a distance which is as close as comfortable and the remaining eighteen studies contained both operational definitions. The differing spatial dimensions of interactional distance are also apparent.

Four studies were congruent with respect to territorial dimensions and the subsequent operational procedures (Bailey et al., 1972; Davis, 1975; Edney et al., 1974; Lott and Sommer, 1967). Thirty-four studies offered no discernable definition of personal space or interactional

TABLE I  
CONCEPTUAL/OPERATIONAL CONGRUENCY  
ACROSS METHODOLOGY

Study	Conceptual Definition	Method	Operational Definition	Congruency
Adler & Iverson 1974	none	BL	none	-
Aiello 1972	ID	BL	CP	-
Aiello & Cooper 1972	ID	SL	MS/CC	+
Aiello & Jones 1971	ID	NO	MS	+
Albert & Dabbs 1970	PS	BL	CP	-
Allgeier & Byrne 1973	none	BL	CP	-
Argyle & Dean 1965	ID	SL	CC	+
Bailey et al. 1976	none	BL	MS	-
Bailey et al. 1972	T	BL	CC	-
Bailey et al. 1973	PS	BL	MS/CC	-
Barash 1973	PS	BL	CP	-
Barefoot et al. 1972	PS/ID	BL	CP	-
Batchelor & Gaithals 1972	ID	BL	CP	-
Bauer 1973	PS	BL	CC	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Baum & Greenberg 1975	PS	BL	MS	-
Baum et al. 1974	PS	BL	MS	-
Baxter 1970	ID	NO	MS	-
Beck & Ollenick 1976	none	BL	MS	-
Becker & Mayo 1973	PS/ID	NO	MS/CC	-
Blumenthal et al. 1967	PS	SL	MS	-
Boucher 1972	PS/ID	BL	CP	-
Booream & Flowers 1972	PS	BL	CC	-
Buchanan et al. 1976	PS	BL	CC	-
Cheyne & Efran 1972	PS	NO	MS	-
Cook 1970	ID	SL	MS	+
Connally 1975	ID	BL	MS	+
Cronje & Moller 1976	none	BL/SL	MS	-
Dabbs 1971	PS	BL	MS	-
Dabbs 1972	PS	BL	CC	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Dabbs & Stokes 1975	PS	NO	MS	-
Daniel & Lewis 1972	none	BL	MS	-
Davis 1975	T	NO	T	+
Daves & Swaffer 1971	ID	BL	MS/CC	+
Dean et al. 1975	PS	NO	MS	-
Dean et al. 1976	PS	NO	PS	+
Dosey & Meisels 1969	PS	SL	CC	-
Desor 1972	PS	SL	MS	-
Duke & Kiebach 1974	ID	BL/SL	MS/CC	+
Eberts 1972	ID	NO	MS	+
Edney 1972	ID	SL	MC	+
Edney et al. 1974	T	MO	T	+
Efran & Cheyne 1973	PS	BL	MS	-
Efran & Cheyne 1974	PS	BL	MS	-
Felipe & Sommer 1966	PS/ID	NO	CP	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Fischer & Byrne 1975	PS	NO	CP	-
Forston & Larson 1968	ID	BL	MS	-
Frankel & Barrett 1971	PS/ID	BL	CC	-
Fry & Willis 1971	PS	BL	PS	-
Gardin et al. 1973	PS	BL	CP	-
Giesen & McClaren 1976	PS	BL	CP	-
Goldberg et al. 1969	ID	BL	MS	+
Gottheil et al. 1968	ID	SL	CC	+
Grossnickle et al. 1975	ID	BL	MS/CC	+
Guardo & Meisels 1969	PS/ID	SL	MS/CC	-
Haase & Markey 1971	ID PS	SL/BL SL/BL	MS/CC MS/CC	+ -
Hackworth 1974	none	SL	MS	-
Hammers 1964	PS	SL	MS/CC	-
Hartnett et al. 1970	none	BL	MS	-
Hartnett et al. 1974	none	BL	CC	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Heska & Nelson 1972	ID	NO	MS	+
Hobbs 1966	none	SL	MS	-
Hoppe et al. 1972	none	NO	T	-
Horowitz et al. 1964	PS	SL	MS	-
Horowitz 1968	PS/ID	BL	CC	-
Jones 1971	ID	NO	MS	+
Jones & Aiello 1973	ID	NO	MS	+
Karabenick & Meisels 1972	PS	BL	CC	-
Kelly 1972	ID	SL	MS/CC	+
Kleck 1970	PS/ID	BL	CP	-
Kleck et al. 1968	ID	SL	MS/CC	+
	ID	BL	CP	-
Knight et al. 1973	none	BL	MS/CC	-
Knowles 1972	PS	NO	MS	-
Konecni et al. 1975	PS	BL	MS/CC	-
Krail & Leventhal 1976	PS	BL	CP	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Kuethé 1962a	none	SL	MS	-
Kuethé 1962b	none	SL	MS	-
Kuethé 1964	none	SL	MS	-
Kuethé et al. 1963	none	SL	MS	-
Kuethé & Weingartener 1964	none	SL	MS	-
Leibman 1970	PS	NO	MS/CC	-
Lerner 1973	ID	SL	MS	+
Lerner et al. 1975	ID	SL	MS	+
Lindskold et al. 1976	PS	NO	MS	-
Little 1965	ID	SL	CC	+
Little 1968	ID	SL	MS/CC	+
Little et al. 1968	ID	SL	MS/CC	+
Lomranz 1976	ID	SL	MS/CC	+
Lott & Sommer 1967	T	BL	CP	+
Mahoney 1974	PS	BL	CP	-



TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Mallenby 1974a	PS/ID	SL/BL	MS	-
Mallenby 1974b	ID	BL	MS	+
Mallenby & Mallenby 1975	ID	BL	MS	+
McBride et al. 1965	none	BL	CC	-
McDowell 1972	PS	BL	MS/CC	-
McGrew 1970	ID	NO	MS/CC	+
Mehrabian 1965	none	SL	CP	-
Mehrabian 1968a	ID	SL	CP	-
Mehrabian 1968b	ID	SL	CP	-
Mehrabian 1969a	ID	LS	MS/CC	+
Meisels & Canter 1970	PS	BL	CP	-
Meisels & Dosey 1971	PS	BL	MS	-
Melson 1976	ID	SL	MS	+
Middlemist et al. 1976	PS	NO	CC	-
Nesbitt & Steven 1974	PS/ID	NO	MS/CC	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Newman & Pollack 1973	PS/ID	BL	CC	-
Patterson et al. 1971	ID	BL	CP	-
Pedersen 1973a	PS	SL/BL	MS/CC/CP	-
Pedersen 1973b	PS	BL	CC	-
Pedersen 1973c	ID	SL/BL	MS/CC	+
Pedersen 1973d	PS	BL	CC	-
Pedersen 1973e	PS	SL	CC	-
Pedersen & Heaston 1972	PS/ID	SL/BL	CC	-
Pedersen & Shears 1974	ID	SL/BL	CC	+
Pelligrini & Empey 1970	PS	BL	CP	-
Porter et al. 1970	PS/ID	BL	CP	-
Portrey 1980	PS/ID	SL/BL	MS/CC/PS	+
Rawls et al. 1972	ID	BL	CC	+
Reid & Novak 1975	none	NO	MS	-
Roger 1976	ID	SL/BL	MS	+

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Roger & Schalekamp 1976	PS/ID	BL	CC	-
Rogers 1972	ID	BL	MS/CC	+
Rosenfeld 1965	ID	BL	CP	-
Sanders 1976a	none	SL	MS	-
Sanders 1976b	none	SL	MS	-
Sanders 1976c	PS/ID	SL	MS	-
Scherer 1974	ID	NO	MS	+
Scott 1974	ID	NO	MS	+
Sensening et al. 1972	ID	BL	CP	-
Seta et al. 1976	ID	BL	MS	+
Sewell & Heisler 1973	none	BL	CP	-
Sommer 1959	PS	NO	CP	-
Sommer 1961	PS	BL	CP	-
Sommer 1962	ID	SL	CP	-
Sommer 1968	ID	SL	CP	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Sommer & Becker 1971	ID	SL	MS	+
Smith 1954a	none (ID)	SL	MS	+
Smith 1954b	none (ID)	SL	MS/CC	+
Smith 1954c	none (ID)	SL	MS	+
Spinetta et al. 1974	ID	SL	MS	+
Stephenson et al. 1970	ID	BL	CP	-
Stokols et al. 1973	ID	BL	MS	+
Stratton et al. 1973	none	BL	MS	-
Tedesco & Fromme 1974	ID	BL	CP	-
Tennis & Dabbs 1975	ID	BL	MS	+
Tesch et al. 1973	none	BL	CP	-
Thayer & Alban 1972	none	BL	MS	-
Tipton et al. 1975	PS	BL	CC	-
Tolor 1968	none	SL	MS	-
Tolor 1970	none	SL	MS	-

TABLE I (Continued)

Study	Conceptual Definition	Method	Operational Definition	Congruency
Tolor et al. 1975	none	SL	MS	-
Tolor & Donnon 1969	none	SL	MS	-
Tolor & Solafia 1971	none	SL	MS	-
Watson & Graves 1966	ID	BL	MS/CC	+
Weinstein 1965	none	SL	MS	-
Weinstein 1967	none	SL	MS	-
White 1975	ID	BL	CP	-
Williams 1971	ID	BL	MS/CC	+
Willis 1966	ID	NO	MS	+
Wolowitz 1965	none	SL	MS	-
Worthington	PS/ID	BL	CP	-

NOTE: Conceptual Definition Code: PS = personal space, ID = interactional distance, T = territory, None = None. Method Code: SL = stimulated laboratory (includes felt board), BL = behavioral laboratory (includes object of placement control), NO = naturally occurring distance (field study). Operational Definition Code: MS = distance in most social situations, CC = distance which is as close as comfortable for conversation, PS = personal space, CP = chair placement, None = none. Congruency Code: + = congruent across conceptual/operational definition.

distance. Finally, seventy-eight studies while offering a conceptual definition were not consistent with the operational procedures employed.

It is clear that inconsistent procedures and conceptual definitions plague micro-proxemic research. Research reports that purport to measure personal space do not do so (the exception being Portrey, 1980). They do, however, measure variant aspects of interactional distance. If one were to disregard conceptual/operational incongruity, concentrating solely upon operational procedures, one hundred fifty-five studies measure some aspect of interactional distance.

## CHAPTER IV

### HYPOTHESIS AND METHOD

This research is attempting to locate and describe sources of ambiguity in personal space research. A brief glance at the area reveals a plethora of conceptual/operational definitions and a variety of experimental tasks. It is suggested that these inconsistencies contribute largely to a lack of congruent findings within personal space research and can be reduced if the effects of variant methodological procedures can be isolated and identified. To clarify these issues, a series of three (3) experiments, both laboratory and ethological were designed: 1) a simulated personal space laboratory procedure, 2) a behavioral personal space laboratory procedure, and 3) an ethological study was specifically designed to directly reflect attempts to assess the divergent procedures of personal space laboratory research.

The research design in toto suggests five (5) hypotheses:

Hypothesis 1: In simulated personal space research, the interpersonal distance relates directly to the distance suggested by the instruction.

Hypothesis 2: In simulated personal space research, the interpersonal distance relates positively to the size of the board on which the relation is simulated, provided that the size of the figures is held constant. If the first hypothesis is tenable, then the conceptual

definition of personal space must be explicit in simulation research. If the second hypothesis is tenable, then the ratio of figure to board size should be controlled and specified in simulation research. These hypotheses refer to the degree to which divergent operational procedures produce divergent results. If both hypotheses are tenable, the effects of divergent methods become apparent.

Hypothesis 3: In behavioral personal space research the interpersonal distance relates directly to the distance suggested by the instruction.

Hypothesis 4: In behavioral personal space research, the interpersonal distance relates directly to the task required of the subject. If the third hypothesis is tenable, the conceptual definition of personal space must be made explicit in behavioral, personal space research. If the fourth hypothesis is tenable, the task required of the subject should be controlled and specified in behavioral personal space. These hypotheses again, refer to the degree in which divergent operational procedures produce differing results. If both hypotheses three and four are tenable, then the effects of divergent methods become apparent in behavioral personal space research.

Hypothesis 5: In ethological studies of naturally interpersonal distance, the distance reflected will not reflect a personal space dimension of spatial requirements. Rather, it is suggested that this naturally occurring distance will reflect a distance which approximates those instructions in laboratory procedures described as a distance which is maintained in most social situations. Given the Sommer (1969) definition of personal space it seems axiomatic that persons will not space themselves in natural situations in such manner as to violate



those invisible boundaries. It would seem more appropriate to assume that persons will space themselves in such a manner to reflect an interpersonal distance which would be appropriate if interaction were to take place. Thus, spacing which occurs in natural settings reflects an interactional distance and not personal space boundaries. It is assumed that given the public nature of these encounters, this distance would most closely reflect an optimal or average distance between people in most social situations. If hypothesis five is tenable, then it becomes apparent that studies of naturally occurring distance do not measure what they purport: a behavioral dimension of personal space. These studies are describing an interactional distance which seems consonant with the Little (1965) definition. If tenable, this hypothesis demonstrates conceptual/operational incongruity found in personal space research.

Further, when used as a control against the experimental personal space conditions, this ethological mean should provide evidence as to which experimental conditions accurately reflect a naturally occurring distance.

#### Subjects: Procurement Procedure for Laboratory Studies

As indicated, this research is specifically focused on assessing divergent methods within personal space research. Thus, every attempt was made to negate possible biasing effects of sample procurement: volunteer subject. Rosenthal and Rosnow (1969) provide an excellent overview and summary of the role of the artifact in behavioral research. Included there are biasing effects procured by sample procurement

procedures and differential sex bias responses. The specific procedure for subject selection in this research was adopted as per the following considerations. Females volunteer at a greater rate than males when the task is standard, i.e., not unusual (Himelstein, 1956; Howe, 1960; Newman, 1956; Ora, 1966; Rosnow and Rosenthal, 1966; Schubert, 1964; Schultz, 1967; Siegman, 1956; Wilson and Patterson, 1965). To insure a greater participation rate only females were considered as subjects in the research. The experimental task required of the subject in the laboratory procedures of this research is standard.

Volunteers tend to be better educated than nonvolunteers (Benson, Booman and Clark, 1951; Frazen and Lazarsfeld, 1945; Guadet and Wilson, 1940; Pace, 1939; Pan, 1951; Reuss, 1943; Robins, 1963; Suchman and McCandless, 1940; Wallin, 1949; Zimmer, 1956). To insure that the educational bias of volunteer subject to recognize the phenomena under consideration and thus respond differentially a solicitation procedure was adopted, insuring the inclusion of "non-volunteers". This procedure consisted of a face-to-face request to participate in a social psychological experiment. The demand characteristics of such a face to face encounter have been well documented (Orne, 1969). The demand characteristics coupled with propensity of females to participate at a greater rate than males thus insures the inclusion of "non-volunteer" subjects. By so doing the educational bias of the volunteer subjects, if not eliminated, has been reduced.

Volunteers tend to be more sociable than non-volunteers (London et al., 1962; Lubin et al., 1962; Hayes et al., 1968; Martin and Marcus, 1957; 1958; Poor, 1967; Schubert, 1964). It has been reported that extroverts demonstrate differential spacing patterns as compared to

introverts (Williams, 1971). The solicitation procedure was adopted so as to negate the inclusion of a large proportion of the "extroverted" volunteer subject. The demand characteristics of the face-to-face request insures the inclusion of the "introverted" non-volunteer subject.

Volunteers tend to be more arousal seeking than non-volunteers (Howe, 1960; Ora, 1966; Riggs and Kaess, 1955; Schubert, 1964; Zuckerman et al., 1967). Arousal, or stimulus seeking can be equated with extroversion. Again the solicitation procedure was adopted so as to reduce this bias.

Participants are more easily obtained in a face-to-face solicitation procedure when the research was described as short and in conjunction with a doctoral dissertation (Hood and Back, 1967). The inclusion of these contingencies further predisposes the "non-volunteer" to participate.

Given these considerations: 1) females volunteer at a greater rate than males when the task is standard, 2) volunteers tend to be better educated, 3) volunteers tend to be more social, 4) volunteers tend to be more arousal seeking, and 5) volunteers are more easily obtained when the task required of them is described as short and in conjunction with a doctoral dissertation. A procedure was adopted which negated the dependence upon volunteer subjects. Subjects were asked in halls between classes if they had time to participate in a social psychological experiment. It was also mentioned that the experiment was short, "lasting for less than one minute", and that the research was necessary for a doctoral dissertation. The subjects asked were white female college students between the ages of 18 and 26. This

procedure was designed and implemented in order to secure a more congruent response without bias. A tally sheet was kept during this portion of the research to determine the rate of participation: of 505 persons asked to participate in this research 480 agreed, a response rate of .95. A female experimenter was employed in the behavioral laboratory procedures so as to negate any differential response due to cross sex bias.

### Figure and Board Simulation

#### Board Size

The small board was 27 centimeters x 58 centimeters. The silhouettes were 16 centimeters high. The ratio of silhouette height to board was .59. This specific board and silhouette ratio was determined to directly represent a person 1.6 meters tall in a room 2.7 meters high. The board and figure size represented the same ratio as the experimental room in which this procedure was conducted. The large board was 60 x 90 centimeters. The silhouette size remained constant. The resulting scale between figure and board size was .26. Both boards were constructed of plexiglass with a brown paper backing. The boards were attached to the wall of the experimental room in such a manner that the center of the large board could be superimposed exactly over the center of the small board.

#### Subjects

Two hundred-forty female college students between the ages of 18 and 26 were recruited in classes and in hallways, employing the solicitation procedure outlined above. When they agreed to participate, they

were escorted to a waiting room adjoining the experimental room.

### Procedure

On arrival in the experimental room, subjects were randomly assigned to one of the six experimental conditions. For each of two board sizes there were three placement instructions.

Instructional Set 1. Place these figures on the board such that to move them any closer would put each in an area around the other's body where neither would want the other. It was added that what was being sought would be an uncomfortable distance. This instruction has not heretofore been employed in laboratory personal space research. It was derived from, and designed to, directly relate to the Sommer (1969) definition of personal space (cf., Portrey, 1979; Minimal Distance).

Instructional Set 2. Place these figures on the board so that the distance between them represents that distance which is as close as comfortable for conversation (Intermediate Distance).

Instructional Set 3. Place these figures on the board so that the distance between them represents that distance which people maintain in most social situations (More Remote Distance). Instructional sets two and three have been typically employed in personal space laboratory research, both simulated and behavioral techniques. There were forty subjects in each of the six unique conditions. After each subject placed the figures on the board, the subject was escorted from the room. The experimenter measured the distance from toe to toe of the silhouettes to the nearest millimeter.

## Behavioral Procedure

### Experimental Room

The experiment was performed in a seminar room measuring 4.3 x 5.8 x 2.7 meters from which the furniture had been removed. The ratio of approximate subject height, 1.6 meters, to ceiling height was .59, indicating exactness of scale with the small board simulation procedure. The room was lighted by overhead lights and by four large windows on one side.

### Subjects

Two hundred-forty female college students between the ages of 18 and 26 were recruited as in the previous experimental procedure. When the subjects agreed to participate, they were escorted to the experimental room.

### Procedure

Subjects were randomly assigned to one of six experimental conditions. There were two ground conditions, in both of which the experimenter was female. In both conditions, the experimenter and subject stood facing each other at opposite ends of the seminar room, at a distance of 4.5 meters. In the first condition, the subject was told that the experimenter would approach the subject, and that the subject should order the experimenter to stop according to one of the three distance instructions, as stated in the figure and board experiment. This condition will be termed Experimenter Movement Index (EMI) (Williams, 1971). In the second condition, the experimenter remained

stationary at one end of the room and the subject was instructed to approach the experimenter and to stop herself according to one of the three distance instructions. The condition will be termed the Subject Movement Index (SMI) (Williams, 1971). There were forty subjects in each of the six unique conditions. At the conclusion of the experiment, the experimenter measured the distance from toe to toe between the subject and the experimenter at the stopping point, to the nearest centimeter.

### Ethological Distance

#### Subjects

One hundred-twenty female pairs served as subjects. To reflect the laboratory procedures only female pairs standing face to face were considered. These pairs were in free space as discussed by Goffman (1962). Every third pair was observed. The specific measuring technique was determined as per a pretest comparing two techniques, 1) obtrusive measurement, and 2) unobtrusive measurement (Mahoney and Portrey, 1976). The obtrusive measurement consisted of approaching a pair of interactants and simply measuring the distance between them with a meter stick from toe to toe.

The unobtrusive measurement was more complicated and included the use of photographs. A confederate of the experimenter approached the interacting pair. He then positioned himself parallel with the pair. The confederate was equipped with a clip board, on the back of which a scale was expressed in decameters. The scale was on white paper and drawn in heavy black felt pen, so as to be easily distinguished. At a prearranged signal, the confederate turned the scale toward the

experimenter and a picture was taken. The resulting, thirty-five millimeter photographs were enlarged to 23 x 28 centimeters. The scale within the photograph was then superimposed between the interactants and the resulting distances recorded. To obtain comparability of results, the obtrusive measurement was then taken from the same pair. A Pearson product moment coefficient was calculated to determine comparability of method ( $r = .75$ ). Given the amount of possible error within the unobtrusive procedure, i.e., superimposing the scale, recalibrating the scale, recording the resulting distance and the practical restraints of time and money in film processing, it was determined that the unobtrusive procedure was not justified. As a result the obtrusive procedure was adopted for this research.

A general linear model was suggested for these data. The data yielded by the instructions should produce a range of spatial distance from personal space (minimal distance) to a distance in most social situations (more remote distance). This is expected regardless of the laboratory task required of the subject. There is no data available at present to suggest which laboratory procedure will adequately reflect the studies of naturally occurring distances or personal space distances. That is the aim of this research. It is suggested, however, that the naturally occurring distance will reflect one or more of the distances suggested by the instruction concerning most social situations.

It is also suggested that the invasion studies of personal space boundaries will reflect one of the laboratory instructions so designed. Again, with which procedure simulated or behavioral and with which condition, board size or movement; the specific correspondence is unclear.



## CHAPTER V

### RESULTS

The laboratory data was cast in a 3 x 2 (instructional condition by either simulated board size or behavioral experimenter subject movement procedures) analysis of variance design. A linear model of resulting distance data was suggested. The specific analysis of variance procedures employed is termed the General Linear Model procedure (Barr, Goodnight, Sall, and Helwig, 1976). The GLM procedure uses the principle of least squares to fit a fixed effects linear model to virtually any type of data. This procedure is more flexible than alternative analysis of variance procedures, performing univariate and multivariate analysis, including simple linear regression, multiple linear regression, analysis of variance, analysis of covariance and partial correlational analysis.

The GLM was selected primarily for reasons of flexibility. A brief statement of features contained would be beneficial. When more than one dependent variable is specified, GLM automatically groups together those dependent variables that have a similar missing value structure within the data set: a feature very useful during initial data analysis and the cleaning of the data set.

GLM allows the specification of any degree of interactions and nested effects contained within the experimental design. Further, it

also provides for continuous by continuous, continuous by class, and nested continuous effects.

Through the use of the concepts of estimability, the GLM provides tests of hypothesis for the effects of a linear model, regardless of the number of missing cells or the degree of confounding or interaction contained in the model. The resulting statistics from this feature of GLM are the sum of squares associated with each hypothesis tested and also, upon request, the procedure prints the form of the estimable functions employed in the test. This procedure is primarily used in conjunction with various forms of regression analysis and analysis of covariance.

The GLM also provides the means whereby the researcher may specify both the hypothesis matrices and the error matrix to be used in the analysis. This is of particular interest concerning analysis of variance procedures as the resultant F ratio is determined by assessing the explainable variation contained within the data set due to experimental treatment in conjunction with the unexplained or error variance. The use of an incorrect error term may yield results that do not adequately reflect the experimental differences found within the data set. A thorough and enlightening discussion may be found in Coleman (1964), illustrating the extreme importance of selecting the correct error term for the analysis desired.

The results of the GLM analysis of variance procedure and the resulting mean differences by instructional set and board size (simulated personal space) are shown in Table II.

As hypothesized, there was a significant difference between board size conditions ( $F = 50.07$ ,  $df = 1$ ,  $P = .0001$ ), and instructional set

TABLE II  
SIMULATED PERSONAL SPACE  
(GLM Procedure)

Source	DF	Sum of Squares	F Value	Probability
Board	1	12,965.40	50.07	.0001
Instructional Set	2	47.562.23	91.83	.0001
Board by Instructional Set	2	1,211.70	2.34	.0986

INSTRUCTIONAL SET\*

Board Conditions	1 = Personal Space	2 = Close as Comfortable	3 = Most Social Situation	
1 - Small Board	11.150**	31.925**	42.375**	28.483**
2 = Large Board	25.200**	41.475**	62.875**	41.183**
	18.175**	36.700**	52.625**	

\* Means are reported in millimeters

\*\* Significant differences as determined by the Tukey procedure,  $P = .05$ :  
all means are significantly different, .05 (6.40), 10.72

( $F = 91.83$ ,  $df = 2$ ,  $P = .0001$ ). There was no significant interaction effect ( $F = 2.34$ ,  $df = 2$ ,  $P = .0986$ ). A Tukey procedure was performed on the instructional set means. It was determined that all means were significantly different ( $HSD = .05 (6,40) = 10.72$ ).

The results of the GLM analysis of variance procedure and the resulting mean differences by instructional set and experimental task - behavioral personal space - are shown in Table III.

As hypothesized, there was a significant difference between experimental task conditions ( $F = 34.15$ ,  $df = 1$ ,  $P = .0001$ ) and instructional set ( $F = 106.52$ ,  $df = 2$ ,  $P = .0001$ ). There was virtually no interaction effect ( $F = .09$ ,  $df = 2$ ,  $P = .916$ ). A Tukey procedure was performed on the instructional set means. It was determined that all means were significantly different ( $HSD = .05 (6,40) = 111.70$ ).

A final comparison of means test was employed. While the Tukey is suitable for testing mean differences within an experimental design, it does not avail itself to testing specific experimental means against a control (check or untreated) mean. Careful consideration was given to the selection of the comparison of means test. As in this research, many experiments comparing treatments, one of the treatments is often a control.

This research employs the ethological mean, or the naturally occurring interpersonal distance, as a control to assess the convergence of the experimental conditions of interpersonal spatial behavior with a control. An attempt was made to select a comparison of means test that would adequately reflect and answer the research question proposed, i.e., which of the experimental interpersonal spatial conditions are reflected in a naturally occurring interpersonal distance.

TABLE III  
BEHAVIORAL PERSONAL SPACE  
(GLM Procedure)

Source	DF	Sum of Squares	F Value	Probability
Task	1	954,072.60	34.15	.0001
Instructional Set	2	5,952,486.66	106.52	.0001
Task by Instructional Set	2	4,920.33	.09	.916

INSTRUCTIONAL SET\*

Behavioral Task	1 = Personal Space	2 = Close as Comfortable	3 = Most Social Situations	
1 = Experimenter Movement	142.875**	413.325**	516.250**	357.483**
2 = Subject Movement	272.500**	527.000**	651.250**	483.583**
	207.688**	470.163**	583.750**	

\*Means are reported in centimeters

\*\*Significant differences are determined by the Tukey procedure,  
P = .05 (6.40) = 111.70, all instructional set means are significantly different.

If an associative statistical treatment was selected, i.e. correlational analysis, it would necessitate the subject participating in multiple experimental treatment conditions. In so doing the possibility of response set is of definite concern. A test of convergence will accomplish similar results, i.e., if specific treatment means are equal, it follows that they would be correlated, but this treatment does not require participation in multiple treatments. Thus the effects of each specific treatment will be isolated, not confounded by response set.

Dunnett (1955) gives a procedure for the simultaneous interval estimation or multiple comparisons of the control - ethological mean - with each of the other means obtained in the experimental treatments, simulated and behavioral procedures of assessing interpersonal spatial behavior. A treatment and control are declared different if their means differ by more than  $t(\alpha; q, df) S_d$ , where  $S_d$  is the standard error of a difference,  $q = (t - 1)$  is the number of treatments minus the control. Values of  $t(\alpha; q, df)$  are given in Dunnett (1964). Specific values for the notation may be obtained from the GLM procedure, or any analysis of variance procedure for the experimental means. The data required for the control mean may be obtained from the mean of the control.

In the research at hand a few data transformations were required before the Dunnett method was utilized. Specifically, it will be remembered that the simulated personal space data was recorded in millimeters while the behavioral data and ethological data were recorded in centimeters. As the ratio between the simulated and behavioral experimental conditions were directly comparable: figure to small board = .59 and average height of subject to experimental room = .59, the

simulated data was transferred from millimeters to centimeters by simple multiplication. The GLM procedure was then performed on the transformed simulated data to obtain a corrected error sum of squares needed for the Dunnett method.

The Dunnett method requires a combined within variation, or error sum of squares, for the control mean and the treatment means. The ethological variation was obtained by the following formula:  $(S)^2 \times N =$  Sum of Square, where  $S$  = standard deviation of the ethological data, and  $N$  = sample size, 120. The ethological sum of squares and the corrected error sum of squares for the simulated personal space data were then summed to obtain the corrected total error sum of squares needed for the Dunnett method. The results of the Dunnett method for simulated personal space against ethological personal space are shown in Table IV.

As can be seen in Table IV there is no convergence of simulated personal space conditions and the ethological or naturally occurring interpersonal distance data. It was hypothesized that the distance experimentally described as a distance maintained in most social situations would be reflected in a naturally occurring distance. It seems evident, given these data, that simulated personal space does not reflect a naturally occurring interpersonal distance regardless of condition.

The data transformation needed to apply the Dunnett method to the behavioral personal space data was not as extensive as described with the simulated data. Both the behavioral and the ethological data were recorded in centimeters, thus no conversion was required. However, a similar procedure was employed to yield a corrected error sum of squares for the behavioral data. The ethological sum of squares, already

obtained in the simulated procedure was summed with the behavioral error sum of squares to yield the corrected total error sum of squares needed for the Dunnett method. The results of this procedure are shown in Table V.

TABLE IV\*  
MEAN DIFFERENCE TABLE - DUNNETT  
(Simulated Personal Space Against An Ethological Control)\*\*

INSTRUCTIONAL SET			
Board Size	1 = Personal Space	2 = Close as Comfortable	3 = Most Social Situation
1 = Small Board	408.459***	200.709***	96.209***
2 = Large Board	267.959***	105.209***	108.791***

\* Control mean = 519.959

\*\* Standard error of difference, one-tailed,  $t(.01, 6, 233) = 53.8026$

\*\*\* All simulated personal space means are significantly different from the ethological control mean, one-tail,  $P = .01$ .

As can be seen from Table V there is a convergence between two behavioral personal space conditions and the ethological control. This convergence is consistent with the hypothesized relationships, but not congruent across behavioral conditions. The distance described as a distance maintained in most social situations in conjunction with the Experimenter Movement Index yields a similar distance to that obtained



by the ethological control. However, the same instructional set in conjunction with the Subject Movement Index yields a mean distance significantly different from that of the control. The distance which is experimentally described as that distance which is as close as comfortable for conversation with the experimental task being the Subject Movement Index yields a similar distance to that of the control.

TABLE V\*

MEAN DIFFERENCE TABLE - DUNNETT  
(Behavioral Personal Space Against An Ethological Control)\*\*

## INSTRUCTIONAL SET

Experimental Task	1 = Personal Space	2 = Close as Comfortable	3 = Most Social Situations
1 = Experimental Movement	377.084***	106.634***	3.709
2 = Subject Movement	247.459***	7.041	132.291***

\* Control mean = 519.959

\*\* Standard error of difference, one-tailed,  $t(.01, 6, 233) = 54.5036$

\*\*\* Significant difference, one-tailed,  $P = .01$

The implications and possible explanations of these divergent results concerning simulated and behavioral personal space, separately and against a control will be discussed in the following section.

## CHAPTER VI

### DISCUSSION

There were five distinct experimental hypotheses tested in this research. For the sake of clarity each hypothesis will be dealt with separately. Following this individual treatment of hypotheses, a summary and overall conclusion will be provided. Experimental hypotheses 1 and 2 concerned simulated personal space research and will be discussed first. Following will be a discussion of experimental hypotheses 3 and 4 dealing with experimental behavioral personal space research. Finally, hypothesis 5, concerning the convergency of simulated and behavioral personal space research with an ethological, or naturally occurring, interpersonal distance will be discussed.

#### Simulated Personal Space

Hypothesis 1: In simulated personal space research, the interpersonal distance relates directly to the instructional set. As pointed out in the review of literature personal space has been defined in a plethora of ways. A critical element in the research enterprise is the attempt to delineate an isomorphic relationship between the conceptual definition of the research phenomena and the subsequent operationalization of that concept. As these data suggest, there has clearly been a lack of such a concern in simulated personal space research, and

behavioral personal space research as well.

Following from the Sommer (1969:26) definition of personal space, an operational definition, if used in laboratory research, should have indicated private and protected area of spatial structuring. This is clearly not the case. As the review of literature indicated, this researcher failed to locate an operation of such a dimension in simulated and experimental behavioral personal space. The operationalization definitions typically employed in the research contained the phrases "as close as comfortable for conversation" and that "distance maintained in most social situations". Clearly, neither of these operations depict a private spatial area: the first referring to interactional space which implies a shared social space and the second, while no interactional space is specifically mentioned, interaction is implicit in "most social situations". Thus, the second is also referring to a shared, non-private spatial area.

The personal space definition used in this research produced interpersonal distances significantly smaller than the traditionally employed in instructional sets. This suggests that there is indeed a private, or at least more personal, spatial dimension as Sommer (1969) described it.

It may be of interest to note here that the personal space instructional set employed in this research has been previously employed by Portrey (1979, 1980). In these studies, the instructional sets, which referred to personal space and the minimal interaction distance, failed to produce significantly differing distances. Specifically, the instructional sets read as follows: Personal space - Place these figures on the board such that to move them any closer would put each

in an area around the other's body where neither would want the other; Close as Comfortable - Place these figures on the board so that the distance between them represents test distance which is as close as comfortable for conversation. Theoretically, the boundary between personal space and the minimal interaction distance are one and the same. To place figures in such a manner as to reflect a boundary which is as close as comfortable would also indicate a point at which to move them any closer would put each in an area surrounding the other where neither would care to be, i.e., these instructional sets are in a sense identical. The personal space instructional set falling to the criticism that it has failed, as do the traditionally employed instructional sets, to adequately operationalize the Sommer (1969) conceptual definition of personal space.

The instructional sets employed in this research were identical to the sets employed by Portrey (1979, 1980) except for the personal space instructional set. The set read exactly as mentioned above. The phrase, "This is an uncomfortable distance" was added. The results are apparent. By adding that intrusion of this area it would produce an uncomfortable feeling on the part of the pairs, the resulting distance was reduced from: personal space = 36.83 mm and close as comfortable = 40.08 mm (Portrey, 1980) to personal space = 18.175 mm and close as comfortable 36.70 mm. As these data indicate, the critical element in the simulated operation of personal space is the mention of an "uncomfortable" distance.

This mention of an "uncomfortable" distance appears to be a salient operationalization. Comparing the data obtained in this research to that of personal space invasion studies (Dean et al., 1976; Fry and

Willis, 1971; Kraill and Levanthal, 1976) it appears as though laboratory studies may indeed, be employed to tap a private dimension of spatial structuring. The invasion studies report that flight occurs at a distance between 10.10 cm and 22.86 cm. This flight distance may be taken to be indicative of the intrusion of personal space. The distances reported in this research for personal space are as follows: simulated personal space small board = 11.150, large board = 25.20 cm, the average = 18.175. Distances found concerning behavioral personal space are, EMI = 14.28 cm, and SMI = 27.25 cm, the average = 20.76. These experimental results are similar enough to indicate that laboratory personal space research may be utilized in the assessment of actual personal space requirements.

It would seem apparent given these data that conceptual definitions of personal space and the resulting operationalizations of some have been lacking in consistency. If sociologists are to make any progress in the experimental investigation of interpersonal spatial behavior, greater care must be given in the selection of a conceptual definition of the phenomena: personal space as opposed to interactional distance. Further, in attempting to experimentally assess spatial structuring, investigators must be aware that differences do exist and are demonstrably apparent. Given these data describing the divergence of resulting instructional sets it is not surprising that attempts to predict spatial behavior from simulated results have proven inadequate (Clore, 1969; Dosey and Meisels, 1969; Evans and Howard, 1971; Mehrabian, 1968a, 1968b; Patterson, 1973; Pedersen, 1973a, 1973b; Rosenfeld, 1965; Watson and Graves, 1966). Without standard operational procedures it seems only logical that few research enterprises have yielded consistent

results.

Another confounding effect in simulated personal space research is the lack of consistency of instrumentation: specifically board size. As Campbell and Stanley (1963) have pointed out, changes in instrumentation seriously effect the reliability of any research enterprise. Consistent with the hypothesis 2 of this research, the interpersonal distance simulated relates positively to board size: the larger the board the larger the resultant figure placement distance. The results appear to be straightforward.

Instrumentation poses a number of problems for simulated personal research. To compare results across studies would seem fruitless in light of these data. Findings could only be expressed in relative terms: i.e., males place figures at greater distances than do females. This is informative, but certainly not definitive of distance or an accurate statement of specific distance requirements of individuals, particularly when there is no need to reduce distances to an ordinal variable. If simulated personal space measures are to be expected to yield reliable results, instrumentation will have to be standardized in such a manner as to depict a given environment in terms of size. The "one board size is as good as another" orientation should therefore be seen as a lack of control for the empirically demonstrated relevance of the room size variable in crowding research (Desor, 1971; Freedman, 1972).

#### Behavioral Personal Space

Hypothesis 3: In behavioral personal space, the interpersonal distance relates directly to the instructional set. These behavioral data support the hypothesis. The import of these data in behavioral

experimental studies of personal space is precisely that of the simulated research: the conceptual definition of personal space must be made explicit. Following the conceptual definition every attempt to construct a logically consistent operationalization should be made. The author found no experimental research report that attempted to directly operationalize personal space as Sommer (1969) defined it. Rather, as with simulated personal space research, the instructional sets employed more fully depict an interactional distance as defined by Little (1965:237). Thus behavioral personal space research falls to the same observations as does simulated research: a serious lack of conceptual operational consistency.

Similarly, as simulated personal space research suffers from the lack of consistent instrumentation, behavioral personal space research suffers from a variation of behavioral tasks required of the subjects. Due to the lag time implicit in the Experimenter Movement Index procedure: the subject perceiving the experimenter has reached the desired spatial distance, asking the experimenter to halt, the experimenter hearing the request and stopping, the EMI procedure yielded significantly smaller interpersonal distances than did the Subject Movement Index (SMI).

Inconsistent instrumentation plagues behavioral personal space research as it does simulated research. The difference between the EMI and SMI procedures is apparent in Table III. One should notice that the EMI procedure in conjunction with instructional set 3 - most social situations - produced the same interpersonal distance as the SMI procedure as paired with instructional set 2 - close as comfortable for conversation. The methodological artifact: lag time, contained within

the EMI procedure is apparent when examining interpersonal distances across the experimental task and instructional set. The researcher must be acutely aware that when employing the EMI procedure, the resultant interpersonal distances will be significantly smaller than those desired by the subject.

These data indicate that comparisons across behavioral studies and between simulated studies would seem premature. The inconsistency of findings between and across method precludes such comparisons. Further, the lack of consistent predictions of spatial behavior either from experimental behavioral or simulated personal space research is understandable given the amount of inconsistency of instrumentation and conceptual/operational concerns.

#### Ethological Interpersonal Distance/Simulated Personal Space

The last research objective is entailed in hypothesis 5: in ethological studies of naturally occurring interpersonal distance, the distance will not be reflected in the personal space dimension of either behavioral or simulated personal space research. Rather, it is suggested that this distance will reflect a distance which approximates those distances described in experimental procedures as a distance maintained in most social situations.

The hypothesis was not supported in any of the simulated personal space conditions. There was no simulated interpersonal distance that yielded a similar result as a naturally occurring distance. Given these data, it would seem that the use of simulated techniques to assess and/or predict naturally occurring distance is not justified. The lack of



congruence of simulated measures regardless of the specific experimental condition to reflect naturally occurring distance would preclude such predictions (Clore, 1969).

It may be that the scale of the large board to figure size: .26, did not represent and give an adequate depiction of those situations in which the naturally occurring distance was measured. Further, in all cases, the pairs of females, that consisted of subjects for the ethological study, were not alone in a large open space as the simulated procedure intimated. The presence of others in the field undoubtedly effected the amount of space needed and utilized by the pair. The simulated procedure in no way accounted for this phenomena.

Further, it may well be the case that the subject is asked to respond cognitively to a behavior of which she is not normally aware. The subject's cognitive response may simply not be an adequate representation of behavioral tendencies. In this sense, it seems reasonable to suggest the well-known attitude - behavior discrepancy.

The subject in a simulated procedure is asked to respond in a general manner to a phenomena that is enacted specifically. The naturally occurring distance was recorded from an interacting dyad. Presumably, the distance reflected would be a distance which would be smaller than a distance in most social situations as the dyad was involved in a specific situation with specific participants. In the simulated procedure the subject is asked to respond in general terms, perhaps to a stranger. Thus, the resulting distance would be larger than the ethological distances. This seems reasonable as the large board condition paired with instructional set 3 - most social situations-

is indeed larger when converted to scale: 628.75 cm and 519.959, respectively.

#### Ethological Interpersonal Distance/

#### Behavioral Personal Space

The attempt to assess convergence of laboratory procedures with a naturally occurring distance failed to support the hypothesis concerning simulated personal space research, as stated previously. However, this was not the case with behavioral personal space. There were two experimental conditions that yielded similar means to that of the ethological control: EMI/most social situations and SMI/close as comfortable for conversation. These data are somewhat consistent with the hypothesis that the experimental conditions containing the phrase most social situations would yield similar means to that of the ethological mean. These data were not consistent across experimental conditions as expected, but rather, occurred between conditions: EMI and SMI, respectively.

A possible explanation for these results would again be lag time between EMI and SMI procedures, resulting in a distance, although described as most social situations for the EMI procedure, which the subjects perceived as close as comfortable when in direct control of their approach distance.

These data indicate further that the distance maintained by persons in a naturally occurring situation does not reflect a distance maintained in most social situations. Rather the ethological distance seems indicative of a distance which is as close as comfortable for conversation. These data suggest that naturally occurring distance research reports are not measuring personal space nor do they measure that

optional distance required in "most" social situations.

It is possible that subjects in the laboratory procedures interpret the most social situations instructional set as more formal or impersonal. Suggesting, perhaps, that this more remote distance would be utilized by persons who are not familiar with one another; i.e., strangers or persons met for the first time.

However, it must be noted that, given these data, the spatial dimension described as a distance maintained in most social situations does not experimentally operationalize the Little (1965) definition of personal space: that area surrounding a person's body in which most of his/her interactions take place, i.e., most social situations. Rather, as indicated by these data, one must assume that most of a person's interactions take place with non-strangers at a distance which is as close as comfortable for conversation. The distance then indicated by the phrase "most social situations" is not an area where the majority of interactions take place. This distance may be utilized by persons in a very limited sense: formal situations or situations where the interactants have just met. These data seem to suggest that this distance is relative to a specific situation rather than a general one.

These data, while demonstrating a lack of standardization of method within proxemic research, indicate support for the Hallian (1966) concentric zone theory of spatial structuring. A comparison of the distance suggested by Hall and those found in this research is shown in Table VI.

These data suggest that there are at least three distinct spatial areas surrounding an individual: 1) intimate distance - personal space, 2) intermediate distance - as close as comfortable for conversation and,

3) more remote distance - most social situations.

TABLE VI  
COMPARISON OF HALLIAN AND EXPERIMENTAL DATA\*

	Hall	Simulated PS	Behavioral PS
Intimate Distance close phase (personal space)	0-15.24	18.175	20.77
Intimate Distance far phase (close as comfortable for conversation)	15.24-45.72	36.70	47.02
Personal Distance close phase (most social situations)	45.72-76.20	52.625	58.38

\* Distances are reported in centimeters

It must be noted that the Hallian model takes into account the varying personal and interpersonal dimensions of proxemic behavior.

Consistent with Hall's model is the electro-magnetic model proposed by Portrey-Byrum (1980). These data are supportive of both models. The exciting aspect of the findings reported here is that they put parameters around specific distances in spatial structuring, personal space, a distance which is as close as comfortable for conversation and a more remote and formal distance. These areas are more specific in

their application, as Hall's model proposes larger areas in which these types of spatial behavior occur.

Implicit in each of these distances there are degrees of intimacy or affective response to spatial structuring. Hall (1966) indicates that space is an affective phenomena, the closer the interpersonal distance the more affective the response. Drawing upon Simmel's (1949) notion of personal space being an extension of the ego, this proposition by Hall appears to be consistent with affective, personal response modes of structuring and the utilization of space.

The point must be made that this research, by virtue of the basic experimental paradigm employed, in no way has assessed the affective nature of spatial structuring. This area remains largely unexplored except by a few researchers (Goffman, 1963, 1971; Stilitz, 1969; Scheflen and Ashcraft, 1976; Scheflen and Scheflen, 1972). To be included in the main body of this research is assessment and critique of the work presented here.

## CHAPTER VII

### SUMMARY

The results of the three experiments are consistent with, and in support of the five hypotheses. The board size in the figure and board experiment, and the object of placement control in the behavioral experiment significantly affected the interpersonal intervals, and the variation of significant differences in measures, as shown in Table II and Table III. Of the two laboratory experiments, the behavioral study seems more "true to life" than the simulated experiment: the environmental situation is actual, rather than symbolic, and the subject can apply her own habitual spatial relationships in a fairly familiar classroom environment. This is born out in the finding of convergence between the two behavioral conditions and the ethological mean, where no convergence existed between simulated procedures and the ethological mean. The most veridical interpersonal distances are probably those resulting when the subject controlled her own approach to the experimenter. The clearest distinction in this condition appears between Instruction 1, "personal space", and Instruction 2, "close as comfortable for conversation," where the distance is approximately twice as great as personal space. The distance for Instruction 3, for "most social situations" is about 25 percent greater than Instruction 2.

The subject in the role enactment experiment is less successful in

controlling the experimenter's approach, than in controlling her own approach. This is attributed to the lag time in the experimenter's response to the subject's order to stop. The distances are all significantly smaller, but the ratios between types of instruction are also fairly well maintained. The results from the figure and board experiment are in basic agreement with those of the role enactment experiment.

Board size does make a major difference, resulting in one-and-a-half to two times as much distance for the larger board, compared to the distance on the smaller board. The effects of difference in distance implicit in the three instructions are clearly in support of the hypotheses, and lead to the conclusion that a measurable part of the effect in interpersonal distance results in figure and board experiments may be attributed to differences in conceptual definitions which reflect differences in personal space and interpersonal behavior.

The finding that the large board produced significantly larger distances than the small board agrees with the room size effect reported in crowding research. Although the results in crowding research are inconclusive, some of the trends agree rather closely with the present findings. For example, interaction in smaller rooms produce a perception of less space, which appears to explain the reduced interpersonal distance (Stockdale, 1978; Stokols, 1973; Desor, 1972; and Freedman, 1975).

Instrument variation poses problems for simulated personal space research. To compare results across studies seems pointless in the light of this fact. To date, simulated research findings are experimentally established only in relative terms. There is no compelling reason to limit analysis of linear distances to the ordinal level. If

simulated personal space measures are to give a more complete representation of human spatial behavior, the research instruments should be standardized in terms of environmental dimensions.

Differences attributable to instructional sets suggest that to compare results across studies may be misleading. The instructional sets generally used in personal space research produce variation in interaction distances apart from those conceptually incorporated in personal space. Not only is simulated personal space research characterized by incongruency of concepts and operation, but different operations produce different figure displacements. Perhaps the behavioral dimension of spatial structuring cannot be measured accurately by simulation experiments. As a final note, since the instructional sets typically employed in such research refer to an interactional spatial area, one is led to the conclusion that simulated personal space research measures interactional space dimensions, rather than personal space, as it purports to do.

These data suggest that some of the contributing factors to inconsistent results in the experimental study of interpersonal spatial behavior are as follows: 1) lack of conceptual/operational consistency, both simulated and behavioral personal space research, 2) lack of standardized instrumentation, i.e., figure and board ratio and experimental task, 3) given number one, ethological studies do not measure that which they purport: a distance maintained in most social situations nor a behavioral dimension of personal space, but rather a distance which is as close as comfortable for conversation and 4) convergency between experimental research and naturally occurring distance is limited.

This research attempted to assess various methodological and



conceptual problems in the area of proxemic research. The answers suggested by the data reported here should, in no way, be taken as conclusive. There are still many unanswered questions posed by this research. The research was conducted with female subjects, a female confederate, and female figures for the simulated task. The convergence of behavioral procedures: SMI/close as comfortable for conversation and EMI/most social situations may be employed to assess some spatial dimension of females, but the male pairs, cross sexed pairs and mixed racial pairs as well. If experimental procedures can be employed to accurately indicate the interactional and behavioral dimensions of interpersonal spacing, research in this area would greatly benefit.

To conclude, these data demonstrate the importance of conceptual/operational congruity within the research enterprise. The findings should not be taken as definitive, but rather suggestive of further research in the area. The research enterprise is an on going one. When we as social psychologists become satisfied with the answers provided by our research, perhaps the questions have become too familiar.

## CHAPTER VIII

### LIMITATIONS AND CRITIQUE

It is appropriate to begin a critique of this research with an excerpt from Lyman and Scott (1970:108):

The concept of territoriality offers a fruitful approach for the analysis of freedom and situated action. Although the early school of ecology in American Sociology has provided a possible avenue for this kind of exploration, its practitioners appear to have eschewed the interactionist and the phenomenological aspects of the subject in favor of the economic and biotic.

The avoidance of these dimensions seems apparent in contemporary analysis of personal space. Each of the theories discussed in this research emanates from either the economic (exchange model) or the biotic (physiological) model. Duke and Nowicki (1972) and Nesbitt and Steven (1974) can be categorized under the physiological model with Argyle and Dean (1965), Dosey and Meisels (1965) and Portrey and Bynum (1980) included under the exchange model. As Ritzer (1975) has indicated both of these models may be placed within the behaviorist paradigm. The application of such a paradigm precludes the analysis suggested by Lyman and Scott (1970). By virtue of the paradigm employed researchers cannot address certain critical aspects of spatial structuring.

As Lyman and Scott (1970:89) note " . . . free territory is carved out of space and affords opportunities for idiosyncrasy and identity." Working under the rubric of behaviorism, questions of idiosyncrasy and identity are ignored. The focus is upon the identity of persons,

preconstructed by personality measurements (e.g., Pedersen, 1973) as establishing spatial areas. The emphasis posed by Lyman and Scott is upon the carving out of space, being one of the phenomena that contributes to the establishment of a certain identity or self. It is the activity of establishing spatial dimensions that is of primary importance.

Central to this argument is the conception of human behavior as being self-directed and thus human behavior may be observed on two distinct levels - the symbolic and the interactional or behavioral (Denzin, 1970). This notion of humanness stems from interactionist theory and hence may be located in the definitionist paradigm (Ritzer, 1975). The keys to understanding human behavior are the variety and range of symbols and "symbolic meanings shared, communicated, and manipulated by interacting selves in social situations" (Denzin, 1970:453). Such a perspective assumes that meaningful analysis of human behavior must assess these symbolic meanings which emerge over time in interaction. Consequently, speech (Becker, 1971), non-verbal gestures (Goffman, 1967), the mode of dress (Stone, 1975), and style of speech (Goffman, 1959) all contribute and constitute symbolic meaning. Clearly, an experimental design in which utterances are limited and standardized, does not supply the situation where the above aspects of human behavior can be addressed.

The experimental method does not typically concern itself with the fully situational aspects of human conduct. Rather, this method strips away these aspects under the guise of objectivity and standardization. By so doing, researchers are denying the situated aspects of human conduct, in general, and also deny the situated aspects of the

experiment itself.

Objectivism is a pre-condition of most experimental designs. It seems axiomatic that the experimental method further denies or fails to consider the processual elements of human behavior. As James (1904) points out, humans live in an ebb and flow of time, where the past, present, and future simultaneously play upon human conduct. Persons do not live in the structural boxes the experimental method depicts.

#### Criticisms of the Experimental Method: Artificiality, Random Sampling and Triviality

The criticism of artificiality is founded on the argument that laboratory experiments should directly reflect social processes as they operate in the "real world". The goal of research should be the simulation of naturally occurring social processes. "Realism in laboratory research represents a method of research in which an experimental system is created which behaves exactly as its real counterpart" (Drabek and Hass, 1967:342). If such realism is the purpose of laboratory investigation, an obvious problem arises. In order to construct social events in the laboratory, they must be necessarily simplified. But to simplify a complex phenomena is to change that phenomena: "The very act of bringing a variable into the laboratory . . . changes its nature" (Chapanis, 1967:566). Given this simplification, it is impossible to construct a mirror image of a complex social event. Any event that is created in the laboratory will be artificial. Thus, any experimental findings regarding the artificial phenomena cannot be generalized to some "'neutral' phenomena" as it operates in the day-to-day activities of persons.

Researchers have noted that ad hoc groups investigated in the laboratory radically differ from "real groups" such as families, friendship cliques, and work groups (See Drabek and Hass, 1967).

A second criticism addresses the absence of random sampling in experiments. Not only is random sampling not employed, but many research designs use college freshman or sophomores and females, as did the research reported here (Higbee and Wells, 1972, Holmes and Jorgenson, 1971). Such being the case, representativeness of findings must be questioned. Borgatto and Bohrnstedt (1974:113) address this issue: "How representative . . . are these students, and would one expect the findings based on them to generalize to the rest of the population?" The lack of random sampling precludes the generalization of results to any given population. These considerations compound the problem of artificiality further.

Artificiality does not allow laboratory experimentation to be anything but the investigation of the socially trivial. The criticisms of the experimental method - artificiality, lack of random sampling, and triviality - appear to render experimental methodology as an impotent technique of sociological, i.e., social investigation.

Martin and Sell (1978) attempt to answer the above criticisms by postulating two distinct approaches to sociological phenomena: the descriptive and the theoretical. The descriptive approach is concerned with the "explication of social events and processes as they exist at one point in time" (Martin and Sell, 1978:4). This approach is subject to temporal and social constraints. The ability to describe relations between persons does in no way guarantee the ability to adequately predict future relations. Although the descriptive strategy does not

allow for future predictions of what will be, it does allow for an understanding of what is, or rather, what is going on. Given these considerations, attempts at the description of "social processes" observed in the laboratory are clearly inadequate. The criticisms already mentioned apply.

Martin and Sell (1978:11) argue that a theoretical approach is concerned only with "explicating the relations between abstract social phenomena". Such an approach is not concerned with interpreting relations between phenomena of common (everyday) experience. They argue . . . "any results of an experimental test (of a law-like statement) cannot be generalized to any phenomena as they operate in the real world" (12). This approach then is concerned with intellectually constructed objects and events (Ravetz, 1971). It appears that as these intellectually constructed objects and events cannot be defined from common experience, it follows that relations between these events cannot be obtained from common experience.

If the task of the sociologist is to understand the world in which we live, one must ask: What is the viability of constructing events which are not a part of that world? The concern of the theoretical approach is the study of social phenomena which are not contaminated by temporal and/or social factors. Thus, achieving consistency and clarity, one must insist that social phenomena which are not so contaminated are not social phenomena. Rather, they are laboratory phenomena which, by definition, have no relationship to common experience. It appears to make little sense in the quest to understand social relations, which are necessarily "contaminated" with situational and situated factors, by the intellectual creation of "social events" that have no

direct relationship to the social relations investigated.

The purpose of this critique is to point out dimensions of human behavior that have been omitted from the research enterprise, included therein, proxemic behavior. Most of the research concerning proxemic behavior is laboratory in nature. Goffman (1959, 1967), Stone (1962), Lyman and Scott (1970) and a few others have provided unique insight into proxemic behavior, and situated and/or situational factors which may influence such behavior. To date, these aspects of spatial structuring have been noticably absent. As indicated earlier, we must not pursue one aspect of interpersonal distance to the exclusion of the other interactional distance as opposed to personal space. So too, one must not pursue one area of interpersonal research over another: experimental research as opposed to field, qualitative research. Each method has utility yet each argues for primacy in the manner of doing sociology. In lauding one over the other, by denying the efficacy of one, we must continually fail in obtaining a more complete understanding of any human conduct.

The preponderance of laboratory research concerning proxemic behavior proposes a challenge to sociologists. One that will necessitate moving out of the laboratory and into the social arena. The question of how does limited space relate to personal conduct has yet to be seriously considered. This challenge, if accepted, will provide an analysis of freedom, situated action, and will lead to an appreciation of meaningful human interaction.

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