

Chapter 2

Environment/Behavior Basics

You felt it. The hair stood up on the back of your neck. You knew you had to go into that dark parking garage to retrieve your vehicle. While walking through, you heard a noise. You froze—listening. No more noises. You hurried to get into the vehicle and lock the door, breathing a sigh of relief. You started the engine, still shaking.

The behavioral response depicted in this scenario is known as the "fight or flight" response¹. This behavior is a result of "instinctual drift", or the "tendency for all organisms, when under pressure, to resort to and exhibit their natural tendencies. It is part of the genetic programming"² (p. 42). Three important instinctual drift tendencies (IDT) relating to the built environment as described by psychologists' or social anthropologists' research will be reviewed here. For more than thirty years, researchers have been studying the relationship between a human's behavior and his or her physical environment^{1,3,4,5,6,7,8}. Designers and planners must understand these classic environment behavior tenets and use them to support the users' well being. We have the ability to alleviate some stress by paying attention to this body of knowledge and skillfully applying its principles. The following IDTs were developed by the

pioneers of this research area and are considered constant: territorial, situational, and personal space behavior.

Territorial Behavior

Look around you. When you sat down at this table, what did you do with your personal belongings? Is your coat on the chair beside you, your bag on the chair opposite? If so, you are doing what comes naturally—marking your territory (even if the mark is only temporary).

Human territorial behavior is a complex phenomenon. Altman^{1,3} as a pioneer in the field of environment/behavioral research, worked to explain this condition. He defined four basic concepts for human territorial issues: behavioral forms, situational factors, antecedent factors, and orgasmic and social needs.

Behavioral forms refer to the need to use environmental props to mark or defend a territory. For example, a fence marks one's property line; a wall around a person's office marks that individual's 'home base'. If these "props" are crossed without invitation, defensive or aggressive behavior can result. These types of behaviors may consist of physical, verbal, and nonverbal clues^{9,1}. However, territoriality is not just about place. People display possessiveness toward objects, individual relationships, and ideas^{3,9}. The rights to intellectual property and patents are examples.

Situational factors explain that as circumstances change,

so does the amount of space required to conduct an activity. For example, a faculty member presenting material to a group of 600 students needs different spatial attributes than when he or she presents the same material to a group of 50. That illustration just makes for common sense, but some situations are more complex.

The antecedent factor argues that relationships between certain individuals or particular groups of people are influential in stimulating behavior¹. This type is illustrated when leaders appeal to a known value in their constituents and that appeal stimulates a riotous response (e.g., a declaration of war and the mobilization of armed forces to carry out the orders).

Lastly, Altman¹ argues that humans have basic survival needs (e.g., food, shelter, procreation) and a compulsion to associate with like social groups (e.g., tribes, gangs, clubs).

These four behaviors provide a basis for understanding territorial phenomenon. In a corporate setting, these needs are addressed through communities of practice, while in an educational setting it may be more discipline specific. The social anthropologist E. T. Hall⁴ added to Altman's situational attributes, revealing details on a more micro level.

Situational Behavior

E.T. Hall's⁴ notable research studied situational behavior, arguing that by understanding situational needs, humans may better understand how to build environments supporting those needs.¹⁰

Situational behavior refers to circumstances when a personal or social distance mechanism is triggered. Personal distance refers to an "invisible bubble"⁵ surrounding each person. Hall characterized these bubbles as ever-increasing concentric circles moving away from the person, and named his discovery "Proxemic Zones"⁴. Each of these zones has both a close and far phase. The four zones are intimate, personal, social, and public. Within each zone, certain behaviors are acceptable and cause no undo stress. The social parameter provides a measurable distance that a member of the social group is allowed to stray away from the group without causing alarm or concern for safety. For broad attributes of these zones, see Table 1.

The row-by-column seating arrangements found in most traditional classrooms, lecture halls, churches, and theaters are examples of how we design settings that violate the intimate Proxemic zone. No one wants to sit next to a stranger without a protective barrier. It

is stressful to keep up a protective stance for long periods of time. Even an arm on a chair is of some help, but what do we do in a movie theater when we have to share that arm? We are uncomfortable. Yet because as humans we are so incredibly adaptive, we tolerate situations that other animal types would not. These settings appear to be designed for economic gain rather than personal wellness.

Altman writes, "By moving closer to or away from other people, we change their accessibility to us. By moving away, we signal a desire for more privacy and use personal space as a mechanism to shut off certain channels of communication. By moving closer to someone, we permit greater access to our self and open up an increasing richness of communication"³ (p. 61). Each individual controls the regulation of other persons into any one of the zones. When another person violates the prescribed behavior, a flight or fight signal¹ is triggered (i.e., IDT response)². Thus, our personal space and how we perceive it is critical. The next researcher provides a more in-depth look at the elements of personal space and some contributing factors to the perceived success, or lack thereof, of those spaces.

Table 1: Situational Behavior—Proxemic Zone Attributes

Attribute	Proxemic Zones *			
	Intimate	Personal	Social	Public
Distance **	0 inches–18 inches	18 inches–48 inches	48 inches–12 feet	12 feet–25 feet plus
Sensory Information	<ul style="list-style-type: none"> • Vision is blurred • Smell and sense of touch are fully engaged • Body heat is experienced • All senses are heightened 	<ul style="list-style-type: none"> • Normal vision • Smell is strong and touching is engaged • Body heat is experienced 	<ul style="list-style-type: none"> • Reduction of: sense of smell, ability to touch, visual details • Voices get louder • No body heat sensed 	<ul style="list-style-type: none"> • Facial expressions and gestures are exaggerated • Considered a formal distance
Accepted Behavior	<ul style="list-style-type: none"> • Physical contact • Kissing, hugging, nursing, or procreation 	<ul style="list-style-type: none"> • Grasping to just touching • Holding hands, walking arm-in-arm 	<ul style="list-style-type: none"> • No physical contact • Impersonal business occurs • Interaction among casual acquaintances • Space used to screen others out 	<ul style="list-style-type: none"> • No physical contact • Formal behavior

* Adapted from: Hall, E.T. *The Hidden Dimension*. NY: Doubleday Press, 1966.

** Distances indicate both the close and far phases for each zone

Personal Space Behavior

Robert Sommer⁵ describes personal space as "an area with invisible boundaries surrounding a person's body into which intruders may not come" (p. 26). He further suggests that personal space moves with a person as his or her own "portable territory" (p. 27). The maintenance and protection of personal space is accomplished through the use of a combination of gestures, postures, and environmental props⁹. An

Personal space is an area with invisible boundaries surrounding a person's physical being into which intruders may not come.

example might be the manner in which a lecture hall or theater is designed. The hall is set up to accommodate a formal, public proxemic zone. Distance creates a barrier and often a stage is elevated and lit to emphasize that area. Learners are literally "in the dark," the presenter may maintain some anonymity, and the setting is not conducive to exchange of either verbal or nonverbal signals (see Figure 1). It does not mean the setting design in this example is good or bad, but rather demonstrates how

it supports an underlying behavioral function.

Sommer presented two other situational conditions relating to the impact of personal space on communication factors. Both conditions address how humans adapt to situations relative to their ability to use their foveal or peripheral vision. He defined foveal vision as "an area of the retina containing only cones and affording acute vision"¹¹ (p. 399) or as the line of sight providing clarity of an object, which may be thought of as frontal vision. Peripheral vision, he suggested, is the view from the very edges of the eyes when one is looking forward¹¹. This view is blurred and items are not clearly focused. Sommer called these visual conditions supporting visual applications "Sociofugal" and "Sociopetal". In a Sociofugal (items in a single line, or linear) scenario, the foveal, or direct line of sight, viewing range is protected, or channeled. A crowded, row-by-column classroom seating arrangement where direct eye contact is primarily maintained between learners and the faculty member in the front of the room illustrates this point. Learner-to-learner eye contact is not easily managed. Chairs arranged in rows only allow a learner sitting behind another to see the back of someone's head or the presenter. Only by adjusting body position can a learner have direct eye contact with someone in another row. However,

moving draws attention to that learner. Other examples of this situation include side-by-side airport seating and doctor's office side-by-side seating, or rectangular boardroom settings (see Figures 2A, 2B). In each case, the intimate proxemic zone is violated. Yet, due to the fact that direct eye contact is channeled and there is often a small physical barrier (i.e., arms and backs on chairs), people accept or tolerate the situation for short periods of time, though not necessarily without stress. We have all observed situations where one stranger positions him- or herself so as not to sit next to another unless there is no other choice (e.g., overcrowded conditions)¹⁰.

In the Sociopetal condition outlined by Sommer⁵, direct eye contact is maximized. Eye contact is deemed important and necessary in order to maintain participatory engagement. The metaphor for Sociopetal arrangement is radial balance exemplified by a flower (i.e., petals around a center, or radial). Some examples of this type of behavioral setting may include: (1) teaching in the round, (2) dining settings, and (3) seminar areas. The important underlying principle is to maintain eye contact easily for all participants without much bodily movement. An egalitarian approach is used in this setting for sharing knowledge. When people are seated around a table,

particularly a round one, the intimate zone is usually not violated as chair spacing maintains the personal zone and a comfort level for each individual. See Figure 3.

Figure 1:
Focal Point—Public Proxemic Zone
(Sociofugal Arrangement)

Presenter's Space

- 1/3 of total space is dedicated to one person
- Knowledge is from one source
- Projection is predominantly one way
- Public Zone distance (12 ft+) is maintained

Receiver's Space

- Row by column seating (all in a line)
- Eye contact is at presenter or presentation

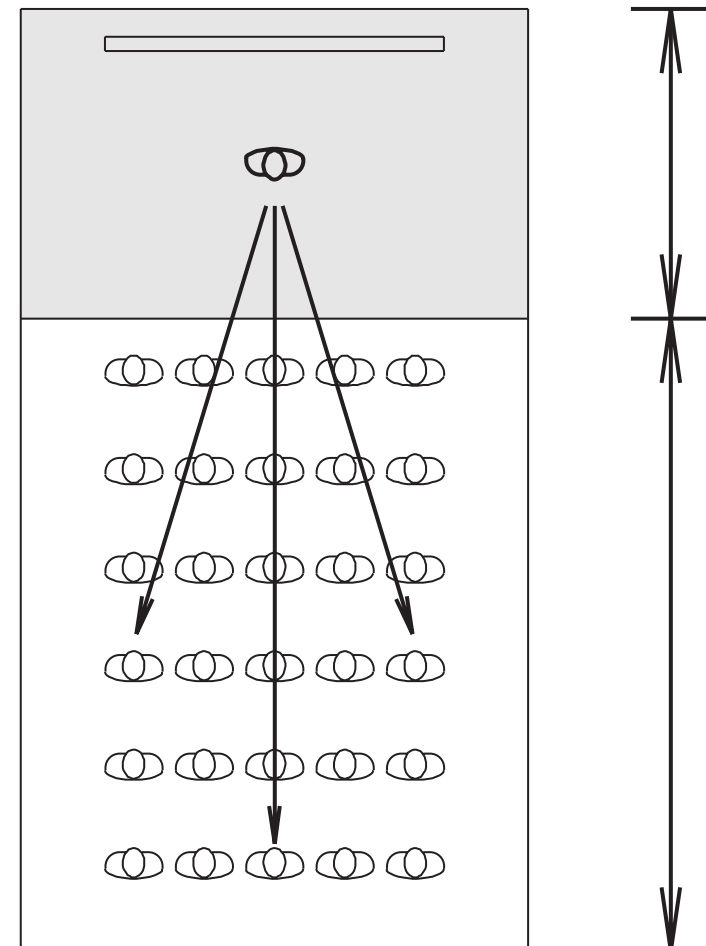


Figure 2A: Sociofugal Arrangements (Linear)

Example: Airport / Doctor's Office Setting



- Interruption of intimate zone (minimal territorial protection)



- Foveal vision minimized (direct eye contact)

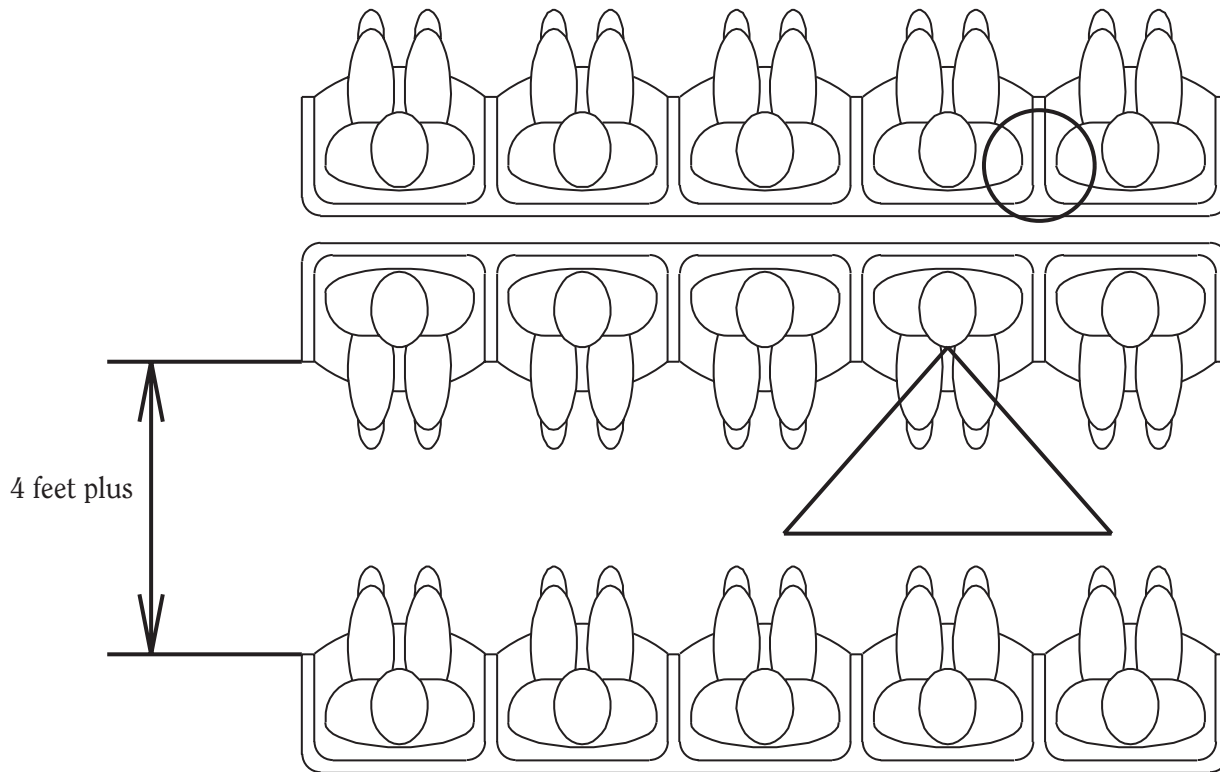


Figure 2B:
Sociofugal Arrangements (Linear)

Example: Boardroom Setting

- • Interruption of intimate zone (minimal territorial protection)
- △ • Foveal (direct eye contact) vision maintained only with those sitting directly across

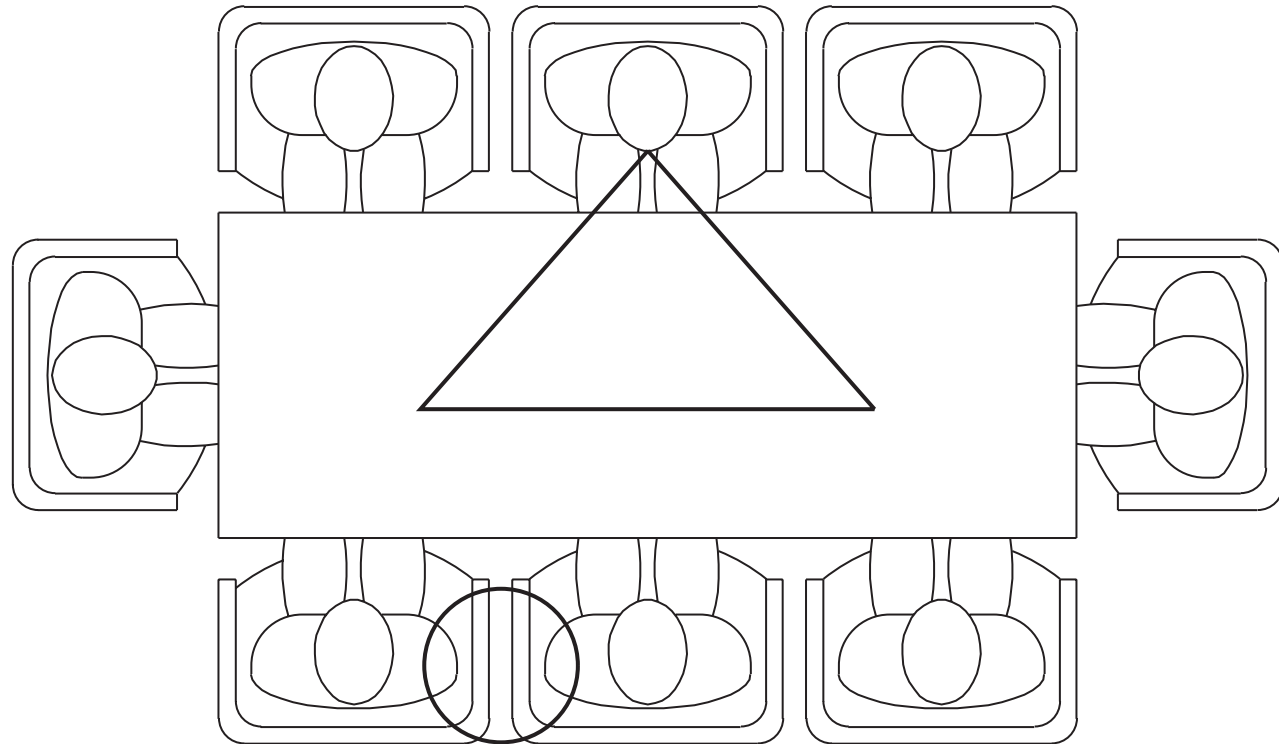


Figure 3:
Sociopetal Arrangement (Radial)

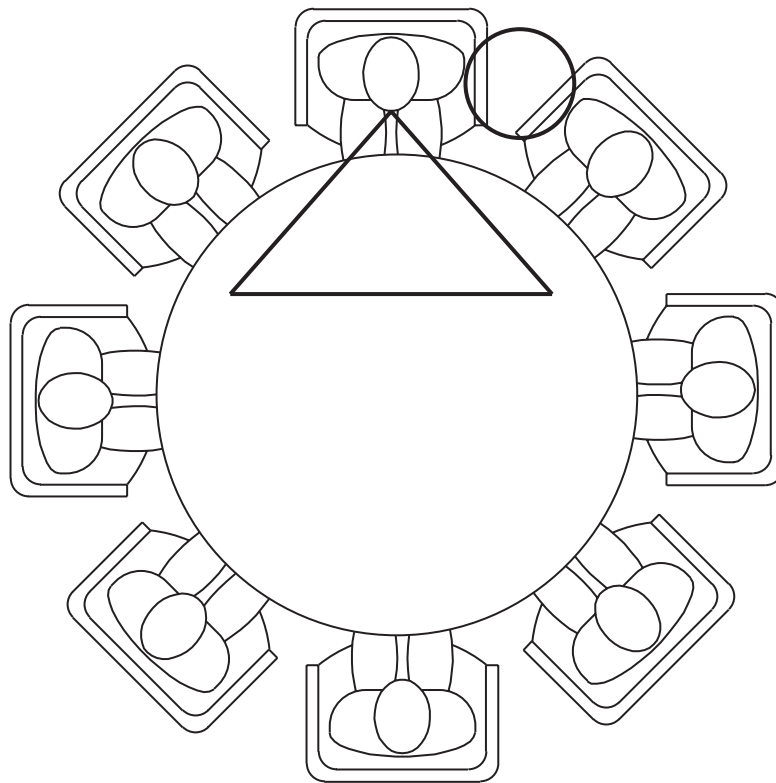
Example: Seminar or Dining Table Setting



- Knowledge is from multiple sources
- Intimate zone intact



- Foveal vision opened up (due to radial arrangement)
- Minimal territorial protection



Recognition of situational behaviors and sociofugal/sociopetal elements provides designers and planners with a better understanding of how solutions may be appropriately applied.







Another important component of the environment/behavior picture should be mentioned. Michelson¹² explains: "Man, as a thinking being, relates to his spatial environment both in his mind and in his actual presence" (p. 30). This suggests a mental and experiential congruence between people and their environment⁹. Further definition^{12,9} is helpful:

- Mental congruence indicates that a person feels that his or her personal characteristics, values, and life styles are accommodated by particular spatial patterns.
- Experiential congruence is defined by how well the environment actually supports the functions, characteristics, and behaviors of people using it.

This idea proposes that people use both congruence indicators when evaluating environment/behavioral fit⁹. Figures 4, 5A, 5B, and 5C summarize the person/environment/behavioral conditions for consideration when developing solutions for the built

environment. In Figure 4, a dashed line around the individual represents the core needs of that person (i.e., the intimate zone as defined by Hall⁴). Protective barriers should surround at least 2/3 of this core (sometimes completely, as in bathroom privacy needs), and no one should have his or her back exposed to the "door." Barriers are depicted as environmental props, or fences, suggested by the solid curved line. A view plane (shown as a triangle) should provide visual access from the individual at the core into the next area, the personal zone. The personal zone is represented by the atmospheric "bubble" or the outer semi-circle with a dashed line. This space provides opportunities for dyadic (one on one) interaction at work, or where friends gather. A partial barrier or movable screen could be used for more privacy (represented by a heavy dashed line at the bottom of the figure). A view into the social zone is also required. This view extends then from the social zone back into the personal. Traffic lanes or team spaces are planned for activities in this outermost area allowing several people to come together in a "common" space, away from the "home base" or core protection zone.

Figure 4:
Individual Proxemic Condition—
Individual's Core Needs

Key: Core Needs	
	Person
	Fence
	View Out
	Zones
	View Planes
	Movable Protection

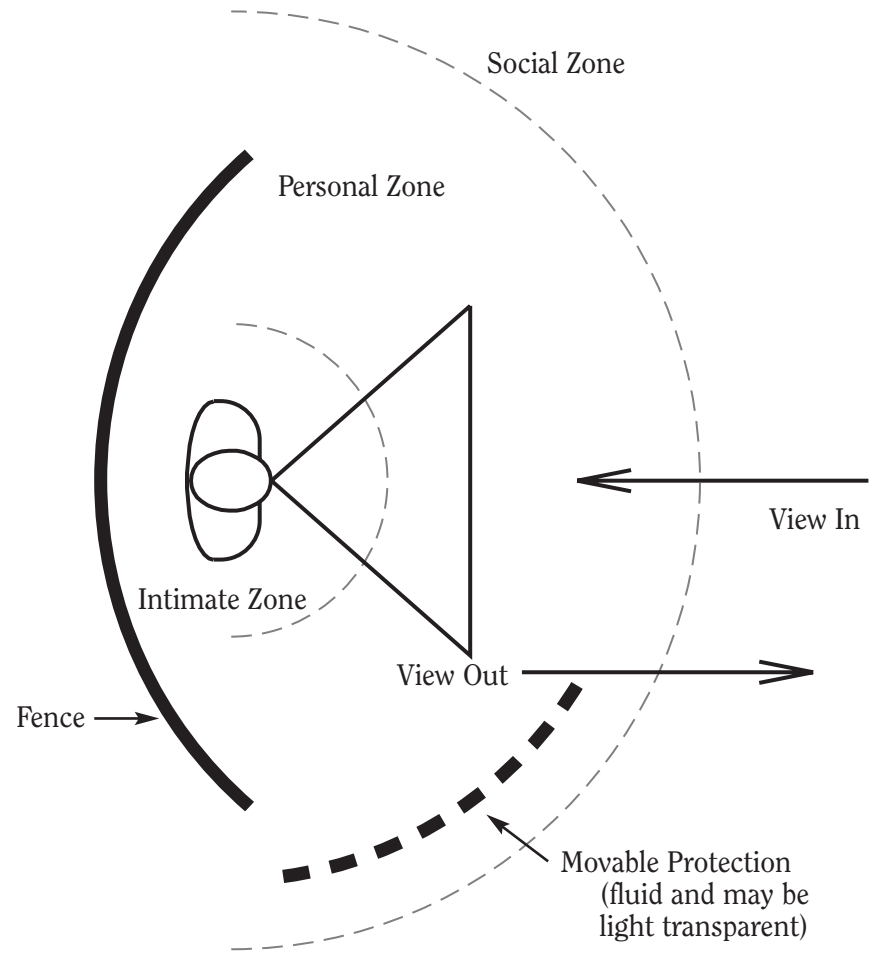








Figure 5A:
Impromptu Team Conditions—
Multiple Core Arrangements

- Team Members

Key: Core Needs	
	Person
	Fence
	View Out
	Zones
	View Planes
	Movable Protection

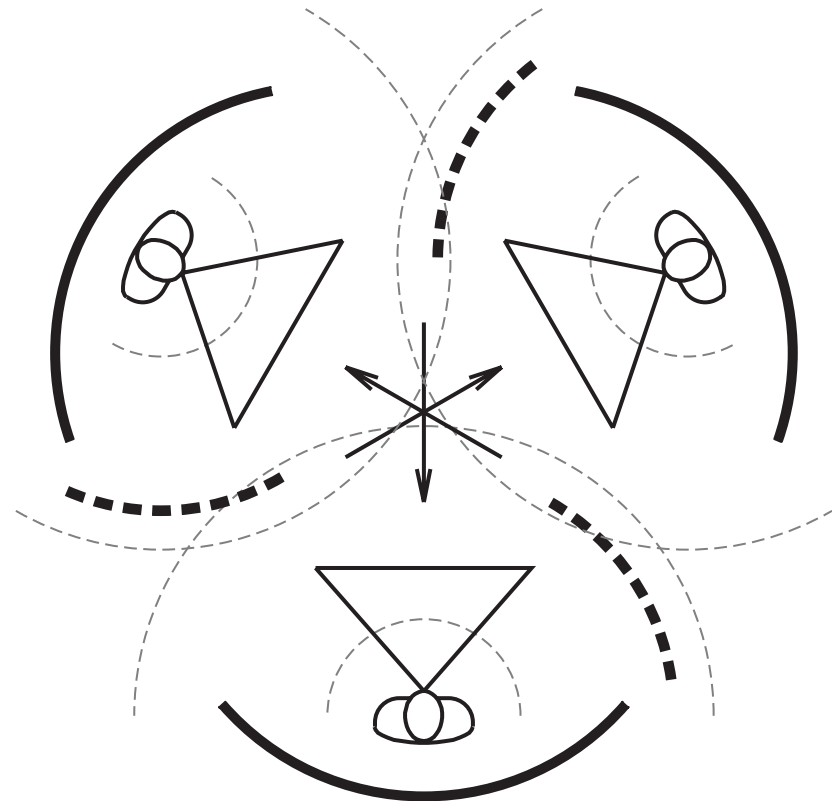






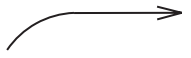


Figure 5B:
Project Team Conditions—
Multiple Core Arrangements

- Project Members
 (more room is required
 for artifacts and traffic flow)
 (area should be protected from public)

Key: Core Needs	
	Person
	Fence
	View Out
	Zones
	View Planes
	Movable Protection
	Path Through

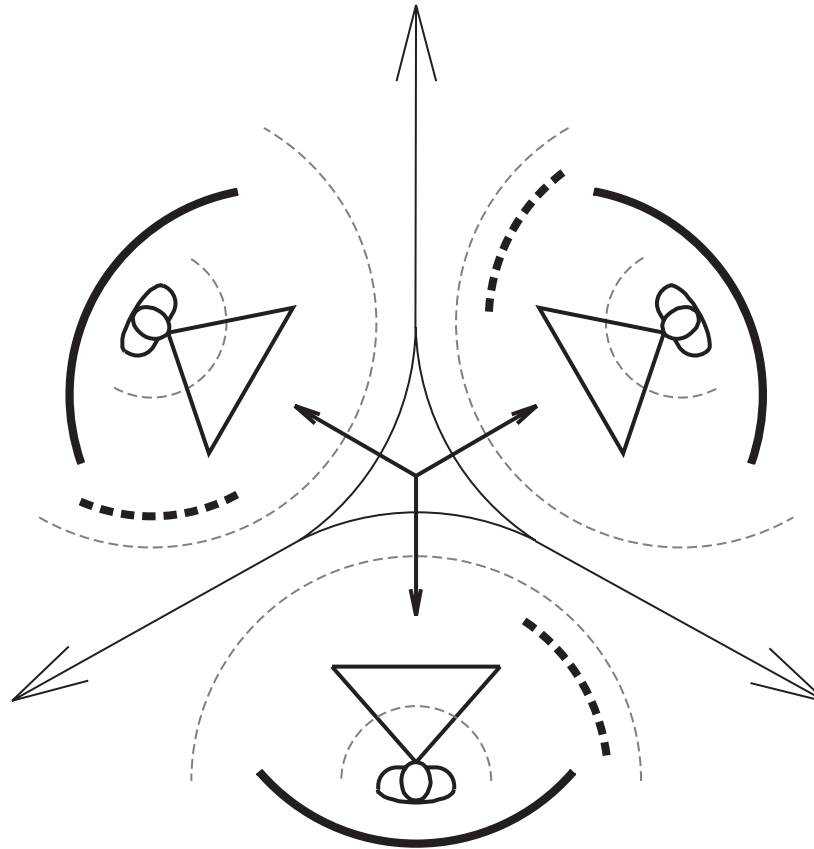






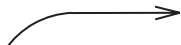
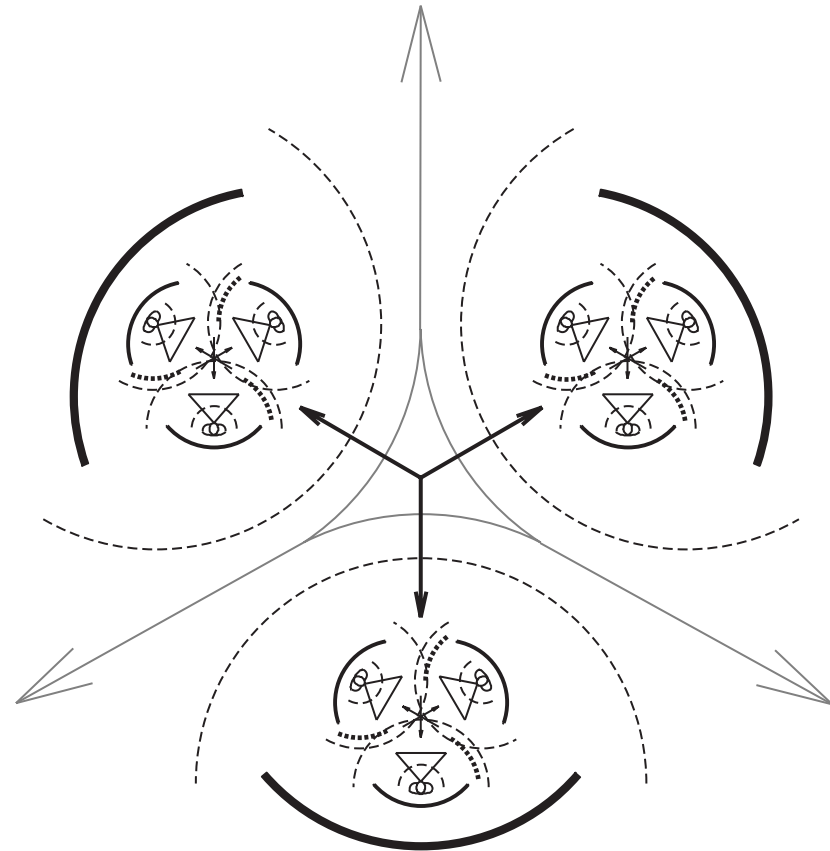


Figure 5C:
Individual Conditions—
Multiple Core Arrangements

- Groups of Separate Teams
 (become the new core)

Key: Core Needs	
	Person
	Fence
	View Out
	Zones
	View Planes
	Movable Protection
	Path Through



Figures 5A and 5B show multiple individual conditions for impromptu and project teams. At a more macro level, the symbol for an individual can be substituted for a group (as in Figure 5C). The group acts as an individual in this arrangement.

This brief explanation of environment/behavior research may help designers and planners recognize IDTs² and situational behavior patterns^{1,3,4,5}, and plan accordingly. The message is clear. People react predictably to environmental conditions. English and Remmers¹³ summarize this phenomenon.

The obvious conclusion that people, as creatures who think and behave in instinctively territorial terms, and have hardly changed with regard to their fundamental needs and patterns of behavior for thousands of years, is underpinned by anthropological theses; they assume that it takes 600 generations until learned behavior becomes hereditary, instinctive behavior.(p. 5)

A summary of environment/behavioral research crystallizes several key points. First, that the built environment impacts behavior. Second, behavioral responses are primal and thus, humans' basic

situational responses are deemed predictable. Finally, evidence suggests that proper planning can support intended behavioral outcomes.

Therefore, designers and planners should become familiar with and understand this research discipline's contribution in order to plan spaces supporting basic human requirements both at the macro and micro levels. This context provides an understanding of the challenges of moving from the models of the Agrarian and Industrial Ages into the Knowledge Age. Initially, it is necessary to explain the remnants inherited from the models of the previous ages.

References

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