

THE RELATIONSHIP BETWEEN ROOM SIZE AND THE LIMITS
FOR COMFORTABLE CONVERSATION

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The problem with which this investigation is concerned is that of determining the relationship between room size and the limits for comfortable conversation in dyadic interactions. Ss were 200 female introductory psychology students at North Texas State University. Three rooms of different sizes and two identical couches were used. The couches were placed facing each other at varying distances apart in each room. Ten pairs of Ss were assigned to each of fifteen conditions, with each pair tested under only one condition. Each pair of Ss was asked to enter the designated room and discuss various proverbs as to their meanings. Seating preferences (opposite vs. side by side) were recorded and chi-square was employed to test the significance of the relationships set forth in the following three hypotheses:

- (1) More pairs prefer to sit opposite one another rather than side-by-side;
- (2) The distance between couches is positively related to the number of pairs choosing to sit side-by-side, and
- (3) Room size is positively related to the number of pairs choosing to sit side by side: (a) At

any given couch distance and (b) Across all couch distances. The overall preference of Ss to sit opposite one another was significant at the .01 level, and the relationship between couch distance and seating preference was also significant at the .01 level. However, there was no significant relationship between size of room and seating preference ($p > .30$), although a trend was suggested. Limitations in design and measurement, the possible influence of certain extraneous variables, and the practical relevance of studies in personal space were discussed.

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FOR COMFORTABLE CONVERSATION

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THE RELATIONSHIP BETWEEN ROOM SIZE AND THE LIMITS
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Until recently there has been relatively little empirical data available pertaining to the human use of space as a means of nonverbal communication. Most studies on spatial and territorial behavior had dealt principally with infra-human subjects. The anthropologist Hall (1961) primarily derived the notion of personal space in his description of a series of interaction spheres which surround each person in his dealings with others. These concentric circles or personal space zones were labeled the "intimate" (0-18 inches), the "casual-personal" (18-48 inches), the "social-consultative" (48-144 inches), and "public domain" (beyond 144 inches). Each of these was defined in terms of the kinds of inter-personal encounters and behaviors which occur within its confines (Hall, 1964).

Sommer (1959) has made a distinction between two general meanings of the term "space" as it is used in the literature. The more familiar of these refers to space in the geographic sense, and includes the concept of

territoriality of animal and human behavior. The second connotation pertains to the "personal space" of an organism, i.e. the distance that one ordinarily places between himself and other organisms. Personal space is carried around with the individual, and its boundaries are invisible, whereas territoriality remains relatively stationary with boundaries that are usually marked. Furthermore, personal space has the body as its center, while territoriality generally does not.

Horowitz (1964) refers to the area of personal space which an individual maintains as a "body-buffer zone" for interpersonal transactions. He sees this zone developing along with a person's "body image" in early ego formation. An analogy to the formation of body image would be the development of a feeling for the peripheries of one's automobile in everyday driving situations. Guardo (1969) has found that reproducible body-buffer zones are established at least by third grade.

Inasmuch as personal space serves many different functions for different people, it is no easy task to pinpoint all the variables which may lead a person to choose a particular distance for a given type of interaction. Argyle and Dean (1965) have described body-buffer zones in terms of

an equilibrium level of physical proximity which exists for each person in any given interaction. It is further supposed that there also exist equilibrium levels for eye contact, amount of smiling, intimacy of conversation, and other behaviors linked to affiliative motivation. During an encounter, if one of these levels is disturbed, then compensatory changes may occur along one or more of the other dimensions in order to maintain the overall equilibrium level of intimacy desired. If the equilibrium cannot be maintained and the result is too much intimacy, then avoidance forces will predominate, and the subject will experience anxiety about rejection or revealing inner states. If there is not enough intimacy, he will feel deprived of affiliative satisfactions.

The amount of eye contact (EC) which a person experiences during an interpersonal encounter has been found to be important in determining the level of intimacy of the interaction (Argyle and Dean, 1965; Exline, Gray & Schuette, 1965; Kendon & Cook, 1969; Mehrabian, 1968). Some of the specific functions which EC may serve include (1) Information Seeking. Feedback is needed most at the end of speeches to see how they have been received. The extra input during EC is found to be distracting; therefore the

speaker looks away at the beginning of his speeches in order to help himself organize his thoughts. (2) Signal That The Channel Is Open. During EC each person knows that the other is attending primarily to him and that the channel is open for further communication. (3) Concealment. Some people do not want to be seen, and feel depersonalized by becoming the object of another's perception. This is often associated with a fear of rejection and/or a fear of revealing inner states. (4) Exhibitionism. Some people lack adequate feelings of ego-identity and consequently have a great desire to be seen in order to be confirmed as a person.

These last two functions of EC point to basic personality differences among individuals as determinants of visual and spatial behavior. Kendon & Cook (1969) found that people who scored high on the neuroticism scale of the Maudsley Personality Inventory engaged in more overall EC during dyadic interviews than did normals. These people also talked for longer periods and looked at the other person less while speaking. Those who scored high on extraversion looked more both while speaking and listening than did introverts. High scorers for dominance spent the most total time talking.

It appears that a person's general attitudes toward social interactions has much to do with his visual behavior.

Exline (1965) administered the Schutz' Measure of Fundamental Interpersonal Relations Orientations (which measures inclusion wanted, inclusion given, affection wanted, and affection given) prior to interviewing his Ss, and found that individuals most willing to engage in mutual visual interaction were oriented toward inclusive and affectionate interpersonal relationships.

In view of the widespread belief in the difficulties that schizophrenics have in communicating with others, several experiments have been performed with these individuals in order to see if they exhibit characteristic patterns of non-verbal communication. Horowitz's (1965) mapping procedures of individual spatial behavior of schizophrenics have shown that there often exist (1) a confusion of boundaries between animate and inanimate objects and between the self and the non-self; (2) clever utilization of spatial cues for defensive or manipulative purposes, and (3) excessive attention paid to feelings about space, which frequently lead to fear, confusion, and/or maladaptive behavior. Other measures of personal space have shown schizophrenics to maintain a larger body-buffer zone than normals. In one study (Horowitz, Duff & Stratton, 1964) Ss were asked to make approaches from eight different angles to a hatrack, a

male, and a female. All Ss maintained a closer distance from the inanimate object than from the male or the female. However, the schizophrenics kept a greater distance from all three objects for each different type of approach than did the normals. When asked to draw lines around nondescript silhouettes in order to represent the distances they wished to keep from others in ordinary social interactions, the schizophrenics drew significantly larger circles around each view of the silhouettes. Further evidence of impaired concepts of personal distance in schizophrenics is provided by Sommer (1959), who studied preferred seating positions at rectangular tables during dyadic interactions. Normal Ss exhibited characteristic patterns for preferred seatings, but in almost every case the schizophrenic Ss departed from these norms.

The body-buffer zone has been theorized to act in part as a protection against perceived threats to one's emotional well being (Horowitz, Duff & Stratton, 1964). One frequently employed mode of inducing perceived threat in social interaction experiments has been to vary the affective tone of the topic under discussion. Several investigators have reported that spatial distances tend to increase as the topic of discussion becomes more unpleasant or self-revealing

(Dosey & Meisels, 1969, Leipold, 1963, Little, 1966, 1968). At the same time, the amount of EC will decrease as the topic produces arousal or tension in the relationship (Argyle & Dean, 1965). Apparently EC can be a particularly useful means of nonverbally conveying a person's desire to either continue or terminate a transaction. It has been previously pointed out that a decrease in EC can serve a "concealment" function when a person wishes to avoid revealing an inner state of affective arousal. Exline (1965) induced the affect of embarrassment into half of his Ss by manipulating the topics of his interview content to include questions of a very personal and self-revealing nature. The concomitant decrease in EC on the part of the Ss was interpreted to mean that a threat to one's composure due to the nature of the interaction with another signals a desire to maintain psychological distance from the other by avoiding eye contact with him.

Additional evidence in support of the perceived threat or arousal theories comes from the field of physiological psychology. McBride (1965) believed that the Galvanic Skin Response (GSR) might provide an indication of the level of arousal associated with the proximity of other persons. GSRs of Ss were studied with respect to experimenters who

adopted nine different proximal and distal approach patterns. Approaches from the front elicited greater GSRs than did approaches from the side, which in turn were greater than approaches from behind where looking behavior is partially or totally impaired.

The amounts of eye contact and personal distance maintained during an interaction are both a function of the degree of acquaintance and positive attitude between the interacting parties (Kendon & Cook, 1969; Little, 1968). For example, Mehrabian (1968) found eye contact to be a parabolic function of positive attitude, i.e. EC was lowest when the person being addressed was intensely disliked, highest for those regarded neutrally, and moderate for those intensely liked. Distance proved to be a decreasing linear function of positive attitude. The fact that the inverse distance-acquaintance relationship is manifested by third grade (Guardo, 1969) indicates that children at this age have already established social schemata of physical distance and psychological closeness.

The particular sex combination of an interacting dyad has been reliably demonstrated to be an important variable for determining interaction distances in a variety of situations. Females generally employ closer distances (and

more EC) to other females than do males to other males (Exline, Gray & Schuette, 1965; Little, 1968). There is also evidence to suggest that in positive-affect situations, female schemata entail greater distances with the opposite sex than those of males (Dosey & Meisels, 1969; Meisels & Guardo, 1969). This particular finding supports the notion of greater male assertiveness and female passivity in heterosexual interaction within this culture. Horowitz (1964) used an approach method to study body-buffer zones and found that Ss of both sexes placed closer distances between themselves and females than between themselves and males. Similarly, all of Kendon's Ss looked more overall when talking to females than when talking to males (Kendon & Cook, 1969). In terms of physiological arousal, McBride (1965) discovered that individuals of either sex attained higher GSR levels when approached by male experimenters than when approached by female experimenters. The Ss also responded more overall to approaching experimenters of the opposite sex.

It must be pointed out at this time that the variables and resulting spatial behavior patterns which have been discussed thus far fall under the influence of common social experiences and therefore may differ somewhat from culture to culture. Little (1968) found significant differences in

social schemas between "contact" cultures and "non-contact" cultures. Contact cultures were defined as having a minimum of taboos against physical contact in public social situations, and included Greeks and Italians. U. S. Americans, Swedes, and Scots represented non-contact cultures. The Greeks were found to have the closest average social schemata, followed by the Italians and Americans, then the Swedes, and finally, the Scots. Hall (1959) observed that Latin Americans stand closer to one another than do North Americans, and that Lebanese often converse while sitting on opposite sides of a room.

Systematic studies of spatial arrangements in discussion groups have shown that group members generally prefer to talk to someone sitting more or less opposite rather than to those sitting adjacent when seated in a circular arrangement (Steinzor, 1950; Hearn, 1957). When rectangular tables are used during discussions between pairs, the majority will choose to arrange themselves at the corner positions if corner seating is available. If no chairs are provided at the ends of the tables, the pairs will then prefer to sit opposite one another rather than side-by-side (Sommer, 1959). These phenomena may be explained in terms of eye contact. A person will experience greater ease during an

interaction if he is in a good position to see what the other person does, as well as to hear him. Steinzor (1950) found that people sitting next to each other do not engage in as much eye contact as those sitting face to face.

Sex differences have been demonstrated to play a role in seating arrangements in a number of investigations (Elkin, 1964; Norman, 1966; Sommer, 1959). For instance, females make more use of side-by-side seating arrangements than do males. In fact, side-by-side seating among males is rare if corner or opposite seating is available. These results are in agreement with the aforementioned data that females in this culture can tolerate closer physical distances from each other than can males. This is further illustrated by observations of females holding hands or kissing, practices which are uncommon among males.

The "Steinzor effect" that people in a discussion prefer to converse with those sitting opposite must be qualified. That is, the effect will hold true unless the distance across is too great for comfortable conversation. In order to determine a possible maximum distance for comfortable conversation, Sommer (1961) asked pairs of non-professional hospital employees (homogeneous as to sex) to go into an attractively furnished lounge, which contained two couches

facing each other, and discuss a non-personal topic. The couches were placed at distances from one to five feet apart. Sommer hypothesized that since people generally prefer to sit opposite one another, the point at which they begin sitting side by side on the same couch could be taken as an indication of the distance at which the couches are too far apart for comfortable conversation. Under the particular conditions of the study it was found that at distances up to three and one-half feet between the couches, the Ss sat across from one another on different couches. At distances greater than this they sat side by side on the same couch.

In a follow-up study the procedure was repeated using four chairs instead of two couches. Thus, it was possible to learn the effects of varying the side by side distance as well as the distance across. The results showed that Ss chose to sit across from one another with two exceptions: (1) when the distance across was too great for comfortable conversation (again greater than three and one-half feet), and (2) when the distance across exceeded the side-by-side distance between the chairs (Sommer, 1962).

Sommer's studies were carried out in a large, attractively furnished lounge (46 x 48 feet). It was agreed that some of the arrangements of the four chairs looked quite

strange, particularly when the chairs were set five feet across or side by side. Yet chairs and couches in most private homes are often observed to be placed six, seven and even ten feet from one another. However, in private homes these distances do not give the impression of isolating people from one another, since the furniture is set against the walls and everything looks natural. It is possible that the size of the room used for such studies plays a significant part in determining the maximum distance for comfortable conversation. In the present study three specific hypotheses were tested: (1) under the particular conditions of the study, more pairs will prefer to sit opposite one another rather than side by side; (2) the distance between the couches will be positively related to the number of pairs choosing to sit side by side; (3) the size of the room will be positively related to the number of pairs choosing to sit side by side (a) at any given couch distance and (b) across all couch distances. The first two hypotheses are replications of Sommer's (1961) investigation of the limits for comfortable conversation, while the third hypothesis stems from Sommer's observations of furniture distances in private homes.

Method

Subjects. The Ss were 300 freshman girls enrolled in introductory psychology courses at North Texas State University. Their participation in the experiment was a part of course requirements.

Apparatus. Two identical 56-inch-long red couches were used for the experiment. In order to study the effects of room size the experiment was conducted in a large ballroom (30 x 55.5 feet), a medium-size lounge (26 x 27.5 feet), and a small room (12.5 x 17.5 feet).

Procedure. The couches were placed at distances of 1, 3, 4, 5, and 6 feet apart in each of the three rooms, thus making a total of 15 different conditions. The design called for 10 pairs of Ss in each condition, and each pair was tested under only one condition. The couches were prearranged in the middle of each room. Each pair of Ss was ushered to the door of the room and given cards which contained the discussion topic. The experimenter instructed the Ss to "Please go over to the central part of the room and discuss these three proverbs with each other for three minutes. At the end of that time period I will come in and interview you as to their meanings." The following three proverbs were printed on each of the two cards: (1) "No

wind can do him good who steers for no port;" (2) "You must not throw pearls before swine;" and (3) "A bad workman quarrels with his tools." After the discussion went on for three minutes, a record was made of how the Ss sat, and they were then interviewed as to the meanings of the proverbs. Any questions the Ss raised concerning the purpose or results of the experiment were answered in the following manner: "You will have a chance later on in the semester to find out what the experiment is all about, if you are interested. Any questions you might have will be answered at that time." None of the Ss inquired about the purpose of the experiment until after they had been interviewed; therefore, they received this explanation at that time only.

The data consisted of diagrams which showed whether the Ss sat opposite one another or side-by-side in each of the 15 conditions. Each pair of Ss was treated as a unit in recording the seating preferences. Chi-square was employed to test the significance of the relationships set forth in the three hypotheses under consideration. Since many of the expected frequencies were less than 10, Yates' correction was employed as an allowance for discontinuity.

Results

The data support previous findings that people prefer

sitting opposite one another rather than side by side. For all rooms and couch distances combined, a total of 106 pairs sat across from one another while only 44 pairs sat side by side ($\chi^2=25.63$, $df=1$, $p<.01$). A detailed account of the Ss' seating preferences under the various conditions is given in Table 1. This table shows that up to a distance of

TABLE 1

SEATING PREFERENCES OF PAIRS
FOR ALL CONDITIONS

Distance Between Couches	Size of Room							
	Small (12.5x17.5ft.)		Medium (26x27.5ft.)		Large (30x55.5ft.)		Total	
	0	SS	0	SS	0	SS	0	SS*
1'	10	0	10	0	10	0	30	0
3'	8	2	10	0	9	1	27	3
4'	7	3	7	3	10	0	24	6
5'	7	3	4	6	4	6	15	15
6'	5	5	1	9	4	6	10	20
Total	37	13	32	18	37	13	106	44

*"O"--opposite seating, "SS"--side by side seating.

4 feet between couches in each of the three rooms, the majority of Ss chose to sit across from one another. At distances greater than this, however, most Ss preferred to sit

side by side on the same couch, with the exception of the small room, where opposite seating was still preferred.

Table 2 shows the seating arrangements with the couches at various distances collapsed across room size. The

TABLE 2
SEATING PREFERENCES OF PAIRS FOR
ALL ROOMS COMBINED

Distance Between Couches	Number of Pairs Choosing to Sit		
	Opposite	Side by side	Total
1'	30 (21.20)	0 (8.80)	30
3'	27 (21.20)	3 (8.80)	30
4'	24 (21.20)	6 (8.80)	30
5'	15 (21.20)	15 (8.80)	30
6'	10 (21.20)	20 (8.80)	30
Total	106	44	150

relationship between varying couch distances and seating choice was significant ($\chi^2=43.68$, $df=4$, $p<.01$). However, no significant relationship was obtained between seating choices and room size collapsed across couch distance

($\chi^2=1.72$, $df=2$, $p>.30$). Table 3 gives the number of Ss sitting opposite or side by side in each of the three rooms for all couch distances.

TABLE 3

SEATING PREFERENCES OF PAIRS FOR
ALL COUCH DISTANCES
COMBINED

Room Size	Number of Pairs Choosing to Sit		
	Opposite	Side by side	Total
Small	37 (35.33)	13 (14.67)	50
Medium	32 (35.33)	18 (14.67)	50
Large	37 (35.33)	13 (14.67)	50
Total	106	44	150

Since there was no variability in seating arrangements among the three rooms at a distance of one foot between couches, no test of significance was required. Separate tests of chi-square were applied to the 3, 4, 5, 6-foot conditions in order to determine the relationship between room size and seating preferences at each of these couch distances. Table 4 shows the number of pairs sitting

opposite and side by side at these distances. Chi-square

TABLE 4

SEATING PREFERENCES OF PAIRS
AT COUCH DISTANCES OF
3, 4, 5, & 6 FEET

Room Size	Distance Between Couches								Total	
	3'		4'		5'		6'		0	SS*
	0	SS	0	SS	0	SS	0	SS*	0	SS*
Small	8	2	7	3	7	3	5	5	27	13
	(9)	(1)	(8)	(2)	(5)	(5)	(3.33)	(6.67)	27	13
Medium	10	0	7	3	4	6	1	9	22	18
	(9)	(1)	(8)	(2)	(5)	(5)	(3.33)	(6.67)		
Large	9	7	10	0	4	6	4	6	27	13
	(9)	(1)	(8)	(2)	(5)	(5)	(3.33)	(6.67)		
Total	27	3	24	6	15	15	10	20	76	44

*"0"--opposite seating, "SS"--side by side seating.

did not reach significance at any distance (3': $\chi^2=3.05$, $df=2$, $p>.20$; 4': $\chi^2=4.22$, $df=2$, $p>.10$; 5': $\chi^2=2.70$, $df=2$, $p>.20$; 6': $\chi^2=3.74$, $df=2$, $p>.10$).

Since Table 1 suggests a preference for opposite seating in the small room at couch distances of 5 and 6 feet, chi-square was applied to a segment of that table in order to determine whether seating preferences in this room

differed significantly from those in the two larger rooms at these distances. Table 5 gives the seating arrangements for the small room and for the other two rooms combined at couch distances of 5 and 6 feet. No significant relationships were found (5': $\chi^2=2.55$, $df=1$, $p>.10$; 6': $\chi^2=1.92$, $df=1$, $p>.10$).

TABLE 5

SEATING PREFERENCES OF PAIRS AT COUCH
DISTANCES OF 5 & 6 FEET; SMALL
VS. MEDIUM & LARGE ROOMS

Room Size	Distance Between Couches					
	5'		6'		Total	
	0	SS	0	SS	0	SS*
Small	7 (5)	3 (5)	5 (3.33)	5 (6.67)	12	8
Medium & Large (combined)	8 (10)	12 (10)	5 (6.67)	15 (13.33)	13	27
Total	15	15	10	20	25	35

*"0"--opposite seating, "SS"--side by side seating.

Discussion

These results support the hypothesis that people generally prefer to sit across from one another rather than side by side when discussing a nonpersonal topic. The second hypothesis was also confirmed, i.e. as the couches are placed farther and farther apart, a greater number of

pairs choose to sit side by side on the same couch. Sommer (1961) found the distance at which most people start sitting side-by-side to be $3\frac{1}{2}$ feet between couches, and defined this distance as the limit for comfortable conversation. In the present study the minimum distance at which side by side seating prevailed was 5 feet in the two larger rooms and 6 feet in the small room. However, no significant relationship between the size of the room and the number of pairs choosing to sit side by side was obtained, either for all couch distances combined, or for any given couch distance. The third hypothesis, therefore, cannot be confirmed. It is possible that the trend toward opposite seating in the small room, as suggested by the data, might possibly have reached significance had a somewhat larger number of pairs been tested in each condition.

Certain individual differences among the Ss may have extraneously affected their seating preferences. The only attempt made to control individual differences was with regard to sex. The fact that all Ss were from introductory psychology courses at the same institution probably ensured some uniformity with respect to age, educational level, etc. In view of the aforementioned effects of such variables as personality, level of acquaintanceship, degree of liking,

etc., it would have been desirable to have had Ss available who were matched along these dimensions. Random assignment of Ss to conditions could have been used as an alternative method of negating many of these unwanted effects. However, practical limitations prevented the use of either of these procedures in that the Ss signed up ahead of time for specific appointments at their convenience and only one set of couches was available for the experiment. In addition, only one room could be scheduled at a time. Therefore, the study had to be carried out first in the medium-size room, then in the large room, and finally in the small room. In other words, the distribution of Ss to conditions was primarily a function of how they happened to distribute themselves on the appointment sheet and which room was available at the time.

Several other limitations in the design of the study are worth mentioning. Ideally, the three rooms used for the experiment should have differed in only one respect--size. Such was not the case. Other aspects of the rooms such as lighting, noise level, acoustical properties, temperature, wall color, presence or absence of carpeting, doors, and windows were by no means uniform. Although the distance for conversation appears to be greater in private living

rooms than in public lounges, it is possible that some of these other factors apart from room size may account for the observed differences.

In the present study the couches were placed in the central area of each room. This arrangement is hardly analagous to those in most private homes where the furniture is often arranged near one end of the room and two couches seldom face one another. It is possible that the distance between the furniture and the walls in smaller rooms may affect the perceived "naturalness" of the arrangements. This can be tested empirically by placing the arrangements in different areas of the room.

Wink and Holt (1961) have found that the color of the furniture can have a dramatic effect upon a person's willingness to sit on a given chair or couch. For instance, some patients in group therapy sessions have called a chair with red upholstery "the hot seat." A few patients sit in the red chair when excited or sexually aroused. By the same token, a blue chair is sometimes referred to as "cool," and some patients choose to sit on this chair when they feel detached.

Before a relevant theory of group ecology can be developed, there are several problems of method which must be

resolved. In the first place, most of the studies dealing with personal space have employed imprecise tabulations of gross categories of spatial behavior. A person's location is recorded as if this describes his head angle, postural orientation, and other responses which are effectively used in nonverbal communication. In the present study, for example, inspection of the data reveals only that given pairs sat on different couches or side-by-side on the same couch. There is no way of knowing if the Ss sat directly across from one another or at opposite ends of the two couches. Nor can one tell how far apart on the same couch the side-by-side pairs sat. Another problem concerns the validities of the various methods of measuring personal space. Kuethe's use of miniature silhouette figure placements assumes an isomorphism with social interaction distances in reality (Kuethe, 1962). Other experimenters have recorded seating distances and arrangements (Sommer, 1959; Leipold, 1963), while still others have measured the distances maintained when approaching another person (Horowitz, et al, 1964). Dosey and Meisels (1969) tested the individual consistency among these three experimental techniques and found slight positive correlations between the approach and silhouette measures and between the approach and seating measures.

The silhouette and seating measures, however, appeared to be slightly negatively related. It was concluded that there was little consistency in the use of the three experimental measures. This underscores the importance of considering the particular method of assessment when discussing personal space.

Studies of personal space and the ways people arrange themselves are indispensable for helping to clarify and make explicit the heretofore intuitive principles for designing functional environments from the standpoint of human relationships. Many aspects of the environment, including furniture, have too often been placed for ease of maintenance and cleaning, with little attention paid to their social functions. These principles will be of greatest help in institutional settings where occupants have little control over their surroundings, e.g. schools, hospitals, public lounges, and homes for the aged.

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