Every social situation has an appropriate ceiling height. If the ceiling height is wrong, the situation is disturbed.

This subject has most often been discussed in terms of proportion. Many efforts have been made to establish rules which will make sure that rooms are "well-proportioned". Thus for instance, Palladio laid down three rules of proportion: All of them shared the feature that the height of a room should be intermediate between its length and its breadth.

However sound this may seem to be in certain cases, it is clearly not a completely valid geometric principle. There are many rooms with extremely low ceilings, especially in cottages and informal houses, which are extremely pleasant — even though they violate Palladio's principle utterly.

None the less intuition that the height of a room does make a difference to the way it functions, is undoubtedly real.

The following theory makes it clear what is wrong with badly proportioned rooms, and gives the beginning of a functional basis for establishing the right height for different spaces. We think the problem hinges on the question of appropriate social distance. It is known that in various kinds of social situations there are appropriate and inappropriate distances between people. (See *Edward Hall, the Silent Language, New York, Doubleday, 1959, pp. 163-164*; and *Robert Sommer, "The Distance for Comfortable Conversation", Sociometry, 25, 1962, pp. 111-116.*) Now, the ceiling height in a room has a bearing on social distance in two ways:

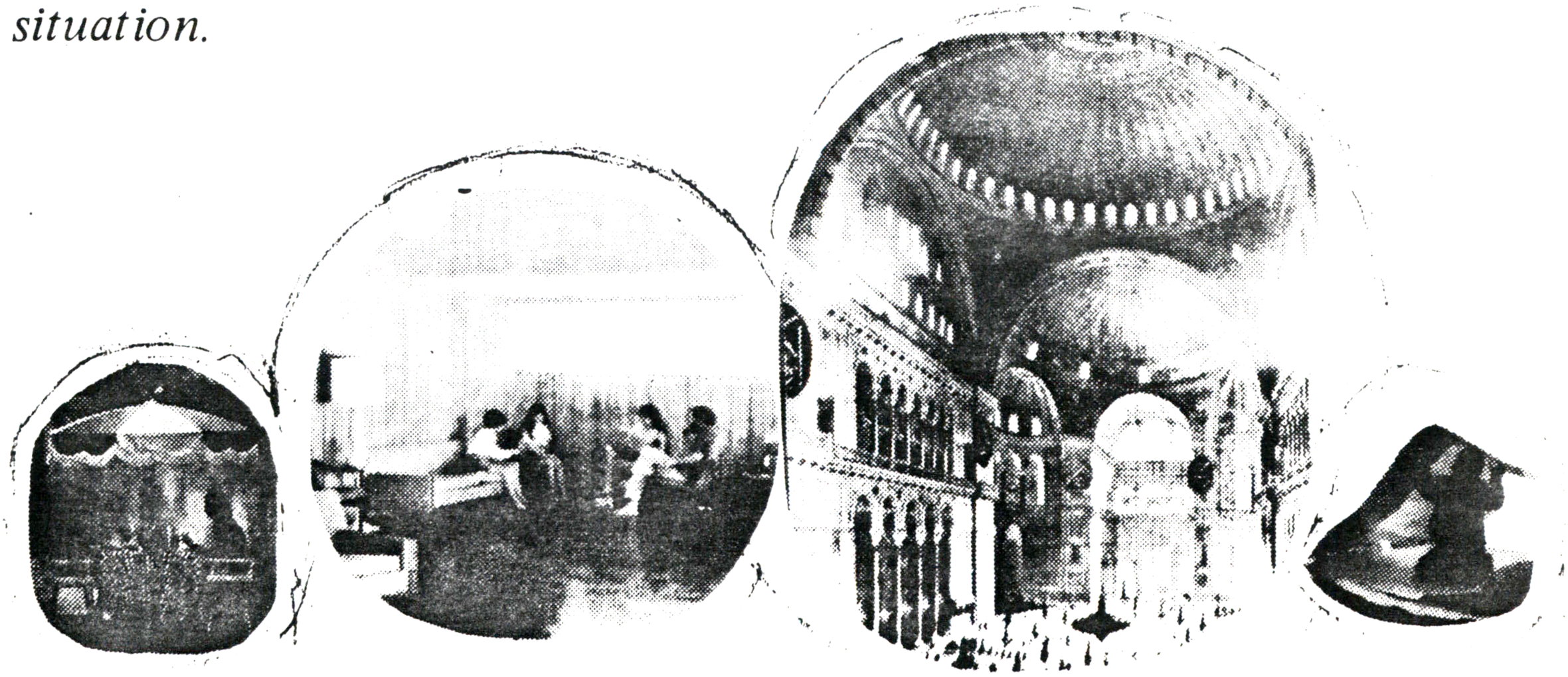
1. In an acoustic manner (lower ceilings make sound sources seem nearer than they are); and

2. Through the medium of three dimensional "bubbles" (adding a vertical component to social distance).

(continued over)

Ceiling Heights

Therefore: Arrange ceilings according to the social situations contained in the space. Let the ceiling over a social situation be about x, where x is the appropriate horizontal social distance for the situation.



Problem (continued)
We discuss the two components of our social distance theory separately.

1. The height of a ceiling appears to affect the *apparent distance* of sound sources from a hearer. Thus, under a low ceiling, sound sources seem nearer than they really are; under a high ceiling they seem further than they really are.

Since the sound is an important cue in the perception of distance between people (voice, footstep, rustle, etc.), this means that ceiling height will alter the apparent distance between people. Under a high ceiling people seem further apart than they actually are. It may even be the case that room shape adds to the effect. (Informal empirical investigations suggest that this effect is true. However, it has not been tested thoroughly, and the social and physiological literature does not refer to it. For a similar intuition see *Richard Neutra, Survival Through Design, New York, Oxford University Press, 1954, p. 169.*)

On the basis of this effect, it is clear that intimate situations require very low ceilings, less intimate situations require higher ceilings, formal places require high ceilings, and the most public situations require the highest ceilings: e.g., the canopy over a double bed, a fireside nook, high ceilinged formal reception room, Grand Central Station.

The acoustic theory may account for some of the effect; we know, however, that it cannot account for such phenomena as the way exposed beams seem to "lower" ceiling height and make rooms more intimate.

The following theory, is similar to the acoustic theory, but may account for these phenomena:

2. We know that each social situation has a certain horizontal dimension or diameter. We may think of this as a kind of membrane or bubble which encloses the situation. It is likely that this bubble has a vertical component — equal in height to its diameter. If this is true, a social situation taking place in a room which is lower than the apparent bubble will make the ceiling seem oppressively low, while a ceiling which is higher than the apparent bubble will seem uncomfortably high. Thus, according to this theory, the height of the ceiling should, for comfort, be equal to the dominant social distance in the room. Since people in Grand Central are strangers, and require a separation of 100 feet, this would explain why the ceiling has to be very high; similarly, this explains why the ceiling over an intimate nook, or over a double bed, has to be very low.

It is clear, in this case, that it is the apparent ceiling height which counts — thus, the bottom faces of the beams, in a room with exposed beams, create a virtual plane — and it is the height of this plane which must be measured against the dominant social distance.

This social bubble theory also explains why the huge but low-ceilinged "office landscape" designs (introduced by the Schnelle organization, see *Francis Duffy, Burolandschaft, Architectural Review, February 1964*) are not oppressive. Though hundreds of people may be working in the same basic office space, the space is "landscaped" into small social bubbles through manipulation of furniture, screens and plantings. In these relatively small social bubbles the low ceiling height of 8'2", specified by the Schnelle organization, is perfectly appropriate. Furthermore, due to the acoustic phenomenon mentioned above, the low ceiling helps each social bubble retain its privacy.

Context
This pattern is intended to apply in spaces containing a recurring social situation where the appropriate social distance across the situation can be fairly well established.

Japanese Rule of Thumb
In traditional Japanese architecture, this pattern is taken care of by a simple rule of thumb.

The ceiling height of a room (in feet = Japanese Shaku) is 6'3" + .30 x (number of tatami in the room)

This creates a direct relationship between floor area and ceiling height. A very small room (3 mats) has a ceiling height of 7'2". A large room (12 mats) has a ceiling height of 9'11". Although this relates ceiling height to area, not to social space, the implication is clearly the same, since the larger rooms in a house are used for social gatherings, and the smaller rooms by individuals and couples. See *Heinrich Engel, The Japanese House, Charles E. Tuttle Company, Rutland, Vermont, 1964, pp. 68-71.*

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