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Philip Thiel

PEOPLE, PATHS, and PURPOSES

Notations for a Participatory Envirotecture

CREDITS

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Chapter 3 Experiential Envirotecture

D. Experience

note: 'EX' = experience
'UP' = user-participant

Our first consideration is the question of the existence of the stream of EX. Do we have any tangible evidence of what EXs have occurred, or are occurring, for a given UP? By what means may we discover such EXs, and in what form may they become manifest? How accurate are reports of EX, how complete are they, and what validity may we assign them?

We can identify six types of EX reports, which can be grouped in three categories. These categories and types are

1. **fictional** EXs: *imagined* and *attributed*
2. **actual** EXs: *introspected* and *inferred*
3. **future** EXs: *instructed* and *proposed* or *intended*

Fictional Experiences

The *imagined* EXs are the descriptions of the EXs of fictional people, in fictional (or real) environments and situations. They are more or less pure literary invention. For an example, an excerpt from *Lady Chatterley's Lover* by D. H. Lawrence makes us privy to the sequence of observations and reflections that occur to Connie Chatterley as she is driven through the Derbyshire countryside on a cold, wet day in May.

"The car ploughed uphill through the long squalid straggle of Tevershall, the blackened brick dwellings, the black slate roofs glistening their sharp edges, the mud black with coal dust, the pavements wet and black. It was as if dismalness had soaked through and through everything. The utter negation of natural beauty, the utter negation of gladness of life, the utter absence of the instinct for shapely beauty which every bird and beast has, the utter death of the human intuitive faculty was appalling. The stacks of soap in the grocer's shops, the rhubarb and lemons in the greengrocers! The awful hats in the milliners! all went by ugly, ugly, ugly, followed by the plaster-and-gilt horror of the cinema with its wet picture announcements, "A Woman's Love!" and the new big Primitive chapel, primitive enough in its stark brick and big panes of greenish and raspberry glass in the windows. The Wesleyan Chapel, higher up, was of blackened brick and stood behind iron railings and blackened shrubs. The Congregational chapel, which thought itself superior, was built of

rusticated sandstone and had a steeple, but not a very high one. Just beyond were the new school buildings, expensive pink brick, and gravelled playground inside iron railings, all very imposing, and mixing the suggestion of a chapel and a prison. Standard Five girls were having a singing lesson, just finishing the la-me-do-la exercises and beginning a 'sweet children's song.' Anything more unlike song, spontaneous song, would be impossible to imagine: a strange bawling yell that followed the outlines of a tune. It was not like savages: savages have subtle rhythms. It was not like animals: animals *mean* something when they yell. It was like nothing on earth and it was called singing. Connie sat and listened with her heart in her boots, as Field was filling petrol. What could possibly become of such people, a people in whom the living intuitive faculty was dead as nails, and only queer mechanical yells and uncanny will power remained?"

—D. H. Lawrence, *Lady Chatterley's Lover*

The *attributed* EXs, on the other hand, are descriptions of the EXs that may have occurred to real people in real (or, to a degree, imagined) environments and situations. They are commonly found in the more popular types of biography: "what Napoleon felt, what Napoleon did, what Napoleon thought." They are also seen in descriptive writing that is likewise based on reasonable inferences from other evidence, as in the example provided here by Willetts.

"We have remarked that the processional way could have had very little meaning for private residents in Chinese administrative towns. But upon those who sought an audience with the Son of Heaven in Peking, its impact must have been overwhelming. Suppose such a person, say a Western envoy—who in Chinese eyes would have been a tributary—approached the city from the south. From the moment he crossed the outer moat he would have been forced into an automatic dance, its rhythms set by the changing masses and spaces of each successive stage over which he made his way. First, a semicircular counterscarp surmounted by a massive gate-tower. Immediately beyond it, the south wall of the Southern City with a second gate-tower, followed by a long and uninterrupted avenue leading straight across the Southern City to its north wall. Another counterscarp and gate-tower; and then the north wall was crossed at Ch'ien Men with its five gateways. An open space, beyond which lay another gate, Chung Hua Men, after which the way continued due north into what is today the enormous T'ien-an Men Square, the impressive setting for public celebrations under the present Government. On the far

side of the square it crossed the lower or 'outer' course of the Chin Chui Ho, 'River of Golden Water,' by way of five parallel bridges with carved marble parapets. And again there was a wall, and ahead a gate-house with five vaulted openings beneath, T'ien-an Men, or 'Gate of Heaven's Peace.'

"Passing through T'ien-an Men, the visitor now enters the Imperial City and a long enclosure blocked at its northern end by Juan Men; beyond lay a second and yet longer enclosure with side-gates through which he perhaps caught glimpses of the courtyards and buildings of the Temple of Tutelary Gods, She-chi Miao, on the left, and on the right T'ai Miao, the 'Supreme Temple' of the imperial ancestors. At the back of the empty stage on which he now stood was the enormous Wu Men, 'Noon Gate,' its two projecting wings surmounted by pavilions, set in yet another wall running west to east across his line of vision. Where, he must have wondered, was he being led?

"One can well imagine the growing bewilderment and disquiet of such a person as

he passed through one blank wall and beneath one brooding gate-house after another, to find beyond it only a featureless avenue leading to yet another wall and gate. Reality was softening into a dream. His mind, so long attentive to a distant goal somewhere ahead in this labyrinth of straight lines, so long expecting a climax that never seemed to come, must at last have refused to record and memorize the minor differences in scale, proportion and decorative detail of the buildings that were the only landmarks of his progress. As he pressed forward into a world of emptiness and of deadening silence, dream must have intensified into a nightmare of *déjà vu*. Whatever self-possession he may have had at the outset must long since have drained away when, crossing Wu Men, he finally entered the precinct of the Forbidden City. As William Empson has remarked in conversation, the Forbidden City was a biological device for ruling the world. And, however ineffectually it may have regulated its own internal affairs, there can be little doubt of its capacity to reduce outsiders to a state of supplicatory awe."

—William Willetts, *Chinese Art II* (Baltimore: Penguin, 1958)

Authors, exercising their imagination on the field of their own or vicarious experiences, perform the social service of providing us with suggestive EX samples: an enculturative and acculturative function in the case of history, myth, and biography and a developmental function in the case of works of fiction, fantasy, and imaginative speculation. In these ways the exercise of this art enhances human life.

Actual Experiences

The second group of EX records includes *introspected* and *inferred* experiences. Verbalized introspection is purely a UP operation, an autobiographical report of what the experiencers themselves have thought, felt, and done. For an example, see Casson's notes on his visit to the Temple of Heaven, Peking, presented in the last section of chapter 2. These reports are limited to the conscious level of experience and, as discussed earlier, suffer from a number of other difficulties.

Alvin Lukashok and Kevin Lynch, "Some Childhood Memories of the City," *AIP Journal*, Summer 1956.

Kevin Lynch and M. Rivkin, "A Walk around the Block," *Landscape*, Spring 1959.

Donald Appleyard, Kevin Lynch, and John R. Myer, *The View from the Road* (Cambridge: MIT Press, 1964).

In addition to this autobiographical and anecdotal form, introspections of EXs may be generated in experimental situations. Lukashok and Lynch, for example, tape-recorded interviews with forty subjects on their memories of the city they experienced as children, ten or fifteen years earlier. The basic assumption of the authors was "that present adult memories reflect actual childhood preoccupations, i.e. that items which persist over such a long time span are records of the real, salient, emotionally important experiences of youth." In another study, by Lynch and Rivkin, twenty-seven subjects were accompanied on a walk in an urban environment and asked to verbalize their spontaneous responses to this environment to an accompanying interviewer. Their comments were picked up by a lapel microphone and recorded. A different method of elicitation and mode of representation of a limited aspect of immediate EXs by Appleyard et al. required subjects to make rapid, simple sketches at a forced pace of about three per minute in the course of an automobile trip.

The second type of EX record in this group is that of *inferred* experience. Whereas the preceding introspected record is produced by the UP, the inferred EX record is a product of another person, an observer or analyst who experiences only the *behavior* of the UP directly while it is being manifested or indirectly, at a later date and at second hand, by means of reports, transcriptions, or recordings. Here the EX record is vicarious and is a conjecture based on interpretations of the UP's behavior and demeanor. Behavior as used here refers to not only coping activity and expressive demeanor, as overtly manifested and therefore available to direct observation, but also the normally covert somatic body processes—pulse rate, blood pressure, stomach contractions, brain waves, etc.—which may be externalized by suitable instrumentation. But even with the aid of instrumentation, all behavior is only the *externalized part* of EX, some portions of which still remain inaccessible; and thus the inferred EX record is in all cases not only putative but partial.

A critical discussion of these techniques was given in section D of chapter 2.

The validity of such inferences may be improved by the use of skilled interpreters (those characterized by empathic ability) and by an increase in the duration and intimacy of the acquaintanceship of the interpreter with the UP in question. Thus it is a matter of common experience that parents, teachers, and spouses provide frequent examples of considerable proficiency in empathy with and sensitivity to the thoughts and feelings of their children, students, and mates, respectively. Fiction provides us with a number of excellent examples of superior ability in making inferences, none better than those chronicled in the adventures of the famous detective Sherlock Holmes by A. Conan Doyle. A classic example is quoted in section D of chapter 2.

See also John P. Spiegel and Pavel Machotka, *Messages of the Body* (New York: Free Press, 1974).

Future Experiences

The foregoing group of introspected and inferred EX reports was concerned with present and past EXs. The third group of EX records involves future experiences. The *instructed EX* can be thought of as a specification for behavior and as a guide for the acquisition of preferred, optimum, or unique experiences. The most obvious example is the tourist's guidebook, in which the traveler is invited to follow a particular path and notice specific features of the environment. Occasionally the reader is even provided with suggestions for appropriate cognitive and emotional responses, as may be observed in the selection from Oakes presented here. Additional examples of this type of instructed EX are the "sensory walks" developed by Halprin and Goodey as means of discovery of both oneself and the physical environment.

"Walk right, along the Rue de l'Abbaye, then take the first street to the left, the short Rue de Furstenberg, which leads to one of the most enchanting miniature squares in Paris, the Place Furstenberg. Here in the shade of four magnolia trees and the square's antiquated, ornate lamppost there is a strange and quiet air. The nineteenth-century painter Ferdinand Delacroix had his studio at No. 6. You will be delightfully surprised to come upon several antique shops, among the most tasteful in Paris.

"Leaving this lovely oasis, so near the bustling traffic along the Boulevard St. Germain, turn right into the twisting, narrow Rue Cardinale. Above you, rise picturesque houses in varying shades of gray and ochre, with window boxes beneath slanting

roofs and crooked chimneys. Now turn left and cross the fourteenth-century Rue de l'Echaudé, and then left to the juncture of the Rue de Seine and Rue de Buci. Here you are in the midst of the neighborhood marketplace. Patisseries, grocery stores, vegetable stalls, and fish and meat markets cater to the many customers who crowd the street and sidewalks. Have a drink at the corner bistro while you watch the shoppers fight their way through the hawkers, and listen to the housewives, jamming the little streets, shout to the truck-drivers who are trying to get through with their loads of perishable foods. This is usually one of the gayest scenes in Paris."

—George W. Oakes, *Turn Right at the Fountain* (New York: Holt, Rinehart & Winston, 1965)

Lawrence Halprin, *The RSVP Cycles* (New York: Braziller, 1969); B. Goodey, "Urban Walks and Town Trails," Research Memo 40 (Birmingham, England: University of Birmingham Center for Urban and Regional Studies, Dec. 1974); and B. Goodey, "Sensory Walks," Working Paper 33 (Birmingham, England: University of Birmingham Center for Urban and Regional Studies, 1975).

A second, more common example of the *instructed EX* is the musical score, which implies a temporal pattern of operant behavior on the part of each musician. Additionally, affective characteristics of the performance are occasionally specified (*affetuoso*, *allegro*, *dolce*, *ernst*, *giocosso*, *grave*, *innig*, *lustig*, *pesante*, *sanft*, *scherzando*, and *zart*, for example). Dance notation is a similar, but perhaps not as familiar, example: in this case the specification is concerned with a kinesthetic and proprioceptive EX. Although music and dance are usually intended to be performed before an audience, they must first be experienced by the performer, who is the interpreting UP. The musicians or dancers are instructed by this EX record and only subsequently may make it available to others, having passed it through the alembic of their own nature, or, as is said, having "interpreted" it.

In the preceding cases the instructions apply to the use of existing facilities—a physical environment, musical instruments, one's own body—to produce a preferred "designed" EX. In the next type of EX record, the type of most importance for envirotects, we have a specification for an EX to be realized from the use of facilities which may not yet exist. In this case a physical environment, presently a nonactuality, is only hypothesized and is assumed capable of providing a pattern of events which, when experienced by a given group or type of UPs under given circumstances, will have a high probability of supporting or eliciting the specified EX.

"Charles Rosen goes so far as to say that a Bach keyboard fugue 'can be fully understood only by the one who plays it, not only heard but felt through the muscles and nerves . . . Only the performer at the keyboard is in a position to appreciate the movement of the voices, their blending and their separation, their interaction and their contrasts . . . Part of the essential conception of the fugue is the way in which voices that the fingers can feel to be individual and distinct are heard as part of an inseparable harmony.'"

—Charles Rosen, ed., *Bach: The Fugue* (Oxford: Oxford University Press, 1975); quoted by Joseph Kerman in "Bach's Greatest Hit," *New York Review of Books*, 6 Oct. 1994

Ann Hutchinson, *Labanotation* (New York: New Directions, 1954); Rudolf Laban, *Principles of Dance and Movement Notation* (London: MacDonald & Evans, 1956); Rudolf Benesh and Joan Benesh, *An Introduction to Benesh Dance Notation* (New York: Pitman, 1956); Noa Eshkol and Abraham Wachmann, *Movement Notation* (London: Weidenfeld & Nicholson, 1958).

This EX record may thus be called a *proposed or intended* experience and is a specification for the "performance" of a hypothetical environmental configuration. It is not a construction specification. A construction (or management) specification is the means for identifying the physical arrangements (quantities, qualities, and relationships and assemblies) which will presumably provide an opportunity for the realization of specific types of temporal patterns of events. A performance specification, on the other hand, describes the general EX to be realized by an assumed UP group or groups as a consequence of their sequential exposure to a temporal pattern of some as-yet-to-be-arranged series of events. A performance specification describes the goal or end, whereas a construction/management specification describes a presumed means for achieving this end.

This distinction is vital. We are hampered today because of persistent professional confusion of these means and ends, which is engendered by the lack of a method for clearly and explicitly specifying our intentions. Up to now EX performance specifications existed only in the form of the few casual, fragmentary, vague, and generalized verbalizations of a few articulate professionals. For example, consider the following two contemporary examples, provided by the architects Marcel Breuer and Philip Johnson. In the former's design of a church for a Catholic monastery it was the intention of the monks that "the significant liturgical elements—baptismal font, church doorway, confessionals, communion tables, altar and throne—should be ordered for symbolic and visual reasons in a sequence along the central axis of the building. Thus, one should enter the church through the baptistry and immediately find the confessionals. Proceeding down the central aisle, one should find the altar, balanced by communion tables. Beyond these should be the symmetrical halves of the choir, and at the termination of the axis, the Abbot's throne."

These intentions led Breuer "to the design of a low entrance structure in front of the main mass of the church, reminiscent of the ancient atrium. In recognition of Minnesota climate, glazed skylights in the center of the roof replace the open court. Directly beneath this natural light source on the central axis is the baptismal font surrounded by low parapet walls. In a liturgical sense, the symbolic doorway to the church proper is not the outside opening in the atrium but it is the entry following the baptistry. Thus, entrance to the church is gained via the font-area and, in the case of the newly-baptized child, directly through it. The entrance doors swing between the granite jambs which contain the confessionals within its thickness."

Marcel Breuer, "The Buildings at St. John's Abbey," *Design Quarterly* 53 (1961).

Johnson, writing of his intentions for one of his designs, says: "My own New Canaan House was started with the driveway. Such a disturbance is the automobile that its handling is the first consideration . . . I had to buy the land next door to keep the monster from seeing my glass home. It now sits lurking behind a six-foot wall. The visitor gets out without seeing the house, rounds the corner (not 90°—about 45°—very important) and sees the house at another 45°. Again a Choisy-Greek principle: never approach a building head on; the diagonal gives you a perspective of the depth of the building. To help you round the corner, to enhance the importance of the glass unit, there stands on the right a solid box, urging the visitor to turn away toward the glass house."

"The glass house is on a promontory, a peninsula, to make a 'cup' of the experience of entering. A dead end, so you know you have arrived; there is no further to go. Within the house there is more procession however. The 'entrance hall' (the pushing together of the chimney and kitchen cabinet) forces you (gently, to be sure) between them into the 'living room,' where you can climb onto the 'raft' of white rug which is the ultimate arrival point, the sitting group which floats in its separate sea of dark brick."

Philip Johnson, "Whence and Whither: The Processional Element in Architecture," *Perspecta* 9/10 (1965).

In these two examples (combining, it should be noted, both EX intentions and EN hypotheses), we see one designer concerned with matters of cosmic orientation and symbolic reference, while the other is operating on a level of physical orientation and guidance of movement. Unfortunately contemporary records of even such fragmentary EX intentions are very scarce. This is no doubt due to the fact that designers in the past have identified themselves with the needs and values of their rich and powerful patrons and/or have assumed that they themselves were representative examples of all the UPs whose experiences mattered. Under these conditions there was little need of ever making explicit in any sort of EX description what was to be the point of the whole project, or if they chose to explain the behavioral or experiential rationale for their design, they wrote or spoke of their intentions in terms of personal references. In other words, the architects designed for *themselves*, as equivalents of their patrons, or to provide normative examples for the public, and therefore had no great necessity to externalize their intentions for review and evaluation by others.

See, for example, Charles Garnier's explanation of the circulation and behavior anticipated in his design of the Paris Opera (1874), quoted in section A of chapter 5. But note also Robert Gutman (in Russell Ellis and Dana Cuff, eds., *Architect's People* [New York: Oxford University Press, 1989]): "In reflecting on the ideas architects have of people it is also important to recognize that people and their satisfactions are not the primary concerns of most architects. The principal interest is architecture, and architecture, at least in its manifestations as an art, is believed by most advanced [*sic*] architects to exist in a realm by itself."

This will hardly serve, however, under our contemporary conditions, in which we must operate in terms of a pluralistic, diverse, mobile society, living on larger space and experience scales, building on larger construction scales and shorter time scales, and concerned with a greater diversity of values, social purposes, and functional operations. Under these new, more stringent, diverse, and unprecedented conditions, our ability to evolve new tools is evoked, for we desperately need a better means to formulate our intentions not only that they may be thus increased in variety, richness, and subtlety, but also that with greater explicitness they may better serve as public criteria to judge our performance in implementation.

Experience Specification in Other Fields

At this point we may well look to the most pervasive media of our age—cinema and television—for what they have to offer in these matters. Both these arts provide programmed sequential EXs, to both general and specialized groups, and they operate in a very pragmatic, closely coupled feedback link with these audiences, on a relatively short turnaround time. Some remarks of the Swedish film director Ingmar Bergman will be of interest. He has expressed himself vividly on the initial problem of uncovering and evoking the idea for a film:

Ingmar Bergman, "Why I Make Movies," *Horizon*, Sept. 1960.

"A film for me begins with something very vague—a chance remark or a bit of conversation, a hazy but agreeable event unrelated to any particular situation. It can be a few bars of music, a shaft of light across the street. Sometimes in my work at the theater I have envisioned actors made up for yet unplayed roles.

"These are split-second impressions that disappear as quickly as they come, yet leave behind a mood—like pleasant dreams. It is a mental state, not an actual story, but one abounding in fertile associations and images. Most of all, it is a brightly colored thread sticking out of the dark sack of the unconscious. If I begin to wind up this thread, and do so carefully, a complete film will emerge.

"This primitive nucleus strives to achieve definite form, moving in a way that may be lazy and half-asleep at first. Its stirring is accompanied by vibrations and rhythms that are very special, and unique to each film. The picture sequences then assume a pattern in accordance with these rhythms, obeying laws born out of and conditioned by my original stimulus."

The articulation of this intangible material into a communicable form presents its own special difficulties: "If that embryonic substance seems to have enough strength to be made into a film, I decide to materialize it. Then comes something very complicated and difficult: the transformation of rhythms, moods, atmosphere, tensions, sequences, tones and scents into words and sentences, into an understandable screenplay.

"This is an almost impossible task.

"The only thing that can be satisfactorily transferred from the original complex of rhythms and moods is the dialogue, and even dialogue is a sensitive substance which may offer resistance. Written dialogue is like a musical score, almost incomprehensible to the average person. Its interpretation demands a technical knack plus a certain kind of imagination and feeling—qualities which are often lacking even among actors. One can write dialogue, but how it should be delivered, its rhythm and tempo, what is to take place between lines—all this must be omitted for practical reasons. A script with that much detail would be unreadable. I try to squeeze instructions as to location, characterization, and atmosphere into my screenplays in understandable terms, but the success of this depends on my writing ability and the perceptiveness of the reader, which are not predictable.

"Now we come to essentials, by which I mean montage, rhythm, and relation of one picture to another: the vital third dimension without which the film is merely a dead product from a factory. Here I cannot clearly give a key, as in a musical score, or a specific idea of tempo which determines the relationship of the elements involved. It is quite impossible for me to indicate the way in which the film breathes and pulsates."

Finally, writing of the actual process of production, he makes an almost plaintive plea: "I have often wished for a kind of notation which would enable me to put on paper all the shades and tones of my vision, to record distinctly the inner structure of a film. For when I stand in the artistically devastating atmosphere of the studio, my hands and head full of all the trivial and irritating details that go with motion-picture production, it often takes a tremendous effort to remember how I originally saw and thought out this sequence, or what the relation was between the scene of four weeks ago and that of today. If I could express myself clearly, in explicit symbols, then the irrational factors in my work would be almost eliminated, and I could work with

absolute confidence that whenever I liked I could prove the relationship between the part and the whole and put my finger on the rhythm, the continuity of the film."

It should be noted in all this that Bergman does not distinguish between the perceptions and responses he means to elicit in the audience in the course of their experience of the film ("moods," "tensions," "atmosphere," "associations") and the characteristics of the film itself as an artifact ("rhythm," "sequences," "tones," "inner structure"). In view of the fact that he surely must have known of the storyboard technique for planning the construction specifics of a film (an early example being provided by Sergei Eisenstein's analysis of the orchestration of the audiovisual film montage, measure by measure and shot by shot, of some of the scenes from his film *Alexander Nevsky*), we can only conclude that the "vision" Bergman would like to be able to notate refers to the EX score, or performance specification.

Sergei Eisenstein, *The Film Sense* (New York: Meridian, 1957).

In the case of the animated film, where all the photographed material is literally made to order, the necessity for the preplanning of effects is particularly severe. It is no accident that novel techniques have evolved in this field. Manvell outlines the production process and describes the use of a "tension chart," incorporating a "tension line" showing "how the dramatic expectancy should operate for the audience as the action progressed—working up to a climax, relaxing afterwards, then gathering tension for the next phase of excitement, throughout the total length of the film. This ensured that there should be no excessive lulls in the action—that the quiet cumulative excitement and concentration generated by reading a book to oneself could be translated into the extrovert clash of the drama, the rise and fall of action capable of holding the attention of an assembled audience for all of 75 minutes." This was the performance specification: under it were developed the "construction" specifications, concerned with the music, color, and weather conditions, stated in terms of expressive moods and correlated with the story line.

Roger Manvell, *The Animated Film* (London: Sylvan Press, 1954).

Television producers (for another example) are very explicit about the effects they propose to produce in an audience. Millerson writes: "A fundamental aim of all programs is to arouse in our audience certain definite ideas and emotions, to stimulate their thoughts along particular, prearranged lines.

Gerald Millerson, *The Technique of Television Production* (New York: Hastings House, 1968).

"Throughout the show, however, the audience's interest will fluctuate. Concentration mounts and subsides. Tension builds up and relaxes. Excitement rises and falls. We cannot maintain them at full pitch, even should we wish to. One of the skills of good direction is to engineer these variations so that they come when we need them most."

He also presents a graph of the variation of "tension" with time: "Of course, most writers and directors rely on experience and intuition rather than analysis, when judging how they will introduce these stresses and lulls. But a graphical outline helps to remind us that these audience interest or concentration patterns have to be contrived to be completely successful. They do not come automatically."

See page 360.

He shows how this works in a diagram detailing the separate contributions

See page 339.

note: 'BC' = behavior circuit (routine paths taken by a user)

James Marston Fitch, *American Building: The Environmental Forces That Shape It* (Boston: Houghton Mifflin, 1972).

of the several aspects of the production to the intended sequential effect on the viewer and continues in an extensive discussion of the nuances of pacing and timing of form and content necessary to achieve the intended audience response. Since the editorial manipulation of strips of film or tape is more readily done than the rearrangement of furnishings, buildings, and highways, and since a closer commercial feedback loop exists between film and producers and the responses of their audiences compared with environmental designers and their publics, it is easy to understand how the film professionals have so readily capitalized on the flexibility and responsiveness of their medium and operation to become more clearly aware of their effective goals and more clearly cognizant of the means to implement them.

This is not to overlook the great differences in setting, commitment, interests, and attention that exist between a theater, film, or TV audience and the general public in the general environment. These differences are due to the fact that the audience of a movie, concert, or drama has committed both time and money for a "unilinear exposure," in Fitch's terms, to an intended and predetermined sequence of events in an environment specifically arranged to achieve and enhance this end; whereas in the general case of the UPs' routine BCs in the environment, the experience is usually aleatory and "polydirectional" to a much greater degree. This is because of the lack of the preoccupied UPs' committed and focused attention; their usual freedom of movement through the environment in terms of direction, path, and rate; the varying operational constraints on their attention necessary to this locomotion; the variations in the environment due to the season, time of day, and weather conditions; and the UPs' susceptibility to distraction and interruption. Only in the circumstances of the highway, where direction and rate of motion are prescribed and legally enforced, and in the case of occasion and emergency BCs does the experiential situation begin to approach the condition of the environmentally committed audience. But one must not forget that the greater capital investment, the durability of the final product, and the wider public influence of the general environment suggest the desirability of more explicitly formulated and clearer goals and much greater concern for effective means to these goals.

But even in the case of the highway there are constraints and distractions interfering with the experience of an uninterrupted and coherent sequence of environmental events:

"Even among the users of the road there are different kinds of audience. The tourist sees the landscape with a fresh eye; he attaches relatively few personal meanings to it, but is urgently engaged in orienting himself within it. The commuter, or other habitual user of the road, is more likely to ignore larger features in favor of activities, new objects, or the moving traffic of the road. The driver must watch the scene constantly; his vision is confined to a narrow forward angle and focuses on events in the road itself. His passenger is freer to look or not to look, has a wider angle of vision, and is not necessarily concerned with immediate traffic. Both driver and passenger are likely to be an inattentive audience, whether

through the compulsion to watch only a small part of the scene, or conversely through the very freedom to let attention wander. They may be partially preoccupied with conversation, squabbling among the children, or private worries.

"Yet at the same time both are a captive audience who cannot avoid remarking, even if only subconsciously, the most dramatic events of a scene which is too mobile and too dangerous to be ignored. In both cases, vision is directed forward, a fact which provides the designer with a means of directing attention. In both cases, there is an undertone of risk, which may be fearful or stimulating . . .

"The highway experience has some further special characteristics. It is usually reversible: people may traverse the road in either direction. It is as if a movie or a recording had to be enjoyed when played

backward as well as forward. This limits possible effects, or demands some technique of masking the 'backward' form while the 'forward' form is being sensed.

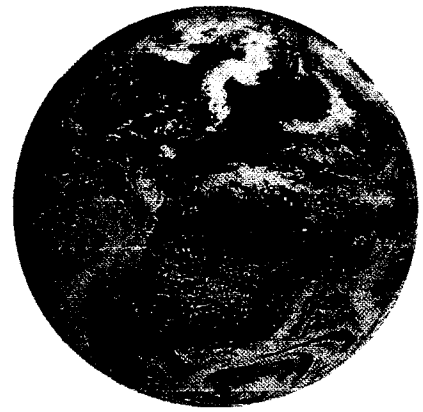
"In the second place, a highway designer cannot be sure that people will watch his drama from beginning to end. They will enter and leave the highway at intermediate points, even if these points are as limited in number as they are on a superhighway. The sequence must therefore be interruptible.

"The driving experience can now be described as being a sequence played to the eyes of a captive, somewhat fearful, but partially inattentive audience, whose vision is filtered and directed forward. It is a sequence which must be long, yet reversible and interruptible."

—Donald Appleyard, Kevin Lynch, and John R. Myer, *The View from the Road* (Cambridge: MIT Press, 1964)

note: UP = user-participant

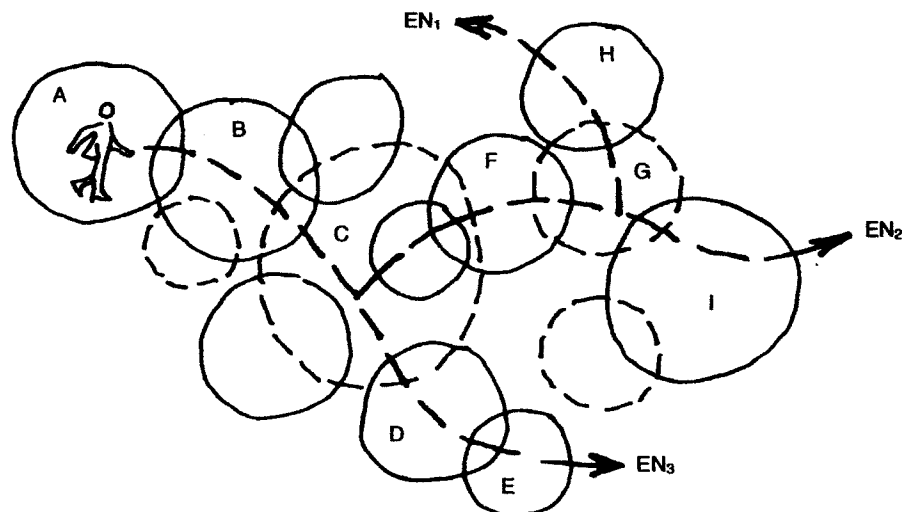
EN = environment



E. Environment

We have previously developed the concept of the physical environment as a sequence of physical stimuli available at the UP's sensing envelope over a given interval of time and at a specific point or along a specific sequence of points in space. We have also presented a model of the UP's unique array of transducing, coding, and attending capabilities for the conversion of this sequence of stimuli into the UP's subjective phenomenological environment. We will now outline a descriptive model of this phenomenological environment as the necessary preliminary step for the subsequent development (in chapter 6) of a taxonomy, scaling, and notation of this complex entity.

In moving through the environment we learn to discriminate the different patterns of stimuli as "affordances," as "behavior settings," and as "activities." Vernacular usage provides us with the labels to identify the first as such entities as path, stairs, platform, and cliff; the second by such terms as bedroom, highway, cafe, and courtroom; and the third as such behaviors as commuting, luncheon, violin concert, and English lesson. Together these terms describe the scenes which constitute our worldly stage, and we spend our lives in motion through them. For us the environment, EN, is a path-contingent sequence of these scenes and can be represented schematically by a number of adjacent and overlapping areas, each denoting a specific scene. The scenes, of course, may be various sizes and shapes, in three-dimensional array, with various degrees and combinations of discrete and amorphous boundaries, and furnished and occupied in a variety of ways for a multitude of purposes. The phenomenological EN for a given UP is then a consequence of the particular path followed through these scenes, as a particular necklace may be said to be a function of the beads selected and strung next to each other along a thread.



"Long ago I concluded that the architect's mind is more suited to envisioning space and structure than the subtler materials and colours that adorn interiors. Preoccupied with the purity of our spaces, we tend to overlook them. And when an architect does attempt an interior, the result is always recognizable for its lack of that final, complementary step of definition—the tying together on the intimate level dominated by furnishings and their details. At the same time, the architect with no control at all over his interior finds his work more often compromised than enhanced by the work of the interior designer, for whom a set of rooms may be but a stage for presenting a quite unrelated visual order."

—Arthur Erickson, *The Architecture of Arthur Erickson* (New York: Harper & Row, 1988)

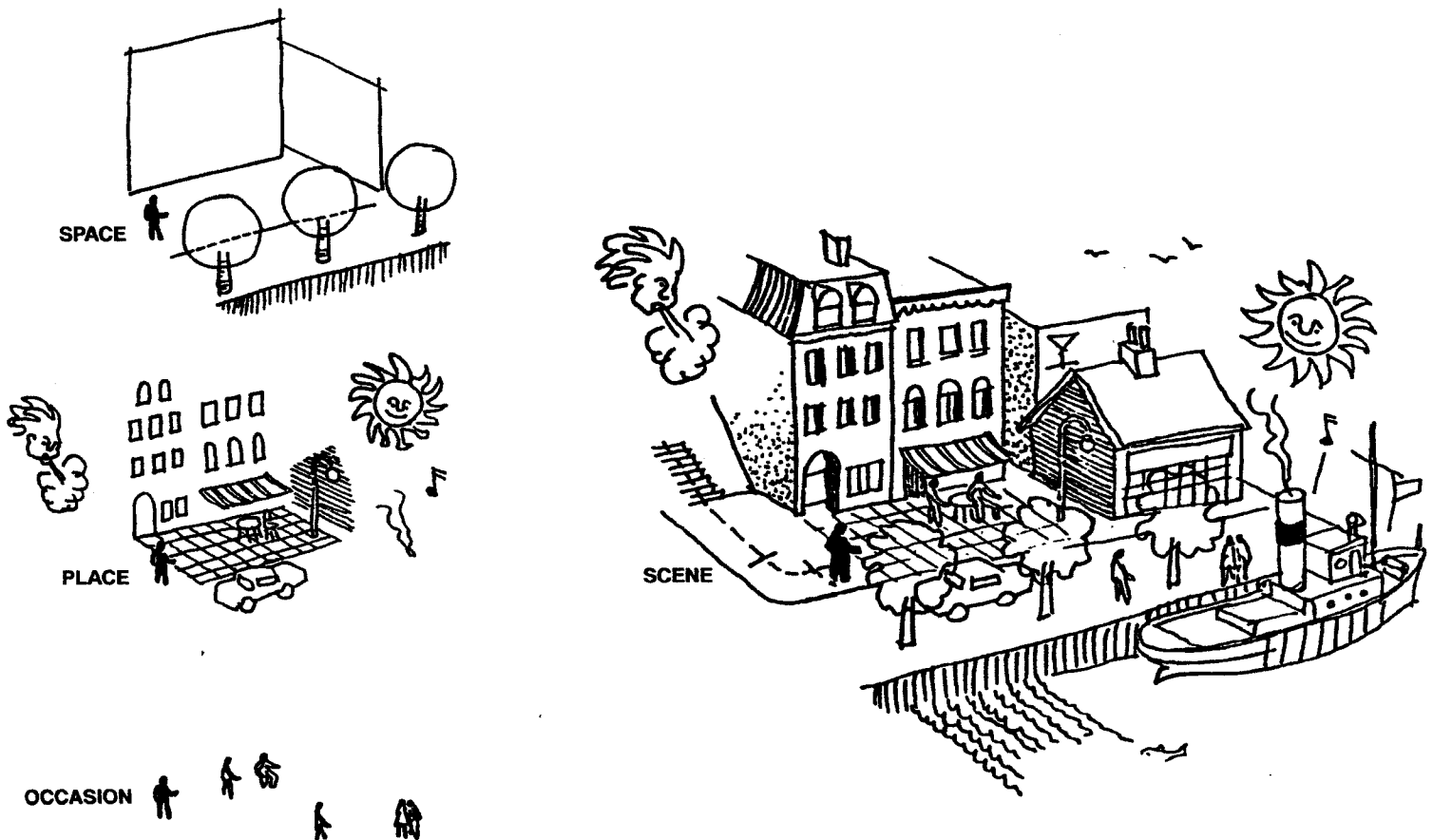
If we consider a given scene at the moment of entry thereto (for the identified UP, for instance, as shown in the illustration), we can "decompose" the scene into three basic components:

1. **Space**, denoting a more-or-less discrete and delimited volume affording human occupation and movement therein
2. **Place**, referring to the further perceptual qualification of a space to achieve an identity as a particular behavior setting
3. **Occasion**, due to the presence and activity of the human occupants in the place, in accordance with some implicit or explicit program

Thus, in the figure we see a UP at the moment of entering a scene, and in the adjacent figures we separate the components of this scene in accordance with elements which establish, qualify, and condition its space, place, and occasion characteristics, respectively.

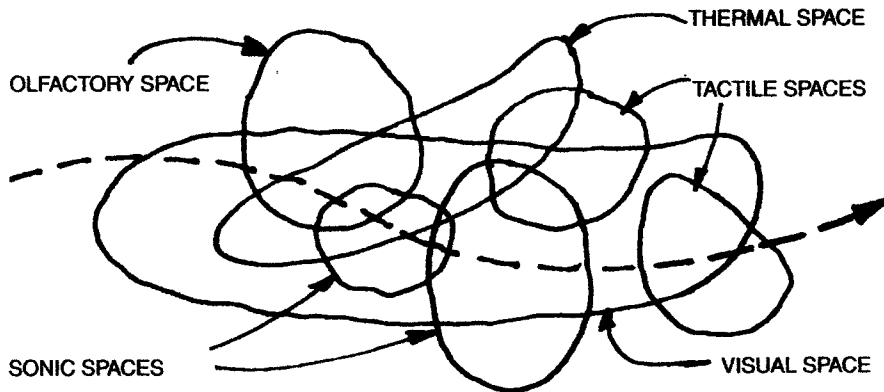
The justification for this analytic procedure exists in the functional and operational independence of these components as suggested by the existence of the separate professions of architecture (essentially concerned with space construction), of interior design (primarily involved with space furnishings), and of environment management (chiefly interested in space use). The advantage of this analytic structure, of course, is that it provides a logical basis for a taxonomy of the EN as a prerequisite for its scaling as a complex stimulus.

We will next consider each of these scene components in turn.



Space

If we imagine a Great Void within which all things transpire, we can then conceive of a scene as a locally differentiated region thereof. A scene can be viewed as a group of invariant sensory patterns, perceived in various sensory modes, as sustained over some finite extent of time and distance. Thus, in the accompanying figure, each of the closed forms represents the local extension of a given pattern of available signals in a single given mode, that is, as olfactory, thermal, tactile, auditory, and visual "spaces" (for examples, respectively: roses, horses, bread; a cold draft, radiant warmth; hard concrete, loose gravel, wet sand; music, voices, a waterfall; a dark tunnel, a shady porch, a bright terrace).

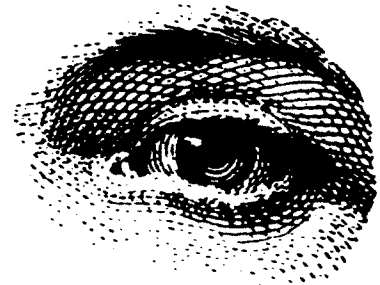


The boundaries of these individual single-mode spaces may of course range from abrupt discontinuities to gradual transitions, and as shown in the figure, the spaces may vary in form and be superimposed in various combinations. If the UPs move along any path, such as that indicated by the dashed line, they will encounter a variety of spatial combinations, and thus a sequence of different scenes.

Because of the greater range, amount, and type of information that the human visual perceptual system can handle we will hereinafter characterize space primarily in visual terms and will involve the remaining sensory modes as factors place-qualifying the visual space of the scene.

The perception of visual space depends on four factors. The first is, of course, the UPs themselves, whose natural, unaided transducers and visual perception systems are responsive to that portion of the electromagnetic spectrum lying between 3,800 angstroms (deep blue) and 7,600 angstroms (deep red). The second factor is the illuminant, or source of this radiation. The third is the environmental surfaces upon which this radiation impinges and which, in selectively reflecting, refracting, or absorbing it, modulate it in various ways. The fourth factor is the gaseous and particulate medium in which all this interaction takes place and which by absorption or diffraction also qualifies the radiation.

As the UPs move about in the medium from point to point they respond to the information latent in the pattern of modulated radiation available at each point. This information is specific to the instantaneous position and posture of the UP, the illuminants, the environmental surfaces, and the intervening medium. By continuously sampling the higher order patterns of this energy, unique at each point in space, the UPs are able to probabilistically dis-



For details on the relative capacity of human sensory information channels, see G. H. Mowbray and J. W. Gebhard, "Man's Senses as Informational Channels," in H. W. Sinaiko, ed., *Selected Papers on Human Factors in the Design and Use of Control Systems* (New York: Dover, 1961); J. J. Gibson, *The Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966); and E. T. Hall, *The Hidden Dimension* (Garden City, N.Y.: Doubleday, 1966).

For comments and insights on the acoustic organization of space, see Warren Brodey, "The Other-Than-Visual World of the Blind," *Ekistics*, Aug. 1969; Warren Brodey, "Sound and Space," *AIA Journal*, July 1964; Michael Southworth, "The Sonic Environment of Cities," *Environment and Behavior*, June 1969; E. Carpenter et al., *Eskimo* (Toronto: University of Toronto Press, 1960); and E. Carpenter and M. McLuhan, "Acoustic Space," in E. Carpenter and M. McLuhan, eds., *Explorations in Communication* (Boston: Beacon, 1960). On olfactory space, see R. Bienfang, *The Subtle Sense* (Norman: University of Oklahoma Press, 1946); and E. T. Hall, *The Hidden Dimension* (Garden City, N.Y.: Doubleday, 1966). For the consequences of stressing one sensory mode over the others, see M. McLuhan, *The Gutenberg Galaxy* (Toronto: University of Toronto Press, 1962); and G. E. Stern, *McLuhan: Hot and Cool* (New York: Dial, 1967).

criminate between invariant and transitory characteristics of their environment and thus infer and operate in a visual world.

If there is no illuminant (as at night), or if the environmental surfaces absorb all incident radiation (as if matte black), or if the medium diffuses the radiation pattern (as in a heavy fog), no visual information would be available to the UPs, and they would have to rely on their other perceptual systems, such as the auditory, thermal, tactile, and olfactory, to operate. We assume, however, the presence of illuminants, of selectively reflecting modulators, and a reasonably clear medium, characteristic of the more common environmental situation, and proceed to a discussion of the role played by modulators in the establishment of space. (Illuminants will be considered in the section of chapter 6 concerned with the physiognomy of place.)

Environmental surfaces are the modulators upon which the radiation from the illuminators impinges, directly or indirectly, and from which it is reflected or refracted to the UPs. These modulators are the "substance" of the visual world. Without environmental surfaces the visual experience of space is as shown in the figure where we find a UP alone in the Great Void except for a single celestial companion. The next figure represents a more typical terrestrial situation, however, and here we observe that the single scene and unlimited space of the Great Void have been differentiated into many scenes of differing finite spatial extent due to the presence of both natural and artificial environmental surfaces. As Burnette notes: "We have learned

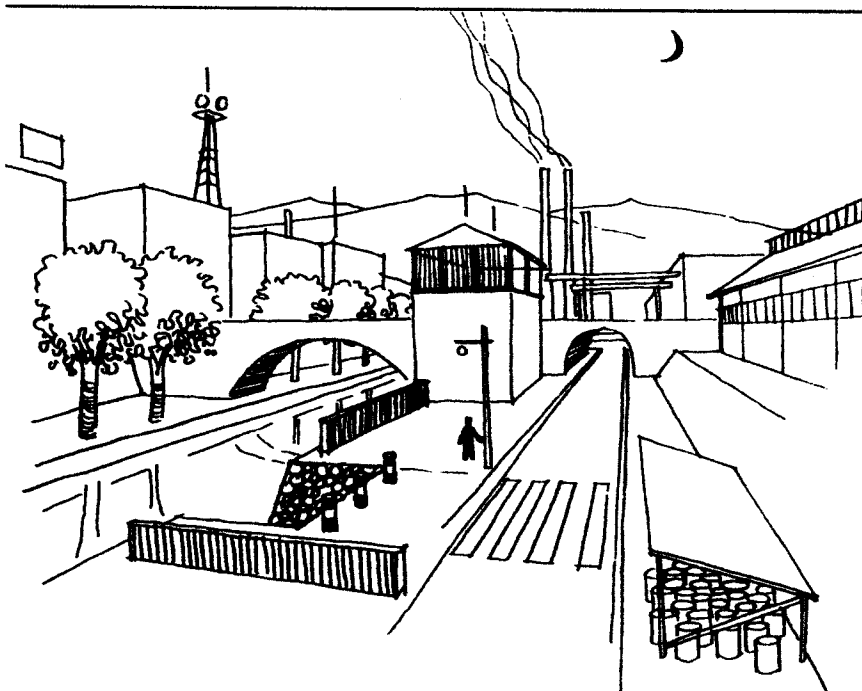


from earliest experience that behind a sensible surface is a physical substance (mass) and before it there is distance (space). Both architectural mass and space exist as mental constructs built from the direct sensation of surface. This logical, empirically valid dependency in which surface is the perceptual referent articulates a continuum that is comprehensive given that the extent of description is limited to a physical, three-dimensional object that is statically appreciated (as the object of action-perception). Surface is the critical aspect of the definition, communication, and experience of architecture-as-object in that it mediates the extent of space and the content of mass by functioning as a common boundary explicitly configuring them."

Thus the terrestrial particularization of the Great Void, or the spatial differentiation of one location from another, exists naturally in terms of the geographical convolutions and growths of the earth's surface which produce valleys, canyons, glades, forests, plains, savannahs, mesas, defiles, caves, beaches, islands, mountains, and crags. It is most commonly accomplished by human beings in their changes to these natural forms by means of their environmental interventions such as tumuli, monuments, canals, causeways, dams, and tunnels, and by means of their pavements, fences, facades, walls, ceilings, and roofs producing terraces, platforms, loggias, paddocks, arenas, alleys, avenues, streets, squares, bowers, halls, corridors, boudoirs, and boardrooms.

Charles Burnette, "Towards a Theory of Technical Description for Architecture" (University of Pennsylvania Institute for Environmental Studies, 1969, working paper).

A most useful study would be the compilation and comparison of space form and space-establishing element vocabularies for a number of natural languages. This would undoubtedly provide new common perspectives on the perception and conception of space and on spatial experience.

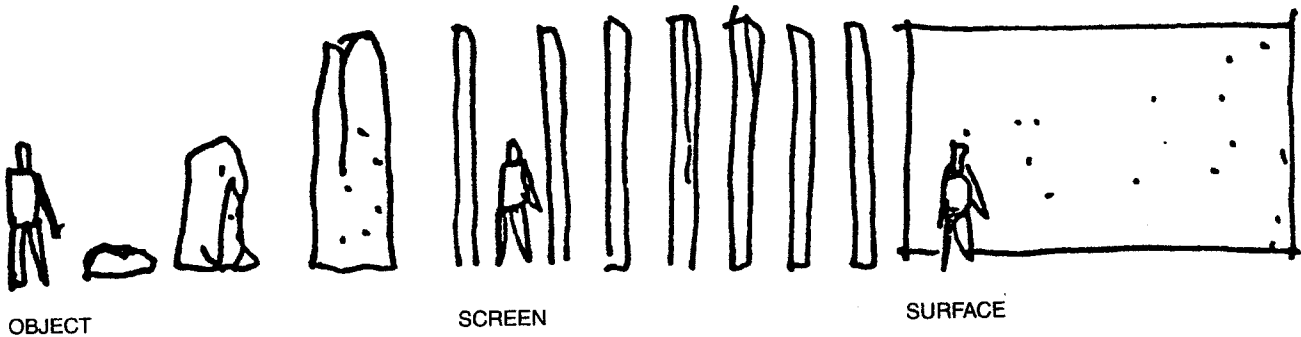


Space in several scenes

note: SEE = space establishing element

In addition we recognize that the delimited space of a scene may come into existence as the result of a temporary arrangement or confluence of people or artifacts; as in the case of a group of people gathered around a speaker or around a campfire on the beach, or in the case of a group of chairs arranged in a circle. We further recognize that some permanent scenes are not necessarily fixed in geographic location: caravans, cars, ships, and aircraft preserve their particular spatial identity while in motion.

Visual space, then, exists in terms of the perceived positional relationships of these light-modulated environmental surfaces that are circumambient to a given point. In general we may classify these space-establishing elements in three categories: *objects*, *screens*, and *surfaces*. Objects may be thought of as two- or three-dimensional forms existing as separate, discrete visual entities in a larger space than the one they help establish. Surfaces are perceived as two-dimensional forms limited in spatial effect to the space they help establish. Screens are perforated surfaces or closely spaced objects, and are obviously an intermediate type. These three elements visually delimit a portion of the Great Void to some degree and occur as both natural and built forms and in all positions relative to the UP. For convenience we will refer to these space-establishing elements as SEEs.



"Space, in fact, is liberty of movement," says Scott. "That is its value to us, and as such enters our physical consciousness. We adapt ourselves instinctively to the spaces in which we stand, project ourselves into them, fill them ideally with our movements." See Geoffrey Scott, *The Architecture of Humanism* (New York: Scribners, 1924).

For an elaboration on spatial "affordances," see James J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979).

SEEs denote the boundaries of the space, determine its areal and volumetric form and extent, and thus indicate the physical possibilities of free movement therein. In addition to the actual physical restraints on movement, such as walls, fences, and edges, virtual social restraints on free movement also exist, indicated by two-dimensional object SEEs as property boundaries, crosswalks, and lane dividers. Culturally conditioned discrimination of environmental surfaces (along with the furnishings and occupants within the space) cues the types of behavior permitted, required, or appropriate within the space.

It is possible to conceptualize a particular space in two ways. One way is to think of the space as distance, or the interval between discrete, solid objects, as between apples on a table or between freestanding buildings. Here the objects—apples, buildings, or whatever—are seen as masses which possess "positive" (tangible) substance. The intervening space is "negative"

(intangible) and usually thought of as a formless matrix. Scully reminds us of a historical example of this type of space use in scene making: "... the apparently anarchic grouping of the buildings in archaic temenae is neither thoughtless nor regrettable. It is simply a 'mass-positive,' 'space negative' method of building placement. Space is merely a void, a true interval, between masses. This method does not represent a lack of perception on the Greeks' part, as some critics—familiar, as they tell us, with the opposite criteria in Baroque planning—have claimed. Instead, it was not only reasonable rather than mystical, since space is in fact a void defined by solids, but also essential, as the Greeks obviously knew, in order to release the great shape of the temples they had in mind. In this way the environment which had been created by the old labyrinth and courtyard of the Bronze Age was fundamentally modified; solids now acted on each other, confident in the open, clear in the light. The environment was now defined by a counterplay of forces. This quality, though with many expressive variations, remained characteristic of Greek temenos groupings for a long period, and will be seen at a number of Doric sites better than it can be at Samos. A recognition of it as deliberate seems to show where the Greeks' primary attention was focused: upon the active relationships between solids; upon temple and landscape and, as we shall see, between temple and temple. Yet with those the Greeks would later shape some voids uniquely alive."

The other way of conceptualizing space is just the opposite. In this case the space is conceived of as the "positive" and tangible, and by means of a greater explicitness of establishing elements (as discussed in chapter 6) it becomes the virtual "object." In caves, in interiors of buildings, and in densely built-up urban districts the solid masses lose their identity as discrete objects and become the "negative" elements. Rasmussen cites another historical example: "The Austrian author Camillo Sitte . . . maintained in his book on city planning in 1889 that in many old cities the open spaces were conceived as the positive focus. The whole city would be regarded as a composition of open spaces. The squares were the great assembly halls where the population could meet, the streets were corridors leading to the squares, and the buildings formed the frames which defined the open spaces. This conception is quite obvious in many old cities. The building blocks are completely filled out and can have very strange shapes. It is as if streets and squares are cut out or hollowed out of an amorphous mass of stone, and *they* have got the regular shapes. This form was natural for old world cities with much outdoor life and slow traffic."

At the present time, due mostly to the dispersive effects of the automobile and partially to the space-affluent and individualistic nature of our American society, our contemporary built landscapes tend toward the mass-positive and space-negative. Here space is an intangible resource, to be exploited, filled up, and used (as in "air rights") for economic gain; or employed as a medium for the display of buildings as large-scale sculpture: "featurism," as Lowenthal calls it. But, as Scully suggests, a space-negative approach is not necessarily inferior to a space-positive approach.

V. J. Scully, *The Earth, the Temple, and the Gods* (New Haven: Yale University Press, 1962).

Steen Eiler Rasmussen, *Experiencing Architecture* (New York: Technology Press & Wiley, 1959).

David Lowenthal, "The American Scene," in H. M. Proshansky, W. H. Ittelson, and L. G. Rivlin, eds., *Environmental Psychology* (New York: Holt, Rinehart & Winston, 1970).

See also Yoshinobu Ashihara, *Exterior Design in Architecture* (New York: Van Nostrand Reinhold, 1970), for a discussion of positive and negative space, and W. Rauda, "Urban Space and How to See It," *Landscape*, Spring 1960, for notes on their contemporary use in combination.

note: PQA = place qualifying agent = furnishings

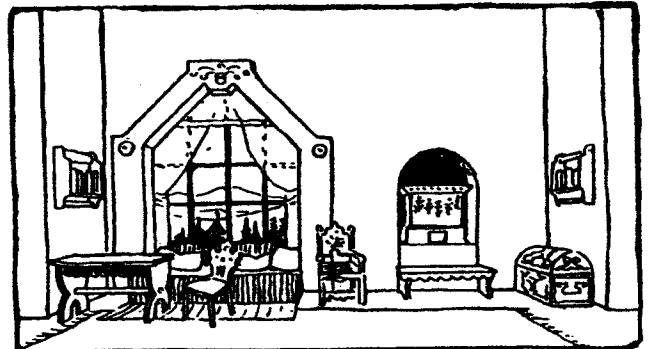
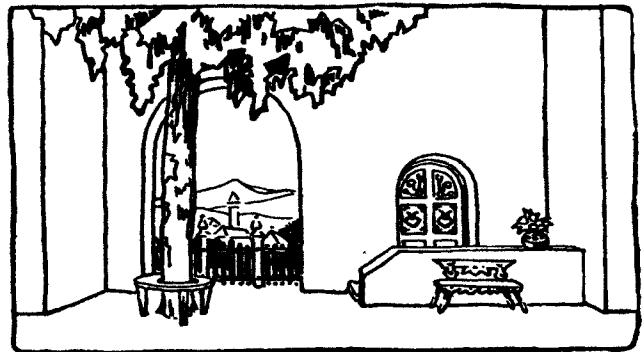
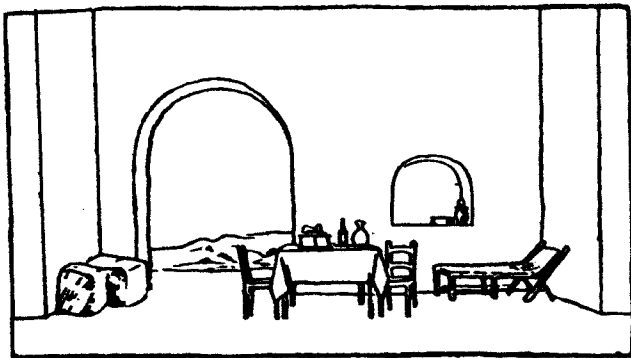
Place

We continue our explication of the structure of scene by now considering the qualification of a given space as a particular place. We have previously made a distinction between space and place by defining space as the physical delimitation of a portion of the Great Void arising from the perceived positional relationships of the various surfaces, screens, and objects, as space-establishing elements, circumambient to UP at a given time and position; and by suggesting that a particular place results from the additional treatment of the more or less anonymous space. This "dressing" or qualification of an existing space results in a further and more specific individuation of the scene and is accomplished by the furnishings, called here place-qualifying agents, or PQAs.

The relative independence of space and place and the major dependence of place upon furnishings are suggested by the figure illustrating the successive qualification of the same stage space into four different places through the use of a different selection and pattern of furnishings. Although this illustration relates to theatrical stagecraft, we recognize the operational validity of this conceptualization in the vernacular practice of the idiosyncratic differentiation or "personalization" of identical dormitory rooms or apartments, or in fact of any space adapted over time to personal habitation or other specific uses. (It is, of course, the basis of the professional distinction between "architecture" and "interior design.")

From Walter René Fuerst and Samuel J. Hume, *Twentieth Century Stage Decoration*. Copyright 1928 by Alfred A. Knopf, Inc. Reprinted by permission of the publisher.

The equivalent of this occurs in the natural scene when in the course of the year Nature wears the successive habiliments of spring, summer, autumn, and winter. The space of the valley, prairie, or glen remains, but because of the seasonal changes the furnishings vary, and the places are not the same.



We can say, then, that space in a sense is an abstract and theoretical conceptualization and that usually the spaces we encounter, both natural and built, are to some degree tangibly furnished. We are thus required to describe the physical attributes of these furnishings, which provide the denotative and connotative basis for the signification and expression of place. Just as surfaces, screens, and objects were identified as the SEEs, whose attributes in various combinations produce the range of possible spaces, in a similar way we can categorize the furnishings, or PQAs, whose varied patternings determine the variety of possible places.

When SEEs and PQAs are generally natural and unaffected by human intervention, the mood evoked by a particular place has, in former times, been attributed to the presence of a *genius loci*, a minor deity dwelling in or guarding a particular locality. The sacred groves and holy places of ancient people derive in part from sensitivity and suggestibility to the qualitative and expressive aspects of the natural environment. "In antiquity," writes White, "every tree, every spring, every stream, every hill had its own *genius loci*, its guardian spirit. These spirits were accessible to men, but were very unlike men: centaurs, fauns, and mermaids show their ambivalence. Before one cut a tree, mined a mountain, or dammed a brook it was important to placate the spirit in charge of that particular place, and to keep it placated . . .

". . . By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects . . . Christianity, in absolute contrast to ancient paganism and Asia's religions (except, perhaps, Zoroastrianism), not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends."

Lynn White Jr., "The Historical Roots of Our Ecological Crisis," *Science*, Mar. 1967.

Highet, reviewing the lives of and revisiting the landscapes associated with seven great Roman poets, provides us with an eloquent evocation of this pagan sense of place (and also, on his own part, of the "spirit" that a sensitive contemporary can find in the present scene). See Gilbert Highet, *Poets in a Landscape* (New York: Pelican, 1959). Gaudenz Domenig (personal communication, 1970) suggests on the basis of his research in archaic space and place making that humans acquired the notion of the *genius loci* from their own activities in place making and that the oldest *genii loci* were resident in man-made places—in contradiction to the assumptions of nineteenth-century antiquarians, ethnologists, and anthropologists.

Domenig also comments on another aspect

of space and place: "Archaic man-made places were, according to my theory (which coincides here with the one of Vitruvius), first of all *at-places*; historic man-made places are mainly *in-places*, as treated by you. The invention of *in-places* marks the decisive step in the evolution of early human space-experience. Seeing it thus one might wonder whether we are not making another step of radical significance in our present time. I mean a step towards a partial life in *out-places*: Man seems more and more tired with being where he is, in or at his place, and as a result of this he looks towards places 'out there,' on the seaside, in the Far East, on the moon . . . He stays where he is in order to go where he would like to go, i.e. in order to get the means to realize his dreams."

On the other hand, when the SEEs and PQAs are generally artificial, or humanly qualified—"articulated by the imprint of human life"—the quality of a place may be said to be that of an "ethnic domain," to use Susanne Langer's term; this expression quite properly indicates the culturally determined basis of human influence in the environment. Our primitive place making starts with the "taking possession" of space: driving a stake, bundling reeds, binding or blazing a tree, building a fire, erecting a cairn or monument of stone, all indicating where "it" is, as a point of central reference and highest importance. Fences, palisades, and walls come next, as boundary markers separating "here" from "there" and creating the distinction of "inside" and "outside." Examples of these archaic activities are still common in Japan: the *shin-no-mihashira*, or sacred stake, that locates the site of the Shinto shrine, as at Ise; and the *toko-bashira*, or decorative post, that identifies the place of honor in the traditional reception room. Stalks of bamboo positioned at each of the four corners and connected with a *shimenawa*, or straw rope festooned with strips of white paper, are the minimal means used to indicate the boundaries of a temporary sacred place. More permanent divisions of the sacred and the profane are effected by a formal hierarchy of concentric fences, exemplified most clearly at Ise but existing in vestigial or implicit form at all shrines and temples.

"As *scene* is the basic abstraction of pictorial art, and *kinetic volume* of sculpture, that of architecture is an *ethnic domain*. Actually, of course, a domain is not a 'thing' among other 'things'; it is a sphere of influence of a function, or functions; it may have physical effects on some geographical locality or it may not. Nomadic cultures, or cultural phenomena like the seafaring life, do not inscribe themselves on any fixed place on earth. Yet a ship, constantly changing its location, is none the less a self-contained place, and so is a Gypsy camp, an Indian camp, or a circus camp, however often it shifts its geodetic bearings. Literally we say the camp is *in* a place; culturally it *is* a place. A Gypsy camp is a different place from an Indian camp, though it may be geographically where the Indian camp used to be.

"A place, in this non-geographical sense, is a created thing, an ethnic domain made visible, tangible, sensible. As such it is, of course, an illusion. Like any other plastic symbol, it is primarily an illusion of self-contained, self-sufficient, perceptual space. But the principle of organization is its own; for it is organized as a functional realm made visible—the center of a virtual world, the 'ethnic domain,' and itself a geographical semblance.

"... architecture articulates the 'ethnic domain,' or virtual 'place,' by treatment of an actual place.

"The architectural illusion may be estab-

lished by a mere array of upright stones defining the magic circle that severs holiness from the profane, even by a single stone that marks a center, i.e. a monument. The outside world, even though not physically shut out, is dominated by the sanctum and becomes its visible context; the horizon, its frame."

—Susanne K. Langer, *Feeling and Form* (New York: Scribner's, 1953)

Nitschke presents an exegesis of the Japanese concept of *ma*. The character for this is pronounced "ma," "ken," "aida," or "kan," depending on the context. It refers to lineal spacing, span, or an interval of distance; to areal size; to volumetric size; or to an amount or an interval of time. In these senses *ma* is an objective, measurable concept. But, as Nitschke shows, it has further subjective uses in reference to personal, qualitative relationships to a particular milieu; to temporal pacing in speech, music, and dance; and to the philosophical conception of "man" as an element of society.

Nitschke discusses these concepts in terms of the symbolic use of the post or column in "place making" (e.g., the central post of early Shinto shrines, the main post of the traditional farmhouse, and the honorific *tokonoma* post of the residential guestroom); as applied to the unity of form and nonform in calligraphy and painting; and as applied to the conceptualization of town planning as a patterning of more or

less intangible symbols rather than of the physical form of buildings and the spaces between them. This attitude is most clearly illustrated, Nitschke suggests, in the temporary spaces prepared for some Shinto ceremonies and in Buddhist rock and sand gardens, where a minimum of physical means is used to evoke a maximum of effect. Thus "consciousness of space transcends the forms." "The duality of 'object' and 'space' is so perfectly overcome . . . that the onlooker is aware of neither one nor the other: he is made aware of the void, the very nature of himself and the universe." See Gunter Nitschke, "The Japanese Sense of Place," *Architectural Design*, Mar. 1966.

See also E. T. Hall's discussion of other cultural differentiations in space and place reference in *The Hidden Dimension* (Garden City, N.Y.: Doubleday, 1966); Amos Rapoport's review of the symbolic place of the Australian aborigines, in "Australian Aborigines and the Definition of Place," in William J. Mitchell, ed., *Environmental Design: Research and Practice* (proceedings of EDRA 3/AR 8) (Los Angeles: University of California Press, 1972); and J. B. Jackson's essay on the patterns of and attitudes toward fencing in America in "A New Kind of Space," *Landscape*, Winter 1969. Reyner Banham cites examples of nonarchitectural place making and the nonmonumental possibilities of "une architectural autre" based on mechanical power in *The New Brutalism* (New York: Reinhold, 1966).

The contemporary differentiation of place depends of course on a greater diversity of means and displays a greater range of meanings. To account for these differences in place quality we must now categorize the PQAs. To do this we will refer again to the theater, because the evocation of place quality, by suggestion or demonstration, is a central concern of the art of stagecraft. In the convention of the theater, the components of the "mise-en-scène" and of the production as a whole are usually called the "setting" (scenery), the "properties," the costumes, the actors, and the "effects" (sound and light).

The setting is conventionally composed of "standing units" ("flats" of various types), "hanging units" (borders, drops, cycloramas, etc.), and "built units" (platforms, steps, etc.), all of which are in general equivalent to our SEEs and as such do not concern us here. Properties, in the conventions of stagecraft, are somewhat loosely categorized for convenience as "scene props" (furniture, rugs, lamps, vases, candelabras, shrubbery, etc.), "trim" (generally related to scenery walls, such as draperies, pictures, hanging bookshelves, sconces, wall clocks, sprays of foliage, curtains, blinds), and "hand props" (the implements handled by the actors, such as food, dinnerware, pipes, magazines, telephones).

Leaving aside the actors and their costumes (which will be considered separately later) we then have left the properties and the effects. In the case of properties we will aggregate the scene props, the trim, and the hand props into one group. Finishes constitute a new class, not included in the conventional theatrical breakdown. Lighting is included in effects. Thus, for our purposes, the components of place are as follows:

1. *Props* are the two- or three-dimensional objects existing as entities within the space (excluding the human occupants). They may be large or small, fixed in place or movable, stationary or moving, temporary or permanent, animate or inanimate. Examples are trees, streetlights, fountains, autos, shrubs, furniture, bookshelves, rugs, pictures, curtains, cats, and plants.

2. *Finishes* are the visual pattern, color, and texture attributes of all the environmental surfaces, including the SEEs and the props. This categorization of the surface finishes as an independent PQA component is a consequence of their mutability when spaces are remodeled to adapt them to changing needs and purposes; it reflects not only the major effect they have in qualifying a space but also the professionalization of the practice and the great variety of options available in paint, wallpaper, drapes, rugs, fabrics, paving, floor finishes, cladding, etc.

3. *Effects* are the luminous, sonic, olfactory, thermal, tactile, and kinetic fields and events qualifying a space. Light, shade, shadow, sounds, noise, music, vibration, scent, temperature, humidity, air movement, resilience, and hardness are examples of effects. They are conceptually distinguishable from the props and finishes in that they may also be varied independently. As PQAs the effects are as noticeable as a lamppost or a rug and as we saw earlier may also establish a subspace.

Chapter 6 will present a comprehensive taxonomy, scaling, and notation for props, finishes, and effects as PQAs.

See, for example, Herbert Philippi, *Stagecraft and Scene Design* (Boston: Houghton Mifflin, 1953); Samuel Selden and Huston D. Sellman, *Stage Scenery and Lighting* (New York: Appleton-Century-Crofts, 1959); or Terry Thomas, *Create Your Own Stage Sets* (London: Adam & Charles Black, 1985).

These implements are referred to as "behavior objects" by Roger G. Barker, in *Ecological Psychology* (Stanford: Stanford University Press, 1968).

note: MH = members of humanity = people

Burchard reminds us of their variety at the urban scale: "The character of a fine or a mean city is composed of its smells, its noises, even its tastes as well as its sights. Its sights include people, their clothing, their conveyances, their flowers, trees, fountains. A city has an unseen history which also forms its aesthetic. A city is not architecture alone, perhaps not even principally.

"Cities have noises. There are the shrill engine whistles at the Gare St. Lazare, the chants of the street peddlers of Naples, the bells of the betjaks in Jakarta, the horns in the fogs of San Francisco, the subterranean rumble of the subways in Manhattan, the unmuffled motorcycle engines on the Corso.

"Cities have people and people have tongues. Street voices do not sound the same even in a single country. The sharpness of Albany is countered by the softness of New Orleans, the flatness of Omaha by the twang of Portsmouth, New Hampshire. None is like the diapason of Hamburg, the falsetto upturnings of London, the liquids of Rome or Helsinki, the wails or bleats of Bombay or Cairo. When they stop talking some people in some cities sing, some listen to sidewalk orchestras, some are silent. Thus cities do not sound alike.

"Cities have smells. Wood smoke and manure provide the warm fall atmosphere of Bourges; coal gas cares for Lille, or Birmingham, or Washington, Pennsylvania; oil for Galveston; fish drying in the sun for Alésund; coffee roasting for Boston; while,

when the wind is in the southwest, Chicago knows the sick sweet odor of drying blood and recently ardent flesh. Mainz is redolent with honeysuckle. Thus cities do not smell alike.

"Nor are all the visual motifs of a city architectural. People wear clothes: the bizarre open shirt of Hollywood and Vine is not the careful gray flannel of Grand Central, or the big hat of Fort Worth, or the bowler of the City of London. The summer skirts of Stockholm do not resemble the kimonos of Kobe, or the saris of Madras, or the serapes of Bogotá.

"People are carried about. Some cities have elephants, or camels or goats, many have mules and horses, some have rickshaws, some have sleds, and a few have sedan chairs even now. More have bicycles, and when you see many you can be sure you are in flat Amsterdam and not flat Chicago. Most common today, of course, are motorcars but even these do not look alike in every city; even the automobile scenery changes. You will not, praise be, see many swept wings east of Suez. Not yet.

"Cities have history, at least great cities do, and historical spots have their own aesthetic. Some cities like Helsinki bear the formidable memories of many different occupations in architectural forms which have not been destroyed; some like Athens and Rome wear their proudest jewels in their magnificent ruins; some like Paris or London offer a wide canvas of undisturbed historical development. For many the histor-

ical aesthetic may be mainly an aesthetic of the memory: the door through which assassins sought to reach Henry of Navarre; the ancient site of a wilderness fort such as Duquesne, or Dearborn; the pavement, long since replaced, on which a Crispus Attucks fell. Often the memory is served only by a plaque. But even such tremulous whispers from the past will cause the sensitive to prickle.

"Some cities have sidewalk cafes and some do not; some have awnings, or umbrellas, or arcades and some do not; some are adorned with mosaic pavements and the result is different from that of cobble stones or asphalt. Some have pleasant street signs or street lamps. Some support flowers everywhere; some have rejected plants. Some are best known for their chimney pots. Some have amusement gardens, but a Tivoli, a Skansen, or a Liseberg is quite different from a Sutro's Baths or a Coney Island, to say nothing of a Revere Beach. Some have rivers, or canals, or lakes; some are moist with fountains; some are dry and hard.

"All these things add to the aesthetic of a city, but most of them are the result of time and tradition. Few have been consciously created in the way a hotel manager might sprinkle an elevator in the Ritz-Carlton with perfume . . ."

—John E. Burchard, "The Urban Esthetic," *Annals of the American Academy of Political and Social Science*, Nov. 1957

Occasion

In our stage model of the scene, space was conceptualized as a volumetric delimitation of the Great Void, in which a UP could move. We have framed all our descriptions from the specific momentary physical standpoint of a UP. The bareness of this empty stage was qualified as a specific place by being furnished with properties, finishes, and effects with denotative and connotative implications for the UP. Having thus established and set the stage, we now undertake to complete the characterization of the scene by describing the attributes of the members of humanity (MHs) (men, women, and children) other than the UP who are also present in the scene.

This "sense of occasion" due to the presence of other people on the stage has a potential for signification to the UP independent of and at least equal to that of space and place (although of course the degree of affect situationally fluctuates between these other two components, on varying levels of awareness). This signification obtains for both the general casual, mundane scene as well as any scene made "occasion-adequate" by means of or irrespective of its space-place attributes. The essence of the matter is that human beings are social creatures by reason of biological necessity, and the absence or presence in the scene of varying numbers and identities of the human species is a matter of fundamental importance to the expe-

W. R. Ellis, "Planning, Design, and Black Community Style: The Problem of Occasion—Adequate Space," in William J. Mitchell, ed., *Environmental Design: Research and Practice* (proceedings of EDRA 3/AR 8) (Los Angeles: University of California Press, 1972).

rience of each individual. Those who choose to withdraw from society are sufficiently exceptional to the general case to warrant such special designation as recluse, anchorite, misanthrope, hermit, and so on, with implications of asceticism, mortification, paranoia, penance, or martyrdom. And involuntary absence from the presence of others as in the case of solitary confinement is held to be very severe punishment.

"Man is an occupant of multiple niches, physiographic and social. He lives in, has reconstructed, and adapts to the most diverse range of environments of any of the animals. This environmental diversity together with man's long gestation period, extended infancy, lengthy maturation and low birth rate combine to make him specifically dependent upon sustaining relationships with his fellows. Evolved from millions of years of socially dependent forebears, he has demonstrated a special capacity for intricate subdivisions of task and role assignment and regulation. As in lower animals, his relationship to his group mates is more than trial and error, action-reaction

sequences. His interactive behavior is not mechanical but interdependently systemic. With his complex division of labor, his performances are seldom isolated action-in-themselves. The social performance of a given member of society is by definition incomplete; task accomplishment is dependent upon continuative, coordinate, parallel or complementary individual or sub-group behaviors. These are rarely ritualized, mechanical, conjoint performances. Flexibility and adaptability demand a continuous and reliable feedback, contribution and correction between the performing membership and this is never apart from the capacities and behavior of the performers."

—R. L. Birdwhistell, "Communication as Multi-channel System," in *International Encyclopedia of the Social Sciences* (New York: Macmillan, Free Press, 1968)

America's most famous recluse (apart perhaps from Howard Hughes) is Henry David Thoreau, who lived alone in a cabin a mile from any neighbor for two years and two months and chronicled his experiences in his classic *Walden* of 1854. But although he wrote in this journal that he "never found the companion that was as companionable as solitude," he also noted, "Every day or two I strolled to the village to hear some of the gossip!"

The presence of MHs is determined from the perceptual standpoint of a given UP at a given moment; that is, the MHs must be visible to the UP, although the UP does not in fact have to notice the MHs. As described later, the given moment is identified with reference to the time scale which is the continuous index to the notation of the UP's particular path through and momentary position and orientation in the scene.

From this it will be appreciated that the sense of occasion as used here is UP time and position specific and sequentially developed, rather than being generally synoptic and omnisciently given; and, further, that it is spatially comprehensive, incorporating interpersonal distances extending beyond the usual range of Hall's "proxemic" interactions and including but not limited to the "behavior setting" of Barker or the "gathering," "situation," or "social occasion" of Goffman. The basis of the sense of occasion as treated here is behaviorally inclusive, encompassing all types of MH activity regular and irregular, official and unofficial, single and multiple, serious and frivolous, formal and informal, planned and spontaneous, continuous and intermittent. In essence it is thus local, potential, experiential, and cumulative (being limited in UP access, inclusive in scope, discursive in nature, and sequential in development). In *summed* affect it is somewhat akin to the Japanese concept of *kaiwai*, which denotes a mood, ambience, or atmosphere arising from the presence and activity of people in a vicinity.

In chapter 6 we will identify, scale, and code the independent factors which constitute the attributes of the sense of occasion and present a notation for describing them discursively and polyphonically as they could become visually perceivable to a UP during presence in and movement through the EN. Here we will limit ourselves to listing those characteristics of the MHs which could be commonly apprehended by "participant natural observation" of the scene by an attentive group of laypersons, in the general role of "onlookers" and with the status of "strangers" (as in the role and familiarity scales described subsequently) and at a "macro" level of detail. In brief and in approximate order of importance, they are conceptualized as

E. T. Hall, "A System for the Notation of Proxemic Behavior," *American Anthropologist*, Oct. 1963; E. T. Hall, *The Hidden Dimension* (Garden City, N.Y.: Doubleday, 1966); R. G. Barker, *Ecological Psychology* (Stanford: Stanford University Press, 1968); and E. Goffman, *Behavior in Public Places* (New York: Free Press, 1963).

K. Nagashima, "Future Urban Environment: Evolution of Social and Leisure Space," *Japan Architect*, Sept. 1970; Teiji Itoh, *The Japanese Approach to Exterior Space* (in Japanese) (Tokyo: Shokokusha, 1974).

1. the *temporal-spatial* characteristics of event, duration, position, distance, and pattern;
2. the *demographic* attributes of number, age, sex, and social condition;
3. the *activity* characteristics of continuity, category, mode, posture, and expression;
- 4a. the *interpersonal MH-MH* relationships within a group of MHs, including role, body distance, and body orientation.

In addition to these four categories of attributes underlying the perception of the sense of occasion for all UPs in common, there is another set of factors that further and uniquely socially qualifies the experience for a given singular and specific UP:

- 4b. the *interpersonal UP-MH* relationships between a specific UP and the MHs, involving the UP's situational role and degree of familiarity with the MHs.

In conclusion we include

5. the *episodic summation* of the sense of occasion, in which the patterns of MH clusters and the relative density of the MHs in the several spaces involved are characterized with reference to those spaces.

This formulation is, of course, a hypothesis. Suggestive confirmation for some of these assumptions is found in Milgrim, who reviews some of the pertinent literature from this experiential standpoint. See S. Milgrim, "The Experience of Living in Cities: A Psychological Analysis," in J. Helmer and N. A. Eddington, eds., *Urbanman* (New York: Free Press, 1973).

F. The Envirotectural Process

At this point we can represent the envirotectural process as an elaboration of the basic design and management process presented in section A of chapter 2. As illustrated in the accompanying figure, and with reference to experiential issues only, the envirotectural process divides logically into the two stages of preconstruction experiential programming and design (A) and postconstruction environmental operation and management (D). This equal emphasis on the pre- and postconstruction parts of the process indicates the importance of environmental management in maintaining the social adequacy of the environment in the course of the inevitable changes in the UPs, programs, and technologies over time. It should also be noted that environmental programming and design (B), and environmental intervention (C), represent the current conventional limits of the environmental design professions.

In this section we will first discuss some of the general issues connected with each of the experiential programming and design operations and decisions, and then we will elaborate on the concept of environmental management as an extension of the presently evolving practice of postoccupancy evaluation.

In recapitulation, these components were space, place, and occasion. With regard to space, "scene" was defined as a locally differentiated subregion within the Great Void, as perceived in a given sensory mode over some finite extent of time and distance. Because of the primacy of vision in the human species, space is treated here in visual terms, and the other sensory modes are involved subsequently as qualifying factors in the component of place.

It was also shown that visual space exists as a function of the UP's perceptual system, the illuminants, the environmental surfaces modulating the illuminants, and the gaseous and particulate medium in which all this transpires. The environmental surfaces, as the more tangible substance of the visual world, "establish" visual space and can be classified in the three categories of objects, screens, and surfaces.

In all this it will be apparent that visual space is taken as the "positive" "figure," in contrast to the alternative attitude in which space is seen as the "negative" "ground" to the "positive" "figure" of the surface-bounded solid forms in the environment.

See the note on the isovist in the description of the hemispherical projection and on the nominal visual field in the previous section.

Space-establishing elements were introduced in section E of chapter 3 and will be taken up in more detail later in this section.

The concept of spatial explicitness will be presented and scaled subsequently.

The significance of views cannot be over-emphasized. Preferences for "a room with a view" or "view lots" are obvious examples and are often evaluated in monetary terms. For a more subtle example consider the differences in a familiar outdoor scene on a misty morning when all the views are eliminated with the same scene later in the day when the fog has burned off and the views are restored. Operationally, the "next view ahead" is crucial to the performance of the mobile UP in making an assessment of the affordance for motion along a path. See also the comments on views in Robert Woods Kennedy, *The House and the Art of Its Design* (New York: Reinhold, 1953); J. O. Simonds, *Landscape Architecture* (New York: F. W. Dodge, 1961); and Gordon Cullen's comments on and illustrations of many notable examples of "here" and "there" in his *Townscape* (New York: Reinhold, 1961).

B. The Anatomy of Space

Having thus set out the phenomenological frame of reference for a description of the experiential EN, we are now in a position to consider the specifics of the anatomy of space, as the first of the three components of the EN posited in section E of chapter 3. Just as medical doctors and physicians are expected to be experts in the anatomy and structure of the human body, so also should environmental designers and managers be expected to become familiar with the anatomy and structure of human space. This analytical elucidation of spatial structure is an absolute prerequisite for an understanding of the complex environments usually experienced in daily life and for the time-based description of their sequential experience.

Space Occupancy

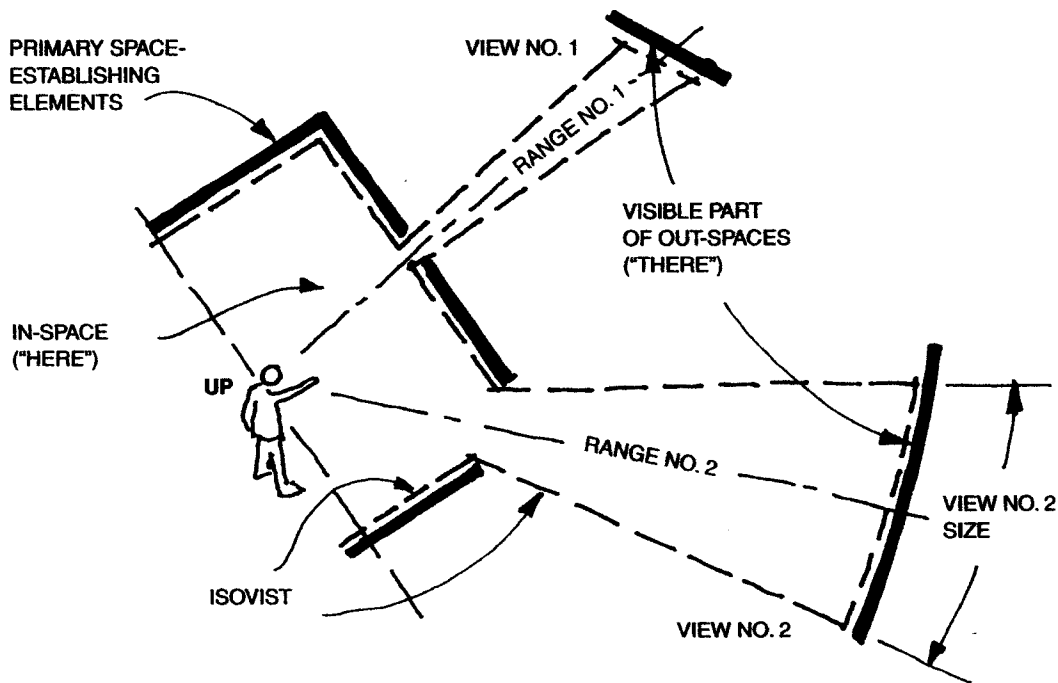
We are always in some space. But we are not always in all spaces. It is important to distinguish between those spaces we occupy at a given moment and those we do not at that same moment. To do this, let us assume a 180° fish-eye photograph (of the existing occupied scene) or a hemispherical projection (of a proposed occupied scene) whose optical axis is aligned with our instantaneous body heading. This will represent the "forward isovist," or everything that can be seen in the forward nominal visual field from a given point at a given moment.

Our criterion for space occupancy is a perceptual one. The UP is said to occupy a space at a given moment when and only when the elements that establish that space are visible (in whole or in part) across the *entire* (180°) nominal visual field ($\theta = \phi = 0^\circ$). The space that the UP occupies at and only at the time that this condition holds is called an *in-space* ("here"). For example, if the UP were in an unobstructed, completely enclosed volume, such as a windowless empty room, that space would be an in-space.

Views and Out-Spaces

If, through an opening in this room, the UP has a glimpse of a street or a garden, we term this relationship a *view*, and we do not say that the UP is also in the street or garden. These street or garden spaces are called *out-spaces* ("there"), defined as those spaces where, at a given moment, the UP has less than a 180° view of the elements that establish those spaces and, therefore, does not occupy.

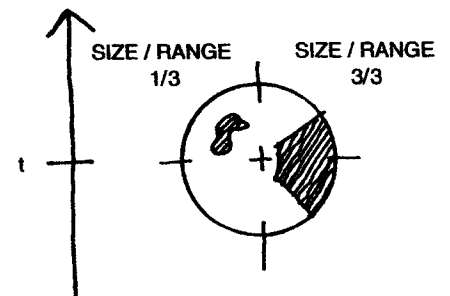
Views are thus mediators between in-spaces and out-spaces, between here and there. Let us now consider their several attributes. View *size* is defined as the view's subtended angular extent in the UP's nominal visual field, and a size code may be formulated as in the appended table. A second attribute is view *number*, since several views into the same or different out-spaces are possible. A third attribute is the *position* of the view in the UP's nominal visual field, such as "upper left," "in front," or "downward." Next comes view *shape*, or the outline form of the view "window." Finally, there is view *range*, or the viewing distance from the UP to the furthestmost SEE of the given out-space, scaled in the previously described distance zones. All these attributes are illustrated in the accompanying diagram.



View code	View description	Included angle, degrees
1	Glimpse	10
2	Sight	20
3	Outlook	45
4	Prospect	90
5	Panorama	180
—	In-space	180 plus

Note that beyond view code number 5 the subtended angle is over 180°, and "view" becomes "in-space."

View attributes may be notated in the schematic hemispherical projection (HP) as shown in the adjacent figure. Along a vertical time line drawn parallel to the path notation a conveniently sized circle is drawn at each view event: that is, when a view appears, disappears, or when any view attribute changes. This circle represents the HP of the nominal visual field. On this the number, position, and shape of the views at that instant are schematically diagrammed and supplemented with coded annotations of the view sizes and ranges. The time sequence of view-event notations then constitutes the *view channel* and is a component of the EN score.

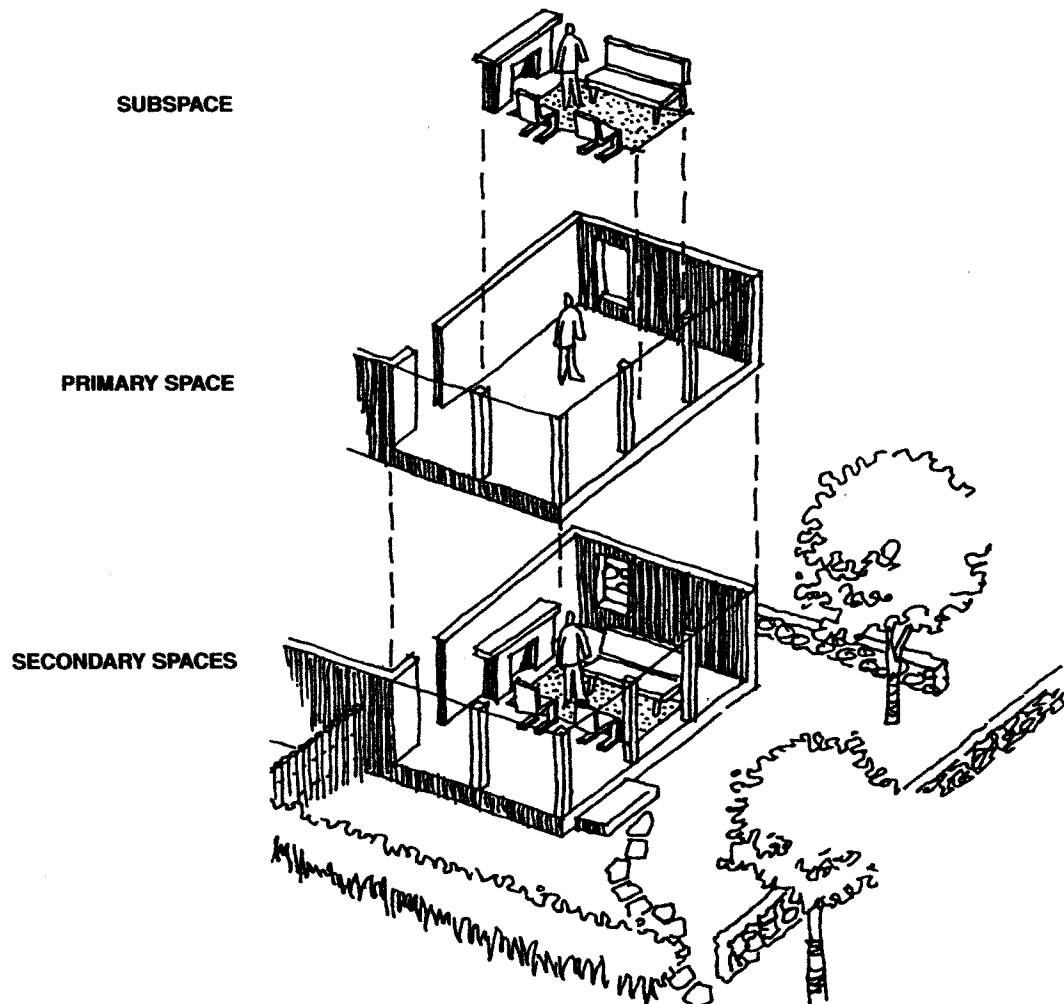


Note Philip Johnson's comments on the simultaneous in-spaces in his "glass box" house, in which all the exterior walls are floor-to-ceiling glass: "This house is a Chinese box in a box in a box. It starts with the coffee table. That is the first unit, and that has never changed. A carefully designed living room that is outlined by the edge of the white rug. The white rug is a raft. The living room is the next box, and the living room sits in a bigger living room, which is outlined, interestingly enough, by the Poussin, the cupboards, the chimney. And then you jump to the kitchen, the sculpture, and the plant. That's the next envelope. That envelope sits in the Glass House. The Glass House sits on the lawn, which is stopped by the lawn grass and by the parking space. But this grass carpet again is another microcosm, which is held by the edges of the woods, which are, of course, the wall and the woods and the woods and the woods. So it's a set of enclosed things within things" (in J. W. Cook and H. Klotz, *Conversations with Architects* [New York: Praeger, 1973]).

Simultaneous In-Spaces

It is also common experience to occupy several in-spaces simultaneously. We are always in some space and quite often we are in more than one space at the same time. Thus we may be in a given seat, in a particular row, in one of the balconies of a theater; or we may be in a given seat of a bus, on a causeway crossing a lake in a valley. In the first case we are in four distinct spaces simultaneously, and in the second case five, each nested one within another. In addition, it will be apparent that we can change our position from one to another of the smaller in-spaces while remaining within the larger spaces. Thus we may change from one seat to another in the above examples, move from aisle to aisle in a supermarket, move from one seating group to another in a hotel lobby, or move from a gazebo to a terrace in a garden.

It is necessary to identify and distinguish between such simultaneous in-spaces. To do this let us consider the example shown in the figure. In this case the UP is first of all in a space established by the rug and the furniture; then in a space established by the floor, walls, and ceiling; and finally in a space established by the trees, hedges, and stone walls. Note that in each case the establishing elements of these three spaces fulfill the instantaneous 180° requirement for in-space occupancy, and thus they are simultaneous in-spaces.



The smallest space most explicitly established (as will be described subsequently) is called the *primary space*. Smaller, less explicit in-spaces are called *subspaces*, and in-spaces larger than the primary space are called *secondary spaces*, *tertiary spaces*, and so on. Thus, in the present example, the in-space established by the rug and furniture is a subspace; the room, by virtue of its greater explicitness, becomes the primary space, and the garden becomes a secondary space.

There may of course be more than two subspaces in a given primary space, and in moving about in a primary space the UP will pass in and out of these subspaces. In moving out of a primary space, however, a secondary space or an out-space will become the primary space. At no time are the UPs not in some space, and if at any time they are in more than one, one of them will be primary.

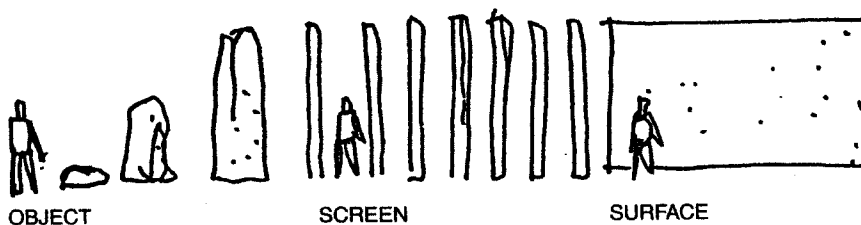
To facilitate the notation of a sequence of simultaneous in-spaces, as encountered along a given path, separate vertical time lines between the path channel and the view channel are used, identified from left to right as the subspace, primary-space, secondary-space (etc., as required) channels, respectively. At a space event in any space category, a horizontal line is drawn intersecting the appropriate vertical space channel at the proper moment with reference to the time scale of the path channel. This intersection is the center of the instantaneous space notation, as described later.

Space-Establishing Elements

We return now to a more detailed consideration of the attributes of the light-modulating environmental surfaces themselves. An in-space is "established" by the perceived relationships of these elements, and as described in section E of chapter 3, we may classify them in three basic types: *objects*, *surfaces*, and *screens*. Objects may be thought of as two- or three-dimensional forms existing as separate, discrete visual entities in a larger space than the one they help establish. (In the context of the larger space, the object does not function as a space-establishing element but as a "furnishing.") Surfaces are two-dimensional forms limited in spatial effect to the space they help establish (although they may be part of a larger object when seen in a different context). Screens, as perforated surfaces or closely spaced objects, obviously are an intermediate type between the other two as limiting conditions. These three elements then are the generic agents which perceptually delimit a portion of the Great Void of space and which occur, as the figure suggests, as both natural and built forms. For convenience in reference we shall refer to these space-establishing elements as SEEs.

The author wishes to acknowledge his indebtedness to Erno Goldfinger, whose writings inspired many of these formulations. See Erno Goldfinger, "The Sensation of Space," "Urbanism and Social Order," and "The Elements of Enclosed Space," in the *Architectural Review*, Nov. 1941, Dec. 1941, and Jan. 1942, respectively.

See also Young Chul Kim, "Space, Place and Home" (Ph.D. diss., University of Edinburgh, 1985), and Young Chul Kim and Arne Branzell, *Visualizing the Invisible Fields of Perceptual Forces around and between Objects* (Gothenburg, Sweden: Chalmers University of Technology, 1995), for further comments on positivistic phenomenological space.



To determine if a particular surface, screen, or object is in fact an element contributing to the establishment of a particular space, we may employ the test suggested by Hall: hold everything else constant, and vary the element in question (by removing it or changing its type). If this changes the nature of the space, the element is then in fact a SEE.

In terms of the general communication model of the anthropologist Edward T. Hall, the SEE is the "isolate" or elementary building block of, in this case, space. In Hall's terminology, space becomes the "set," and sequences of spaces are "patterns." Hall comments on the isolates as follows: "It is quite clear that since they are, by definition, abstractions, isolates are difficult to describe. The concept of the isolate or the building block, however, seems to be an integral part of human communication on every level. Moreover, isolates are something man is constantly trying to discover and analyze whether he does it consciously or not. The term isolate is also one which is used for convenience to denote the type of constituent event which goes to make up other events and is as much a designation of an analytic level as anything else. Despite their tendency to merge with one another, isolates and sets are firmly different in a good many respects. Isolates are limited in number, whereas sets are limited only by the possible patterned combinations

of isolates. They are bound in a system and become sets only when they are taken out of that system. Sets, on the other hand, can be handled and perceived out of their systems but *derive their meaning* from the context in which they occur. Unlike the set which is clearly perceived, the isolate is an abstraction for events that cluster about a norm recognized by the members of a given culture. The actual difference between two isolates that are close to each other in the world of measurements may be less than the range of variation within the norm of each; it is the *pattern* in which they occur that enables man to distinguish between them . . .

"The procedure for testing whether any given element in a grouping is an isolate is to hold everything constant and vary the element at will. If this changes the meaning of the grouping then the element is an isolate . . . A variant of this test is to note the one thing that keeps changing when everything else under observation seems to be

constant. If this variation entails a change of meaning then the variable is apt to be an isolate.

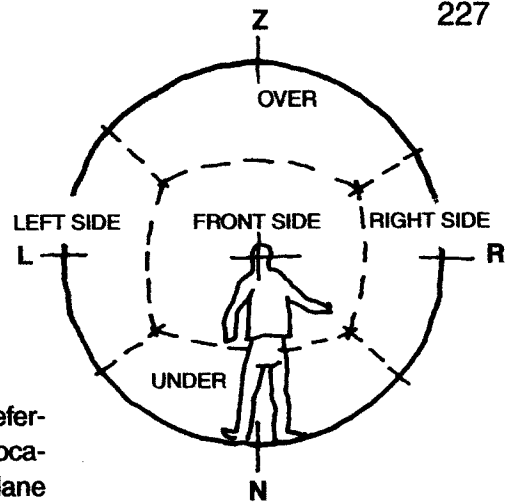
"Up to now the isolate has been described primarily as a constituent of the set. It is also one of the key elements in a pattern. Moreover, it can now be demonstrated that the basic work done on isolates which once seemed so trivial has been of crucial value in analyzing patterns. The isolate provides the transition from the set to the pattern *and is the principal means of differentiating between patterns*. This isolate, so hard to get at and to define, is now discovered to be the key to a great deal of the analysis of communication because it functions on three levels in three different ways: on the set level as a component part (c-a-k-e = cake); on the isolate level as a set (*each sound* is built up of parts which the phonetician analyzes); on the pattern level as a differentiator of patterns." See Edward T. Hall, *The Silent Language* (Garden City, N.Y.: Doubleday, 1959).

The SEE attributes of color and texture are reserved for discussion in connection with the place-qualification of space in the next section. SEEs are here, at this point, to be thought of as "undecorated," neutral stage "flats"; visually delimiting a physical quantity of generic space but not completely qualifying its character as place.

Having thus identified the SEEs as to type, we now consider their other first-order visual attributes: position, number, size, shape, and direction. In addition we will discuss the higher-order characteristics of screen solidity and the types of connections between SEEs. These attributes are described with reference to their appearance in the instantaneous nominal visual field as represented in the hemispherical projection, at a given point in time and space and with a given body heading ($\theta = \phi = 0^\circ$ unless otherwise noted).

note: HP = hemispherical projection

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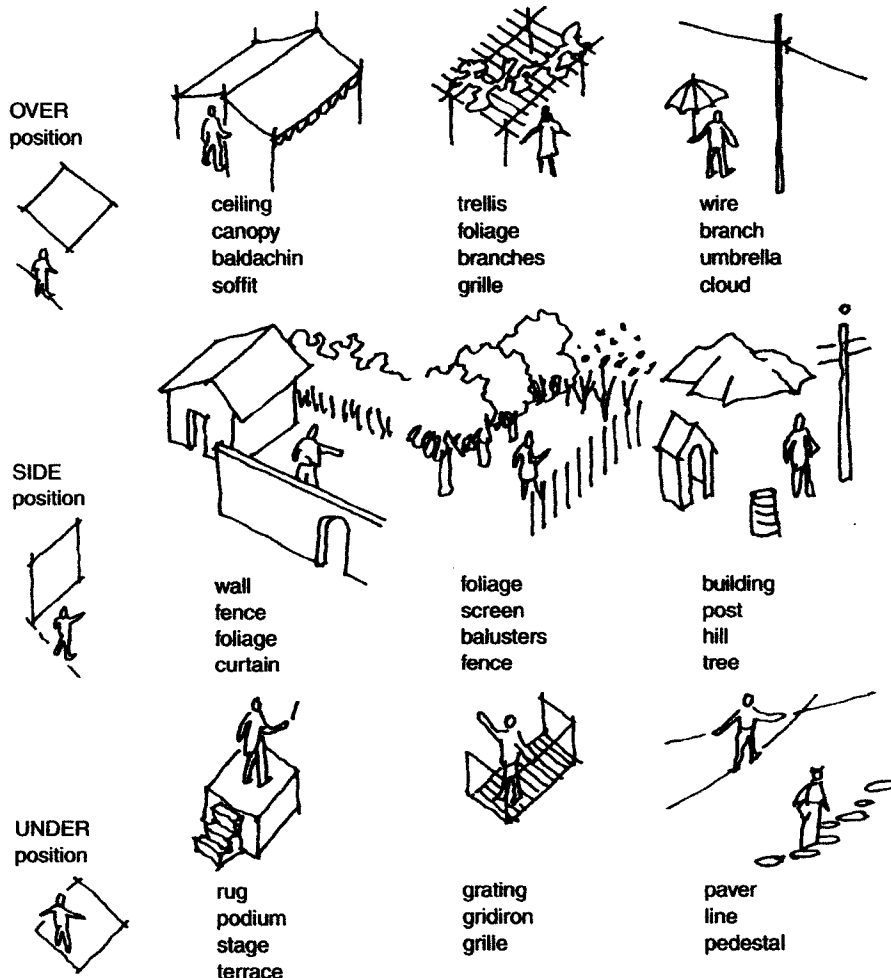
As indicated in the figure, the instantaneous *position* of a SEE with reference to the UP can be described in terms of over, under, and side locations. Thus with reference to the HP, SEEs generally in a horizontal plane at the top of a space (above the LR line, which represents the horizon and UP eye height) are said to be in the over position. Similarly, chiefly horizontal planes at the bottom of the space are in the under position. SEEs chiefly in a vertical plane are said to be in the side position and are further qualified into the left-, front-, or right-side position, with the vertical medial plane (represented by ZN) dividing left from right.

SURFACES

SCREENS

OBJECTS

Common SEEs of all types in all positions

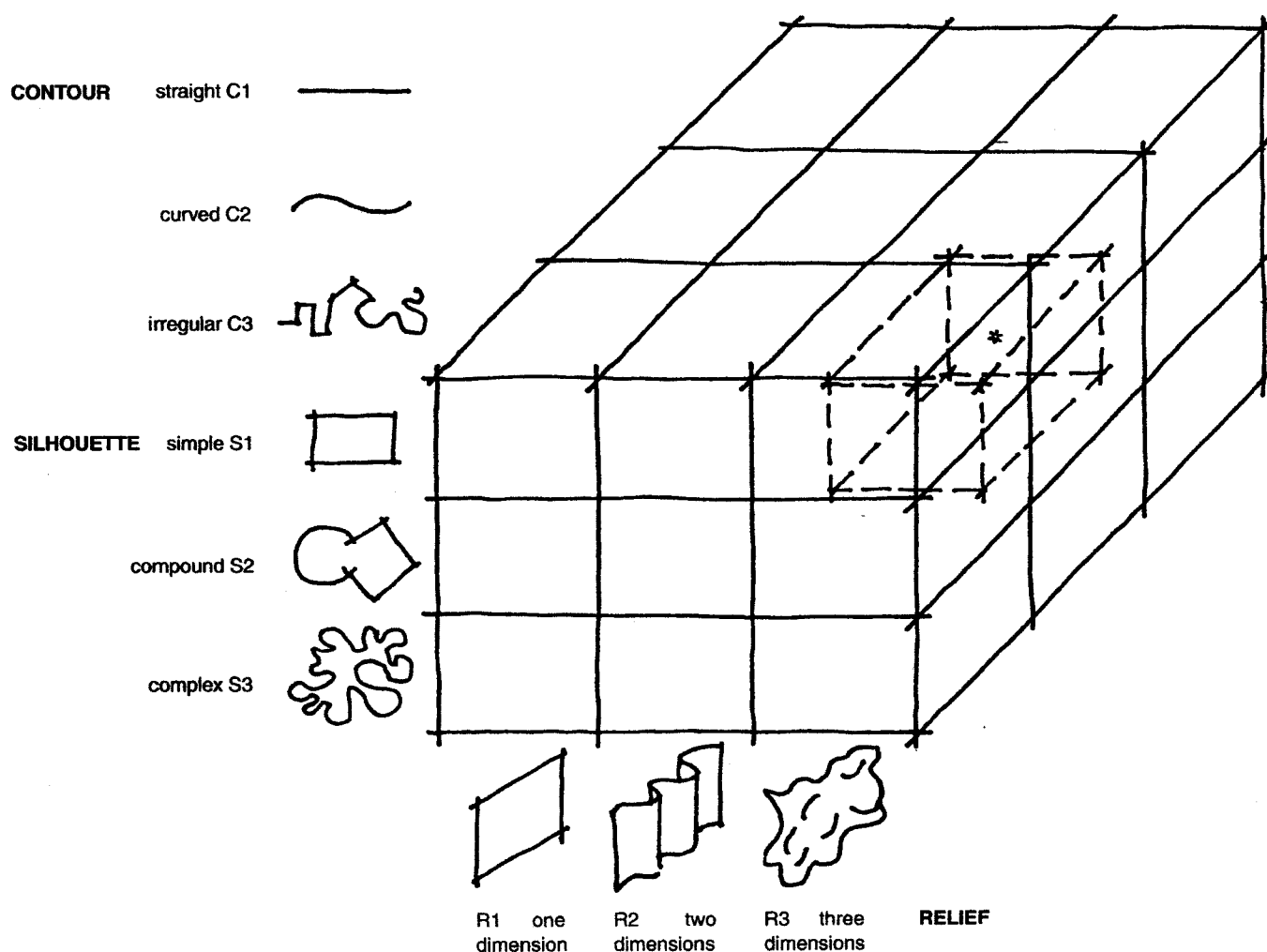


Rose has developed a number of statistical indexes to characterize these attributes. See Stuart W. Rose, "A Method of Describing the Physical Quality of an Urban Street Space" (M. Arch. thesis, Dept. of Architecture, University of Washington, 1965).

The attribute of SEE *number* is self-evident.

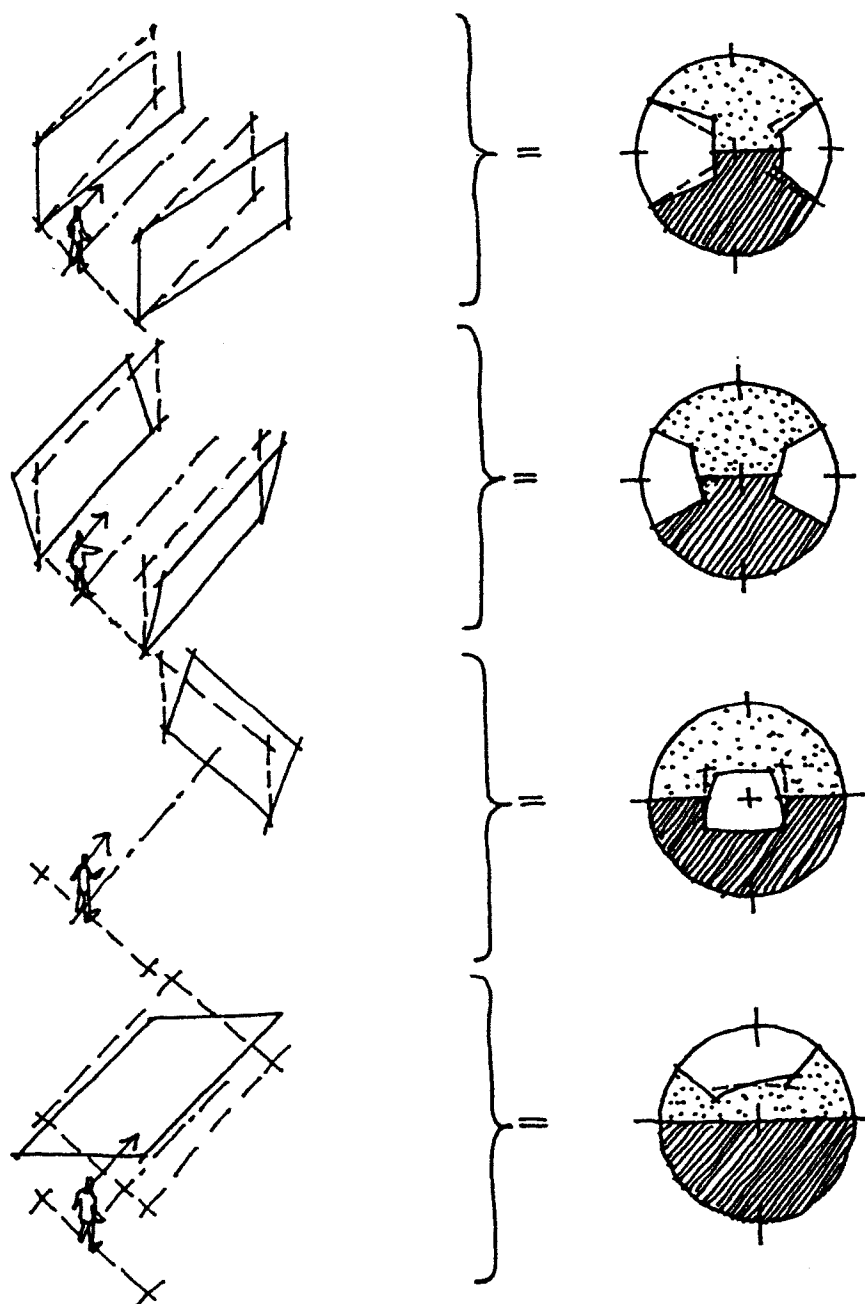
The *size* of a SEE will be indicated as a function of the overall size of the space it helps establish; as specified in connection with space-size notation, below.

The *shape* of a SEE refers to (1) the linear outline contour (silhouette or profile) of the edges of the form, which may vary from the straight to the curved and from the smooth to the irregular; (2) the shape of the two-dimensional form bounded by these contours, ranging from a simple geometric figure such as a rectangle to shapes of greater complexity; and (3) the three-dimensional surface relief, referring to its departure from a smooth idealized geometric surface as a limiting condition. The adjacent figure illustrates the notation of these conditions.



Each of these $3 \times 3 \times 3 = 27$ "cells" represents a unique combination of contour, silhouette, and relief and can be denoted by the coding, such as C1/S3/R2 (as shown at *, above). When no coding is given, assume C1/S1/R1.

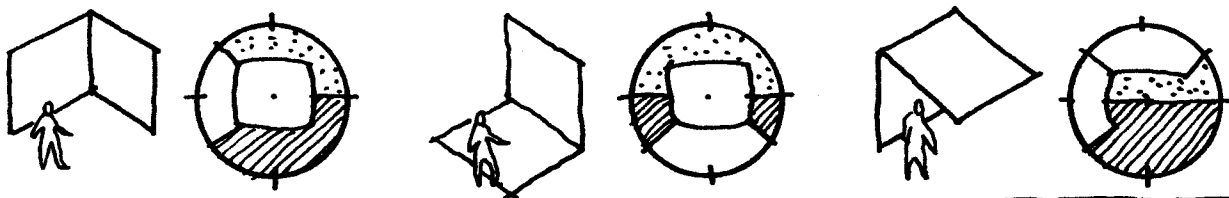
The "normal," default *direction* of a SEE is assumed to be in either a horizontal or a vertical plane, which is either perpendicular or parallel to the body-heading axis. SEEs can of course occur in planes inclined at other directions than these, and these slopes and tilts can be indicated in the HP. Any line in space parallel to the body-heading axis will project along a radius in the HP. Thus a nonradial alignment of the SEE's edges may indicate the divergence or convergence of a plane with respect to the body-heading axis. A nonhorizontal or vertical direction of the further edges of a plane will also indicate a nonorthogonal direction. Tilted and inclined directions in rectangular planes in the front side position are generally indicated by a non-symmetrical condition and/or a lack of conformity to the HP curved grid lines.



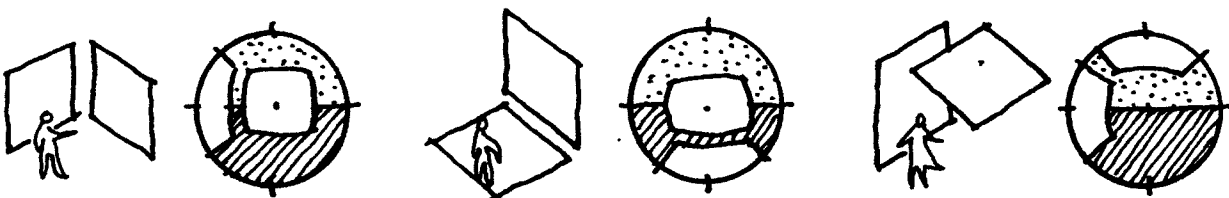
The *solidity* of a screen SEE refers to the ratio of the opaque area of the screen to its overall area as a whole, as projected in the instantaneous HP. High values of this ratio indicate that the screen approaches a surface in solidarity, whereas low values denote a screen condition very like a few widely spaced objects. It should be noted that depending on the nature of the screen, this ratio may change as the UP changes position relative to the screen.

As for the *connections* between SEEs in different positions, in the case of the two planar types of SEEs—surfaces and screens—we note that they may be associated in several different ways. As illustrated in the adjacent figure, there are four basic categories of relationship: joined, separated, overlapped (or overlapping), and continuous.

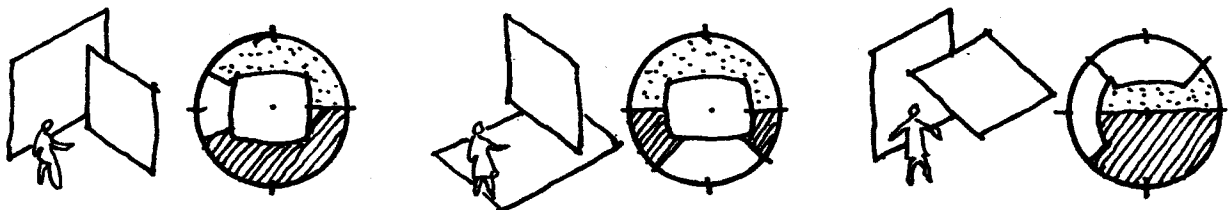
JOINED



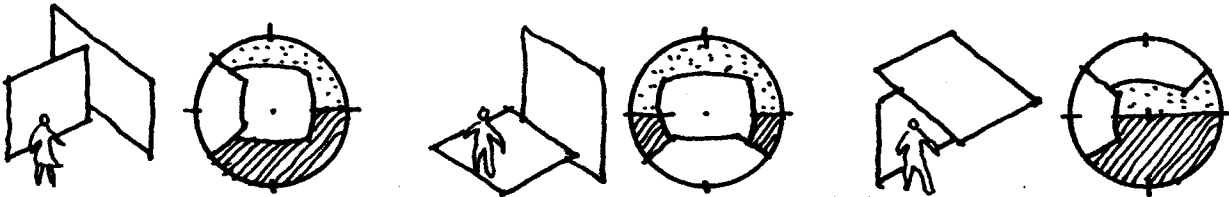
SEPARATED



OVERLAPPED



OVERLAPPING



CONTINUOUS

