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THE EXPERIENCE OF PLACE

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FOR LOIS

1 Simultaneous Perception

Just walking through the vast main concourse of Grand Central Terminal, in New York—something that over half a million people do every working day—almost always triggers in me a spontaneous and quiet change in perception. It alters what I know about my surroundings and about whatever is going on around me, and at the same time modifies my sense of what all these things mean to me. The change—one that is reasonably well known to all of us, or is at least lodged somewhere in our memories—lets me gently refocus my attention and allows a more general awareness of a great many different things at once: sights, sounds, smells, and sensations of touch and balance, as well as thoughts and feelings. When this general kind of awareness occurs, I feel relaxed and alert at the same time. In addition, I notice a sort of unhurried feeling—a feeling that there's time enough to savor all the sights and sounds and other sensations coming in.

Our habitual style of thinking, it is often said, is a stream of consciousness pouring and pushing its way through the present; but this feeling, which I call simultaneous perception, seems calmer, more like a clear, deep, reflective lake. Both the pinpoint focus of ordinary perception, which lets us shut ourselves off from our surroundings, and the broad-band focus of simultaneous perception, which keeps us linked to our surroundings,

are inherited skills built into each of us. People sometimes get so good at blotting out the sights and sounds and smells around them that simultaneous perception, when it resurfaces, can catch them by surprise. But because this ability is always in operation, it's constantly available. And whenever we summon it, it's richly informative. Simultaneous perception helps us experience our surroundings and our reactions to them, and not just our own thoughts and desires.

The main concourse of Grand Central—an enormous room, with fourteen entrances—is only one part of an intricate structure that was opened to the public in February of 1913 and is justly famous as a crossroads, a noble building, an essential part of midtown Manhattan, and an ingenious piece of engineering that can handle large numbers of trains, cars, and people at once. You can buy a ticket and get train information in the concourse—and these days you can also buy a flower or a drink or a meal—but the main purpose of the room is to move people through it. It was designed to handle huge crowds and to impress people with the immensity and the dignity of enclosed public places in a modern city. From the accounts left by its builders, however, it was not designed to provide the experience actually available there today. That experience is one of the unplanned treasures of New York.

The concourse is 470 feet long and 160 feet wide, and it is 150 feet—fifteen stories, perhaps—from the floor to the peak of the vaulted ceiling. The room has arched windows 33 feet wide and 60 feet high, which are deep enough to have corridors running through them—a series of walkways built between the outer glass and the inner glass in each window—and it has constellations painted on the ceiling, with sixty of the stars really glowing, because they are small light bulbs. A balcony 30 feet wide and 20 feet above the floor runs along every wall except the south one. From the west balcony a marble staircase pours down and then divides in two to flow around steps that lead from the

concourse to a lower concourse for suburban trains. The main concourse is bigger than the nave of Notre Dame, and it is sometimes called awe-inspiring or referred to as an American cathedral, but the experience it offers has to do with day-to-day urban living: It's a sort of introductory course (or, for old-timers, a refresher course) in how to join the choreography of New York City.

The experience of the concourse seems to have changed very little in the last seventy-seven years. At least, what I find there now is substantially true to the continuing experience I found there forty-three years ago, when I was six and a newcomer to the city. Two major attention-grabbing additions to this huge room since the late 1940s—a big illuminated clock and stock ticker on the south wall and an oversize illuminated Kodak photograph on the east wall—have recently been removed, and the gigantic windows have been washed. These days, though, there are much sadder sights in the concourse than there used to be: In the mid-1980s, Grand Central became a principal hangout for large numbers of homeless people, as well as for some of those who prey on the homeless.

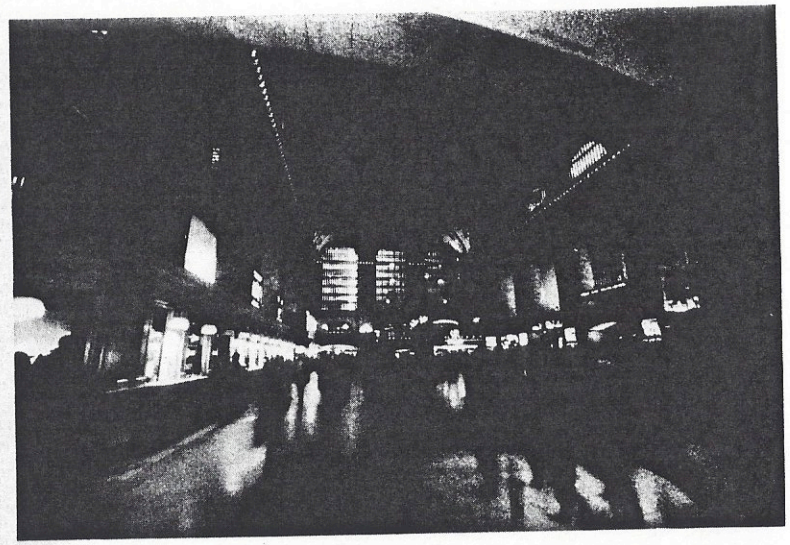
One recent weekday afternoon around three-thirty, I entered the concourse from the east, through one of the two long, nearly straight passageways that lead in from Lexington Avenue. I came out of the East Side IRT subway into the more southerly of the two straightaways and immediately found myself part of a stream of people, four and five abreast, all of them looking straight ahead and moving at a fast New York clip toward the concourse along the right-hand side of a tunnel only twice the width of the stream itself. Toward me along the left-hand side of the corridor—which is well lighted, has a low white ceiling and a beige marble floor, and is lined with convenience stores—came a second stream of people, just as wide, and moving at the same speed and with the same look. Though I could hear my own footsteps, nearby footfalls and normal tones of voice registered

as loud but blurred, indeterminate noises, and although no one was touching me, or even brushing past, I kept feeling that I was about to be bumped into. People sounded closer than they looked, and they seemed closer still, because my eyes and ears couldn't determine whether the people I was looking at were the people making the sounds I could hear.

I felt hurried along. My breathing was shallow and slightly constricted; my neck and shoulders were tight. I could smell cookies and pizza baking in the shops around me, but it seemed difficult to look to either side. I could see maybe twelve feet ahead of me—a view consisting entirely of backs of heads and oncoming faces. There was nothing in any of the faces to suggest that they had just come from a different kind of place. The only alternative to hurrying forward seemed to be to swerve right at random and come to rest in front of a shop.

Then these two streams of people crossed a second pair of streams, running at a right angle to them. The stream I was in entered a space with a slightly higher, cross-vaulted ceiling, and I had a moment to feel alarmed in retrospect, wondering why no one had bumped into anyone else during the crossing. The whole journey so far had taken something like fifteen seconds. Crossing this new space in the next five or six seconds, I was aware of a slight diminution in the noise around me, felt a slight lightening in my shoulders, noticed that the stores on either side were a vitamin shop and a snack bar, and saw in front of me a different light: grayer, clearer, brighter, less intense. I felt that something in me and near me was about to change.

In another step, I was in the concourse. I knew this first not by sight but by body sensation, sounds, the absence of a smell, and breathing. I felt as if some small weight suspended several feet above my head that I had not till then even been aware of, had just shot fifteen stories into the air. I straightened up, my breathing slowed down, and I noticed that the scentless air around me was warm. I was walking at the same fast clip, and



The main concourse in Grand Central Terminal, New York City. *Photograph courtesy of Frank English*

on the same kind of marble floor, but now, and for the rest of the minute it took me to walk the length of the concourse, I could no longer distinguish the sounds of my own footsteps. All the sounds that reached me seemed to have been fused into a single sound. Vast and quiet, it seemed to be evenly distributed throughout the great room. This sound, pleasant in all its parts, regular in all its rhythms, and humorous and good-natured, seemed also to have buttoned me into some small, silent bubble of space. I felt that I wasn't quite walking but was paddling—or somehow propelling—this bubble across the floor. I became aware that my pace had slowed.

This sound was produced by five hundred or more people talking and walking on marble through the bottom part of eleven million cubic feet of air. Within two or three feet of where I stood, I could hear separate voices: "Take care, now" and "Yep,

see you tomorrow'' and ''All 'board!'' And quite often, and from quite far away, I could hear laughing. The rest of what I heard was just the single commingled sound. I could see, quite clearly, two things: an unmoving framework made up of marble floor, tall piers, arched windows, high barrel vault, daylight, and faint electric stars; and the swirling, living motion of five hundred people walking, two and three abreast, from and toward the fourteen entrances and exits of the concourse. Moving silently, as it seemed, within that sound, I noticed once again that no one was bumping into anyone else—that every time I thought I myself might be about to bump into people near me, both I and they were already accelerating slightly, or decelerating, or making a little side step, so that nobody ever collided. On top of this, the weightless sensation in my head gave me the feeling that I could look down on all this movement, in addition to looking out at it. I had a sense that the cooperation I was a part of kept repeating itself throughout the vast room around me and the vaster city beyond it.

I thought, as I have many times in the concourse, that if I were a stranger to this overwhelming city, it would be helpful to me to know that something in me and in everyone around me already knew how to fit in with all the people circulating through the city and going about their business. After emerging onto Vanderbilt Avenue, I found that when I crossed over and walked along the south side of Forty-third Street, I could for a while keep with me this awareness of the cooperation that makes a city possible. It lasted about a block and a half—until, as I was standing at a stoplight at Fifth Avenue, a screaming ambulance and the rest of the traffic brought me back to a more ordinary sense of separateness and disjointedness. At the same time, waiting for the light to change, I could see that even though I no longer felt it, some form of cooperation was continuing to govern the movements of people near me on the sidewalk. People moving in four different directions passed one another without colliding, and in each minute, hundreds of accidents never occurred. Still, the overall level of cooperation seemed diminished, because there was no sense of connectedness between the people on foot and the people in vehicles.

Several overlapping kinds of evidence—among them work by public safety and public health investigators; research findings about the human mind and brain; and a host of personal experiences in a wide variety of settings—have in recent years been opening up our understanding of many of the complex and subtle ways in which we commonly interact with our everyday surroundings: train stations, parks, office towers, shopping arcades, and all the other settings of our lives. Far from constituting a kind of backdrop that we can ignore at will—as long as it permits us to see and breathe adequately—such things as the kind of light around us, the chemical composition of the air, and arrangements of rooms, hallways, and staircases affect not only physical health and mental grasp and agility but our sense of humanity's pressing problems and unfinished business.

The same evidence that has been showing us how much of their ordinary environments people respond to is also leading us to the idea that people have within them various brain-body mechanisms that react to different aspects of their surroundings. An example: Dr. Gary E. Schwartz, a Yale professor of psychology and psychiatry, has found that some scents produce changes in blood pressure comparable to those achieved through meditation; the smell of spiced apple is particularly effective in reducing blood pressure. Another example: Experiments by a bacteriologist and public health biometeorologist have shown that unscented air, if it contains a certain quantity of small-air ions—clusters of molecules with a negative electrical charge—can also have the effect of a drug, lowering the amount of se-

rotonin in the midbrain; high levels of serotonin are associated with sleepiness.

The structure of another brain-body system we use for responding to the environment has been traced in some detail: A research psychiatrist has found that some of the light that enters our eyes when we're outdoors in bright sunlight bypasses the cortex and finds its way, in sequence, to the hypothalamus, the spinal cord, a nerve center in the neck, and, finally, the pineal gland, where it suppresses the production of a hormone called melatonin, which may affect mood and also fertility and many other body functions. And preliminary research in the new field of photobiology, or color therapy, indicates that a bubble-gum color called passive pink may have an almost immediate effect on aggressive behavior. When a berserk sixteen-year-old is placed in a four-by-eight-foot passive-pink cell at the San Bernardino County Probation Department, he is calmer within a few minutes. After ten minutes or so, he's sometimes lying on the floor, nearly asleep.

Some people may wonder why, if we've always been responding to light and air and colors and smells, we're only now beginning to notice these things often enough to have suddenly acquired a lot of information on the subject. Probably, such investigations have taken place in the postwar period because it has been during the past forty-five years that almost everyone in the Western world has for the first time moved indoors—away from bright sunshine, sealed off from the mountains, forests, and streams that, for instance, naturally have an abundance of small-air ions. In the words of Dr. Richard J. Wurtman, a professor of brain and cognitive science at the Massachusetts Institute of Technology, "We are all unwitting subjects of a long-term experiment on the effects of artificial lighting on our health." Speaking solely about the brain-body systems that respond to light, he has made this interim recommendation: "Until much more is known, we should design indoor lighting to resemble as closely as possible what the sun provides."

In all the millennia since our human ancestors descended from the trees of the forest and learned to roam upright across the savannas of East Africa, we have never before made changes capable of impairing the workings of our particular internal systems that rely on light or scent or other aspects of the environment. Now, all of a sudden, it has happened: In America today, almost all of us spend almost all of our time inside, breathing recycled air and absorbing artificial light. And as our internal systems begin to react—badly, more often than not—to this new environment, we become aware of their existence. All the time they were unknown, they functioned beautifully, but now that we do know about them, we have to take conscious responsibility for creating man-made environments that won't further diminish the healthy performance of these systems.

Brain-body systems have thus become a public health matter—a health need that whole communities have to think about collectively, because the health of individual people will be determined by the workings of large-scale environments. Modern public health knowledge got started when nineteenth-century doctors, studying urban diseases, realized that as more and more people lived closer together in cities, local springs and wells would no longer automatically flow clean and pure. People got sick more often in these new cities than they did in villages; that was the first fact. Then it was noticed that people took sick in certain areas within the new cities. Eventually, investigators discovered that bacteria that had entered specific wells could cause cholera in anyone who drank the water from the wells. Discoveries like these led to today's extensive systems of reservoirs and legal watershed protection; we try to protect from development the land whose streams feed a city's reservoirs.

Nineteenth-century public health officials were modern pioneers of the inadvertent, after-the-fact research method that is still being used to uncover various brain-body systems. The basic tool is an ability to be alert to correlations between two different kinds of unintended changes: fluctuations in people's

health or mental functioning that point back to specific alterations of the environment. And what makes the search possible is a realization that changing the environment—whether carelessly or in good faith—can disastrously change the information that our surroundings feed to some unsuspected internal mechanism. Now that the universal need for clean water has been so clearly demonstrated as to seem almost self-evident, we have to remind ourselves that it took almost a hundred years to make the point. Decades followed the doublings and triplings in size of English cities and the subsequent alarming increases in the death rates in those cities before it was possible, through the use of maps that showed both the sites of wells and water pumps and the block-by-block spreading of various diseases, to prove the connection between communicable disease and filth in the environment. And forty years more went by before bacteriologists, working in the last decades of the century, began to be able to identify the specific microorganisms that could cause specific diseases.

But that wasn't the end of it. Public health researchers have discovered in just the last few years that a twentieth-century use of water—in the systems that cool centrally air-conditioned buildings—has helped cause infections and may contribute to a set of symptoms known as the sick building syndrome (the symptoms range from headache to sore throat, wheezing, and shortness of breath). Both can be transmitted to occupants of modern high-rise buildings through a process that is simultaneously waterborne and airborne.

Many modern office and residential buildings are tightly sealed structures, their windows permanently closed. Such buildings were at first widely applauded as energy savers, because their integrated heating, ventilating, and air-conditioning (or HVAC) systems reduced heating and cooling expenses by using the same air over and over. The stale air that accumulates in sealed buildings can contribute to outbreaks of sick building syndrome, in

part because it contains contaminants—fungi, bacteria, and gases produced by many of the man-made materials found inside sealed buildings. Fabrics for rugs and upholstery, for instance, are increasingly made from man-made materials. These materials and the adhesives used to apply them can release what Dr. Jan A. J. Stolwijk, an epidemiologist and a public health specialist at the Yale School of Medicine, calls "a variety of volatile organic compounds," which can cause eye and upper-respiratory irritation.

Sometimes the problems of sealed buildings are compounded by the presence in the air of cooling-tower drift—water droplets so fine they can penetrate unnoticed deep into a person's lungs. In an HVAC system, excess heat is vented through cooling towers, and the water in the towers can be invaded by microorganisms, just like the water in a well. Often the fresh-air intake for one sealed building is close to the cooling tower of another sealed building. Drift transmits any bacteria that may be growing in cooling-tower water, and transmits them so efficiently that the possibilities of infection are considerably greater from breathing the drift-laden air than from breathing outdoor air. One of the serious infections brought about by drift is already well known: Legionnaires' disease.

Stolwijk estimates that most sealed buildings are in a sick condition at least part of the time. All this information is changing professional attitudes toward the value of the sealed modern tower. According to a paper that was read at the Third International Conference on Indoor Air Quality and Climate, in Stockholm in 1986, these buildings may have to be regarded as "a failure." We know now that the study of how contaminated water affects human health has not yet been completed.

An equally long-running environmental experiment on people has to do with simultaneous perception—the system we use to experience our surroundings. Since simultaneous perception is the only internal mechanism we know about that can combine

the responses of all our senses, any change in our surroundings which our senses can register—in the light, in colors, in sounds, in smells, in anything else we can detect—alters the information that this mechanism receives. But what kinds of changes, large or small, or what combinations of changes, will actually alter its workings? Beginning with the nineteenth-century cities and continuing through our postwar reshaping of cities, suburbs, and countryside, we have been making changes in the environment at an unprecedented rate. Today's world not only looks very different from the eighteenth-century world but also sounds very different and smells very different. Whatever else these changes have brought us in the way of human benefits or environmental degradation, they have offered us an unparalleled chance to look at how our health and well-being are affected by changing what we can experience in a place.

Surprisingly, this particular inquiry is turning out to be both more extended and more compressed than the long investigation into the need for clean water. Even in the mid-nineteenth century, public health advocates could present a strong empirical case for clean water—that, for some reason then unknown, it was dangerous not to have it. And they were able to convert this insight into public policy within only a few years; in New York, for example, the old Croton reservoir, a multimillion-dollar project, began sending pure upstate drinking water to the city as early as 1842. In some cases, the more comprehensive understanding of water contamination that was finally provided by late-nineteenth-century researchers only confirmed the validity of major actions taken years before.

While many of the links that connect places and experiences and health have yet to be traced, some people have started treating their own experiences of places in a mid-nineteenth-century clean-water fashion, by taking action to protect experiences that are important to them—for example, fighting to prevent the demolition of places like Grand Central Terminal. Over the past

two decades or so, organized citizen efforts like these have resulted in the creation of official municipal landmarks preservation commissions in hundreds of American cities, towns, and suburbs.

The people involved in this work speak, often, not just of architectural beauty but of the character of a place, or its essential spirit, or the quality of life there, or of its livability, genius, flavor, feeling, ambience, essence, resonance, presence, aura, harmony, grace, charm, or seemliness. These are probably allusions to an actual direct experience of some place. And mention of "people places," or of the individuality of a specific place, or the urban or rural or wilderness quality there, or its scale, or human scale, or visual charm, or beauty, or scenic quality, will most likely be an attempt to convey some specific component of an experience. The language of the laws that set up landmarks preservation agencies sometimes makes it clear that such experiential considerations are at work. It's part of the job of the eleven commissioners of the New York City Landmarks Preservation Commission, for instance, to make experiential judgments whenever they have to weigh the merits of a proposal to set up a possible historic district in the city. New York City's Local Law No. 46 of 1965, the Landmarks Preservation and Historic Districts Law, defines for the commissioners the criteria that an area of the city must meet in order to be eligible for designation as a historic district. Historic districts, the law says, "have a special character or special historical or aesthetic interest or value."

In a similar spirit, Christopher Alexander, an architect in Berkeley, California, and five associates spent eight years studying their own and other people's reactions to buildings and cities in order to find out why certain places "make people feel alive and human." In their 1977 book, *A Pattern Language*, they identify 253 elements, or aspects (they call them patterns), of rooms, streets, and districts that seem somehow to have definite

links with joyful experiences. Eighty-four patterns, or just over a third of those discussed, get two asterisks in the book—the equivalent of three stars in a *Guide Michelin*—to denote connections between place and experience so strong and so consistent as to form what the authors call an "invariant" and also a "deep and inescapable property of a well-formed environment." Some two-asterisk patterns are Identifiable Neighborhood, Sunny Place, Pedestrian Street, Warm Colors, Old People Everywhere, and Four-Story Limit to the height of buildings. ("There is abundant evidence to show that high buildings . . . can actually damage people's minds and feelings.") One two-asterisk pattern, Accessible Green, is based on research by the authors in a Berkeley park which showed that although people derive great benefits from a neighborhood park, they tend not to use it if it is more than about 750 feet—about three blocks, that is, or about three minutes' walk—from their doors. "Apparently, there is a threshold . . . where the distance prevents them from meeting their need," the authors report.

In three years of careful observations of how people use or avoid public plazas in New York City, William H. Whyte found such precise and demonstrable correlations between what he called "amiable" design—"the quality of experience" available in a plaza—and the fullness or emptiness of that plaza that in 1975 the city redrafted its open-space zoning provisions to incorporate his discoveries. Two interconnected elements of amiable design, Whyte learned from standing outside Paley Park, are shallow steps and low flights of steps. Paley Park is a vest-pocket park on East Fifty-third Street that occupies the site of the old Stork Club, and there are four steps up from street level to park level. In his book *The Social Life of Small Urban Spaces*, Whyte writes:

> Many people will do a double take as they pass by, pause, move a few steps, then, with a slight acceleration, go up the steps. . . . Watch these flows and you will appreciate how very important steps can be. The steps at Paley are so low and easy that one is almost pulled to them. . . . You can stand and watch, move up a foot, another, and then, without having made a conscious decision, find yourself in the park. . . . A slight elevation, then, can be beckoning. Go a foot or so higher, however, and usage will fall off sharply. There is no set cut-off level—it is as much psychological as physical—but it does seem bound up with how much of a choice the steps require. One plaza that people could be expected to use, but don't, is only a foot or so higher than two comparable ones nearby. It seems much higher.

The New York City zoning code now specifies: "The level of an urban plaza shall not at any point be more than 3 feet above nor 3 feet below the curb level of the nearest adjoining street."

Studies by BOSTI, the Buffalo Organization for Social and Technological Innovation—one of the first firms in a new field called workplace-design research—are also making it clear that there is a relationship between how people experience the offices they work in and their productivity level on the job. "The environment seems to act in nontrivial ways," says Michael Brill, an architect who is BOSTI's president. A seven-year examination by BOSTI of the conditions in some seventy offices around the country strongly suggests, Brill says, that there are at least seventeen different aspects of office design—ranging from how enclosed an office is to how noisy it is—that can affect job performance, job satisfaction, people's abilities to communicate with other workers in an office, or their satisfaction with their surroundings. Job satisfaction (an index that has to do with turnover, absenteeism, lateness, and grievances) has always been important to workers, but unlike job performance (a measure of things like rates of error and the meeting of deadlines), it was until recently not a factor that many employers paid much attention to—largely because there was no way it could be translated into monetary terms. Now, however, a new discipline known as

human-resources accounting can calculate job satisfaction as a cost of doing business. It's a real cost: According to BOSTI, in a well-designed office, workers will get from five to nine percent more work done in a year's time. And, says Michael Brill, "The economic benefit could go as high as fifteen percent if the office were planned and designed to be a perfect fit for the work."

No one has yet made a compilation of all the reliable empirical findings now available about experiences of places—or of how widely the findings have been acted upon. But already, as even a small sampling can show, the information is so extensive that just by putting it together we can start to see in detail some otherwise shadowy features of the way people relate to their surroundings. One such feature has to do with how close different types of surroundings need to be for people to take advantage of them. Alexander's discovery that Berkeley residents will walk about three blocks to reach a park is closely paralleled, it turns out, by a finding of Whyte's about how far New York City office workers will walk to sit in a public plaza at lunchtime. "Commuter distances" to and from plazas, Whyte says, "are usually short; for most plazas, the effective market radius is about three blocks." This suggests that office neighborhoods function much as residential neighborhoods do, and that the two have much the same size: If people will walk three minutes to reach a central gathering point, then a neighborhood is, in effect, about six minutes' walking time wide—or, in linear terms, five or six blocks, which is between fifteen and sixteen hundred feet.

Corning Glass Works, a few years ago, according to Philip Langdon, writing in *Metropolis*, a design magazine, had two goals: a new engineering building in Corning, New York, and increased productivity from its engineering and support staff, eight hundred strong. Dr. Thomas J. Allen, a professor at the Sloan School of Management, at the Massachusetts Institute of Technology (and now Director of the International Center for

Research on the Management of Technology), who was hired by Corning as a consultant, found that more than eighty percent of an engineer's ideas come from face-to-face contact with colleagues, but also that engineers won't walk more than about a hundred feet from their own desks to exchange thoughts with anyone. The cutoff point in this case is a walk that takes more than half a minute, so conversation has to be available almost next door. Engineers attend conventions reluctantly, he found, and they completely reject any of the technological substitutes for personal encounter. They hate asking for information on the phone, and they get even less out of reading technical journals. Accordingly, the William C. Decker Engineering Building, in Corning, is equipped with twelve separate discussion areas (each one with a coffee machine and wall-size blackboards), and the building's three floors are connected by seven sets of open stairs, two escalators, a double bank of elevators, and several ramps. Corning Glass says it is satisfied with the increase in productivity that has resulted.

Landmarks preservation commissions, zoning code changes, productivity programs, are having their effect, but there's something else at work here as well. Even while we're still opening up the empirical, or mid-nineteenth-century, phase of examining our experiences of places, we're starting to realize that scattered all around us—in places, books, and people—is more than enough information to begin putting together a twentieth-century body of knowledge of simultaneous perception that can in some ways resemble the late nineteenth century's understanding of clean water. In part, this knowledge stems from all our empirical research on the brain and the various internal systems, but we can expand the empirical discoveries about our reactions to places by reading about such subjects as aesthetics, art appre-

ciation, wilderness and nature, and the history of the city and the countryside. And beyond this, we can expand our knowledge by the most powerful means of all—our own observation of local places worth looking at.

One of the things that simultaneous perception can do, as the experience available at Grand Central shows, is to pick up what we could call cross-sensory, or multisensory, patterns of information—things or events we can recognize only when information from two or more senses is taken all together. I began to develop an understanding of how people cooperate as they walk through Grand Central when my mind took in two pieces of information at the same time: I could see how other people were changing their pace as I got closer to them, and simultaneously I could feel in my legs and body and arms the moment-to-moment adjustments in motion I was myself making in response to their approach. Cooperation, the force that coordinated my own actions with those of other people nearby, is something we can actually see—that is, we see it in outline as this outline moves across the senses. It's like seeing the shape of the wind through your eyes, ears, and skin: hearing it slap against a distant flagpole, and then watching it curl through the branches of a nearby tree, and then feeling it land softly on your face and shoulders.

We can detect cross-sensory patterns like the cooperation in a moving crowd because of three other processes in simultaneous perception—processes that have been the object of research. According to Anton Ehrenzweig, an art historian at the University of London, his work with artists shows that people have an innate capacity that he calls "utter watchfulness": We can pay equal attention to everything at once, omitting nothing and at the same time emphasizing nothing. Ehrenzweig also considered the speed with which we can put together and respond to the information made available by "utter watchfulness" and concluded that people's thinking then shows "split-second reaction

to innumerable variables." Another process that assists this kind of cooperation is the gaining of a relaxed sense of our own outside edge—the place where we stop and everything else begins. Dr. Arthur Deikman, a California research psychiatrist who has looked into this aspect of our thinking, calls this border a "fluid body boundary," which can lead to "diminished self-object differentiation"—that is, a point at which we divide our attention equally between ourselves and things outside ourselves. The diminished differentiation makes it easier to move in concert with other people: Fluid body boundaries can turn what might amount to getting through an obstacle course into something as easy as dancing across a ballroom.

Thus, simultaneous perception, putting at our disposal an evenhanded, instantaneous, and outward-looking flow of attention, acts like a sixth sense. Without one of the more familiar senses, touch, we couldn't register things like heat and cold; if I scalded my finger in hot water, I might find it out afterward by seeing my finger turning pink, but in the meantime the heat would be imperceptible to me, and I wouldn't react to it. Without the help of simultaneous perception, multisensory patterns would be hidden from us, and we might bump into everyone in Grand Central Terminal. And when simultaneous perception shows us a pattern like cooperation in a moving crowd, something else appears that's normally invisible: a different sense of who, or what, we are.

Ordinarily, we seem to be completely separate from everything and everyone in our surroundings, and our sense of external things (if not of other people) is that they are waiting around until we can find something for them to do. At moments when the boundaries flow together, perhaps even disappear, a different sense emerges. Walking through a landscape, we have the sense that the plants and animals around us have purposes of their own. At the same time, our sense of ourselves now has more to do with noticing how we are connected to the people and things

around us—as part of a family, a crowd, a community, a species, the biosphere. Since the quantum revolution in physics, sixty years ago, it has become relatively easy to think that at the submicroscopic level an electron or a photon of light can be both a particle and a wave. In the last couple of years, researchers have found that peptides in the human immune system—substances large enough to be seen through a microscope—can also show both particle behavior and wavelike behavior. And now we're finding that the same thing is true of our perceptions of ourselves. Through one system of perception we see ourselves as observers of an environment composed of separated objects, but at the same time, through another system of perception, equally active, we look for ways in which we are connected to or are part of our surroundings.

We seem to use simultaneous perception constantly to monitor our surroundings on a subconscious level for information that helps us maintain ourselves and go about our business. According to William M. C. Lam, an architect and writer in Cambridge, Massachusetts, who investigated one aspect of this activity—our "fundamental and universally shared human needs" for visual information—we are always, "regardless of the specific activity which holds our attention at any one time," on the lookout for information that has to do with "orientation, defense, sustenance, stimulation, and survival." Lam, who specializes in lighting design and is perhaps best known for designing ceiling lights with a cathedral-like glow for the stations of the Washington Metro subway system, has worked for years to establish a comprehensive biological and psychological basis for the lighting codes that are used as industry standards by American builders. It's Lam's discovery that what satisfies people usually is not the quantity of light present but whether they can see things they must know about in order to fill needs that are "essentials of human nature." If we can see those things, as Lam says in his book *Perception and Light as Formgivers to Architecture,* we then "judge an environment to be cheerful . . .

attractive . . . sparkling . . . comfortable and reassuring." This is the link between "a good luminous environment" and "physical, intellectual, and emotional well-being."

Lam's ideas about lighting needs got him in trouble for a number of years. When he started his research, oil prices were so low that electric utilities around the country were merchandising light like a commodity and looking for new ways to stimulate light consumption. The lighting codes of the day, largely drawn up by utility engineers, specified gargantuan quantities of light in almost every situation—every square inch of surface in an office, for instance, was supposed to have enough light to let you read a fifth carbon copy. And this even though photocopiers were already replacing carbon paper! When Lam began questioning the human need for this much light, the power and light companies began to treat him somewhat the way General Motors first treated Ralph Nader. They sent vice presidents and other high-level speakers to denounce him at every meeting he addressed. Then came the oil crisis, and the vice presidents were called off.

What kinds of things enable us to meet our biological needs for visual information? Many of them are conveyed by daylight. Outdoors, the position of the sun in the sky helps us orient ourselves to the time of day and works to set a series of internal clocks. That is not the simple act it seems, because information about the sun's position comes to us in several ways. If we're standing out in the sun, the sense of touch is involved: We react to the strength of sunlight falling on our skin. But even when the sun isn't directly on us, we're still dealing with complex information, because when we look at where the sun is in the sky, we're also looking at the brilliance of the light coming from it, which varies during the day. And we're looking at the color of the sunlight; it's bluer in the middle of the day and more orange-red in the morning and evening. How much of this information can we do without before we no longer have access to our daytime sense of orientation? Some two-foot-by-four-foot

openings designed by Lam give us a first answer to this question. The openings are high up in the walls that separate bedrooms from dressing rooms at the Hyatt Regency Hotel in Cambridge. (Lam designed the hotel's lighting.) The openings convey natural light to the windowless dressing rooms. You can't actually look through the openings—they're too high up—but they do bring in to an inner room the color and some of the brilliance of the daylight outside. The result, as I found out staying at the Hyatt Regency, is that a perfectly ordinary little nook becomes a friendly place that has, if only faintly, the relaxed and spacious feeling of a room in a resort.

So we don't always need to feel the sun or look at it in order to stay oriented, which means we can, if we have to, get by, at least for a while, on about half the information that natural environments provide about orientation. It does seem that the experiences of a place may have a certain amount of give to them, but we're also learning that there are real limits to the amount of experiential diminution we can tolerate. If the Cambridge Hyatt Regency decided to install heavily tinted glass in its bedroom windows, for example, that would distort both the brilliance and the color of the light coming in and might do real damage to the experience available there. The design principle here is that any change made to our surroundings has the potential to affect the way we experience a place, and that the cumulative effect of a number of changes may be at some point to alter the experience entirely.

People are often drawn to places that offer rich experiences: beautiful landscapes, glittering theater districts, tranquil neighborhoods. But changes made over the years to such places which fail to consider the experiential impact produced by physical alterations can turn pearls into paste and convert the real into a mirage. In Gertrude Stein's celebrated remark about Oakland, California, when you get there, there isn't any "there" there—no richness of experience. If we're ever to reach the goal of a man-made environment that nurtures human beings, we need to

proceed with caution; otherwise, the act of getting there may take away any "there" there.

Orientation is just one component of our everyday subconscious use of simultaneous perception. According to some West German research, when we approach or move through a street or a park or a railroad station, we are alert for information that has to do both with our immediate physical safety and with a general sense of how welcoming these new surroundings will prove to be. We let the layout of a place give us an advance reading on such things as whether we can linger there or need to keep on moving, how relaxed we'll be if we stay, and even whether we'll feel comfortable about talking to people already there. Though we may not notice it, we're taking in so much information through simultaneous perception that it's almost as if we were receiving two different messages from our surroundings at all times. Normally, preoccupied by some thought or action, we notice very little about our surroundings and seem to be getting only one message: No immediate danger here; everything's in its usual place.

Something we don't realize is how much energy it may take for us to maintain this routine ignoring of our surroundings, depending on the contents of the second message. Sometimes the second message may be telling us that something's missing. At other times, the second message may actively contradict the first. Last year, while I was waiting for a friend in the enclosed garden court of IBM's midtown Manhattan skyscraper—a space added to the building as a public amenity—I found myself feeling increasingly uncomfortable and ill at ease, for no reason I could pin down. There was no one around who seemed menacing, and nothing seemed out of place: the court was a broad expanse filled with light, plants, and movable chairs. Then I began to pay more attention to everything around me, and I noticed that the entire floor was built on a slight slant, leading down to one corner—apparently for drainage purposes. To the eye, the floor seemed level, but my internal senses and the mus-

cles in my ankles were telling me I was off balance. The sensation was as if gravity had shifted slightly to one side. All around, tables and chairs and overarching bamboo plants invited people to stay, but the floor seemed to say, "Keep moving!"

Small, unnoticed changes in level play a larger organizing role in our activities than we suspect: In Manhattan, the right-angle street grid, which keeps people's eyes focused straight ahead, and the uniform paving of streets and sidewalks, together with the solid blocks of buildings on both sides, tend to keep New Yorkers from noticing the natural contours—or what's left of the natural contours—beneath their feet. The nineteenth-century Manhattan developers who covered midtown fields and meadows with brownstones did such a good job of lopping off the tops of hills and filling in valleys that a hundred years or so later, as Christopher Gray, a New York historian and preservationist, has pointed out, no one really knows what the original topography was.

Descriptive names still exist—Murray Hill, Lenox Hill, Carnegie Hill, Mount Morris—but we don't often associate them with climbing or descending. Nevertheless, almost every block has some rise or dip to it, and these hints of elevation do help people define certain districts. The upper part of Fifth Avenue as a shopping street, for instance, stretches from Forty-second Street to Central Park, but the part of this expanse that people tend to identify in their minds as the historic heart of this district runs uptown from about Forty-sixth. If you look up the avenue from Forty-second Street, say, you can see that Forty-sixth is at the bottom of a small hill that has St. Patrick's Cathedral, at Fiftieth Street, on its crest. The hill seems to have a certain holding power, even today.

Because people can get many kinds of messages from each place they encounter, any building or piece of land used or seen by more than one person has a public-use component that always needs to be managed in ways that take simultaneous perception into account.

2 Connectedness

Simultaneous perception takes on another aspect when it becomes conscious. Some places, like Grand Central, seem to help us become aware of our own experiencing. How do they do this? Normal waking consciousness and our sense of separateness from the world protect us from harm by allowing us to focus instantly on any source of danger. And we're alerted to sources of danger by sudden and rapid movement or loud noises or strong smells. So for simultaneous perception to emerge, we need a place that seems safe, where the information presented to each sense is complex but not overpowering. If louder signals appear, they will tend to drive simultaneous perception underground. That is why we lose touch with it when we leave Grand Central and walk over to Fifth Avenue.

Grand Central not only is easy to experience but also offers a special kind of experience—one that seems to amplify our perceptive reach, allowing us to notice aspects of our mental activity that are normally veiled. Of all the ideas that may form part of a late-twentieth-century understanding of simultaneous perception, this one is probably the most startling—that particular places around us, if we're wide open to perceive them, can sometimes give us a mental lift. It's one thing to find out that a railroad station could be converted into a school and another thing to realize that a mere room can function as a teacher.