

The reader can recall his own behavior during evening engagements. A person asked to spend the evening and arrive about "nineish," wouldn't think of using the daytime "diffused point" pattern. The "displaced point" pattern is mandatory, usually at least ten or fifteen minutes after the hour but not more than thirty-five or forty minutes. If asked for dinner, with cocktails before, the leeway is much less. It is permissible to arrive for a seven o'clock engagement at 7:05 but not much later than 7:15. The "mutter something" period starts at 7:20 and by 7:30, people are looking around and saying, "I wonder what's happened to the Smiths!" The hostess may have a roast in the oven. In New York City there is a big difference between a "5 to 8" cocktail party, when people arrive between 6 and 7:30 to stay for hours, and dinner-party time when ten minutes late is the most allowed.

In these terms, the actual displacement of the point is a function of three things: (a) the type of social occasion and what is being served; (b) the status of the individual who is being met or visited; (c) the individual's own way of handling time.

When a shift occurs in an office from diffused point to displaced point, people feel strongly about it. The diffused point people never really feel comfortable with the other pattern. Such shifts are often interpreted as robbing professional people of status. That is, they *feel* they have been lowered in the esteem of the boss. This is because of the use of this same pattern when meeting dignitaries and when great social distance exists between individuals. The displaced pointers, on the other hand, regard everyone else as very unbusinesslike, sloppy, and as having poor organizational morale. They feel the lack of control and are distrustful of the academic types who are so cavalier about being "on time." Persistent efforts to restrict scientists to the dis-

placed point pattern by enforcing rigid schedules is one of the many things that helped drive many scientists from government work in the last few years.

Regionally in the United States there are seemingly endless variations in the way time is handled. These variations, however, are comparable to the variations in the details of speech associated with the different parts of the country. Everybody participates in the over-all pattern which makes it possible for us to be mutually understood wherever we go.

In Utah, where the Mormons at first got somewhat technical about time and later developed strong formal systems emphasizing promptness, you find the displaced point pattern with very little leeway. That is, the attempt is made to arrive "on time," which means a little before the hour and no more than one minute late. Since, according to their system, it's worse to be late than early, they arrive on the early side of the point, just as military personnel do. What this communicates to other Americans is that Mormons are more serious about their work than the average American.

The northwest coastal region of the United States does some very strange things with time, when looked at in terms of the rest of the country. They will ask a person for 6 P.M. if they want him to arrive by 6:30 P.M., and then hope that he gets there. The detail of muttering an apology after four minutes is quite uncommon and is decried by many.

The more traditional part of the South, on the other hand, seems to behave pretty much as predicted; people slow things down by allowing leeway in both patterns. One finds a greater permissible spread, or a wider range of deviation from the point, than in the urban Northeast. The same could be said for the Old West.

chapter

ten

SPACE

SPEAKS

Every living thing has a physical boundary that separates it from its external environment. Beginning with the bacteria and the simple cell and ending with man, every organism has a detectable limit which marks where it begins and ends. A short distance up the phylogenetic scale, however, another, non-physical boundary appears that exists outside the physical one. This new boundary is harder to delimit than the first but is just as real. We call this the "organisms' territory." The act of laying claim to and defending a territory is termed territoriality. It is territoriality with which this chapter is most concerned. In man, it becomes highly elaborated, as well as being very greatly differentiated from culture to culture.

Anyone who has had experience with dogs, particularly in a rural setting such as on ranches and farms, is familiar with the way in which the dog handles space. In the first

place, the dog knows the limits of his master's "yard" and will defend it against encroachment. There are also certain places where he sleeps: a spot next to the fireplace, a spot in the kitchen, or one in the dining room if he is allowed there. In short, a dog has fixed points to which he returns time after time, depending upon the occasion. One can also observe that dogs create zones around them. Depending upon his relationship to the dog and the zone he is in, a trespasser can evoke different behavior when he crosses the invisible lines which are meaningful to the dog.

This is particularly noticeable in females with puppies. A mother who has a new litter in a little-used barn will claim the barn as her territory. When the door opens she may make a slight movement or stirring in one corner. Nothing else may happen as the intruder moves ten or fifteen feet into the barn. Then the dog may raise her head or get up, circle about, and lie down as another invisible boundary is crossed. One can tell about where the line is by withdrawing and watching when her head goes down. As additional lines are crossed, there will be other signals, a thumping of the tail, a low moan or a growl.

One can observe comparable behavior in other vertebrates—fish, birds, and mammals. Birds have well-developed territoriality, areas which they defend as their own and which they return to year after year. To those who have seen a robin come back to the same nest each year this will come as no surprise. Seals, dolphin, and whales are known to use the same breeding grounds. Individual seals have been known to come back to the same rock year after year.

Man has developed his territoriality to an almost unbelievable extent. Yet we treat space somewhat as we treat sex. It is there but we don't talk about it. And if we do, we certainly are not expected to get technical or serious about it. The man of the house is always somewhat apologetic

about "his chair." How many people have had the experience of coming into a room, seeing a big comfortable chair and heading for it, only to pull themselves up short, or pause and turn to the man and say, "Oh, was I about to sit in your chair?" The reply, of course, is usually polite. Imagine the effect if the host were to give vent to his true feelings and say, "Hell, yes, you're sitting in my chair, and I don't like anybody sitting in my chair!" For some unknown reason, our culture has tended to play down or cause us to repress and dissociate the feelings we have about space. We relegate it to the informal and are likely to feel guilty whenever we find ourselves getting angry because someone has taken our place.

Territoriality is established so rapidly that even the second session in a series of lectures is sufficient to find a significant proportion of most audiences back in the same seats. What's more, if one has been sitting in a particular seat and someone else occupies it, one can notice a fleeting irritaton. There is the remnant of an old urge to throw out the interloper. The interloper knows this too, because he will turn around or look up and say, "Have I got your seat?" at which point you lie and say, "Oh no, I was going to move anyway."

Once while talking on this subject to a group of Americans who were going overseas, one very nice, exceedingly mild-mannered woman raised her hand and said, "You mean it's natural for me to feel irritated when another woman takes over my kitchen?" Answer: "Not only is it natural, but most American women have very strong feelings about their kitchens. Even a mother can't come in and wash the dishes in her daughter's kitchen without annoying her. The kitchen is the place where 'who will dominate' is settled. All women know this, and some can even talk about it. Daughters who can't keep control of their kitchen will be

forever under the thumb of any woman who can move into this area."

The questioner continued: "You know that makes me feel so relieved. I have three older sisters and a mother, and every time they come to town they march right into the kitchen and take over. I want to tell them to stay out of my kitchen, that they have their own kitchens and this is my kitchen, but I always thought I was having unkind thoughts about my mother and sisters, thoughts I wasn't supposed to have. This relieves me so much, because now I know I was right."

Father's shop is, of course, another sacred territory and best kept that way. The same applies to his study, if he has one.

As one travels abroad and examines the ways in which space is handled, startling variations are discovered—differences which we react to vigorously. Since none of us is taught to look at space as isolated from other associations, feelings cued by the handling of space are often attributed to something else. In growing up people learn literally thousands of spatial cues, all of which have their own meaning in their own context. These cues "release" responses already established in much the same way as Pavlov's bells started his dogs salivating. Just how accurate a spatial memory is has never been completely tested. There are indications, however, that it is exceedingly persistent.

Literally thousands of experiences teach us unconsciously that space communicates. Yet this fact would probably never have been brought to the level of consciousness if it had not been realized that space is organized differently in each culture. The associations and feelings that are released in a member of one culture almost invariably mean something else in the next. When we say that some foreigners are

"pushy," all this means is that their handling of space releases this association in our minds.

What gets overlooked is that the response is there *in toto* and has been there all along. There is no point in well-meaning people feeling guilty because they get angry when a foreigner presents them with a spatial cue that releases anger or aggression. The main thing is to know what is happening and try to find out which cue was responsible. The next step is to discover, if possible, whether the person really intended to release this particular feeling or whether he intended to engender a different reaction.

Uncovering the specific cues in a foreign culture is a painstaking and laborious process. Usually it is easier for the newcomer to listen to the observations of old-timers and then test these observations against his own experience. At first he may hear, "You're going to have a hard time getting used to the way these people crowd you. Why, when you are trying to buy a theater ticket, instead of standing in line and waiting their turn they all try to reach in and get their money to the ticket seller at once. It's just terrible the way you have to push and shove just to keep your place. Why, the last time I got to the ticket window of the theater and poked my head up to the opening, there were five arms and hands reaching over my shoulder waving money." Or he may hear the following: "It's as much as your life is worth to ride the streetcars. They're worse than our subways. What's more, these people don't seem to mind it at all." Some of this stems from the fact that, as Americans we have a pattern which discourages touching, except in moments of intimacy. When we ride on a streetcar or crowded elevator we will "hold ourselves in," having been taught from early childhood to avoid bodily contact with strangers. Abroad, it's confusing when conflicting feelings are being released at the same time. Our senses are bombarded by a strange lan-

guage, different smells, and gestures, as well as a host of signs and symbols.

However, the fact that those who have been in a foreign country for some time talk about these things provides the newcomer with advance warning. Getting over a spatial accent is just as important, sometimes more so, than eliminating a spoken one. Advice to the newcomer might be: Watch where people stand, and don't back up. You will feel funny doing it, but it's amazing how much difference it makes in people's attitudes toward you.

HOW DIFFERENT CULTURES USE SPACE

Several years ago a magazine published a map of the United States as the average New Yorker sees it. The details of New York were quite clear and the suburbs to the north were also accurately shown. Hollywood appeared in some detail while the space in between New York and Hollywood was almost a total blank. Places like Phoenix, Albuquerque, the Grand Canyon, and Taos, New Mexico, were all crowded into a hopeless jumble. It was easy to see that the average New Yorker knew little and cared less for what went on in the rest of the country. To the geographer the map was a distortion of the worst kind. Yet to the student of culture it was surprisingly accurate. It showed the informal images that many people have of the rest of the country.

As a graduate student I lived in New York, and my landlord was a first-generation American of European extraction who had lived in New York all his life. At the end of the academic year as I was leaving, the landlord came down to watch me load my car. When I said good-by, he remarked, "Well, one of these Sunday afternoons I put my family in the car and we drive out to New Mexico and see you."

The map and the landlord's comment illustrate how

Americans treat space as highly personalized. We visualize the relationship between places we know by personal experience. Places which we haven't been to and with which we are not personally identified tend to remain confused.

Traditionally American space begins with "a place." It is one of the oldest sets, comparable to, but not quite the same as, the Spanish *lugar*. The reader will have no difficulty thinking up ways in which place is used: "He found a place in her heart," "He has a place in the mountains," "I am tired of this place," and so on. Those who have children know how difficult it is to get across to them the whole concept of place—like Washington, or Boston, or Philadelphia, and so on. An American child requires between six and seven years before he has begun to master the basic concepts of place. Our culture provides for a great variety of places, including different classes of places.

Contrasted with the Middle East, our system is characterized by fine gradations as one moves from one space category to the next. In the world of the Arab there are villages and cities. That is about all. Most non-nomadic Arabs think of themselves as villagers. The actual villages are of varying population, from a few families up to several thousands.

The smallest place category in the United States is not covered by a term like hamlet, village, or town. It is immediately recognizable as a territorial entity, nevertheless, because such places are always named. They are areas with no recognizable center where a number of families live—like Dogpatch of the funny papers.

Our Dogpatches present the basic American pattern in uncomplicated form. They have scattered residences with no concentration of buildings in one spot. Like time, place with us is diffused, so that you never quite know where its center is. Beyond this the naming of place categories begins with the "crossroads store" or "corner" and continues with the

"small shopping center," the "county seat," the "small town," "large town," "metropolitan center," "city," and "metropolis." Like much of the rest of our culture, including the social ranking system, there are no clear gradations as one moves from one category to the next. The "points" are of varying sizes, and there are no linguistic cues indicating the size of the place we are talking about. The United States, New Mexico, Albuquerque, Pecos are all said the same way and used the same way in sentences. The child who is learning the language has no way of distinguishing one space category from another by listening to others talk.

The miracle is that children eventually are able to sort out and pin down the different space terms from the meager cues provided by others. Try telling a five-year-old the difference between where you live in the suburbs and the town where your wife goes to shop. It will be a frustrating task, since the child, at that age, only comprehends where *he* lives. His room, his house, his place at the table are the places that are learned early.

The reason most Americans have difficulty in school with geography or geometry stems from the fact that space as an informal cultural system is different from space as it is technically elaborated by classroom geography and mathematics. It must be said in fairness to ourselves that other cultures have similar problems. Only the very perceptive adult realizes that there is anything really difficult for the child to learn about space. In reality, he has to take what is literally a spatial blur and isolate the significant points that adults talk about. Sometimes adults are unnecessarily impatient with children because they don't catch on. People do not realize that the child has heard older people talking about different places and is trying to figure out, from what he hears, the difference between this place and that. In this regard it should be pointed out that the first clues which

suggest to children that one thing is different from another come from shifts in tone of voice which direct attention in very subtle but important ways. Speaking a fully developed language as we do, it is hard to remember that there was a time when we could not speak at all and when the whole communicative process was carried on by means of variations in the voice tone. This early language is lost to consciousness and functions out of awareness, so that we tend to forget the very great role it plays in the learning process.

To continue our analysis of the way a child learns about space, let us turn to his conception of a road. At first a road is whatever he happens to be driving on. This doesn't mean that he can't tell when you take a wrong turn. He can, and often will even correct a mistake which is made. It only means that he has not yet broken the road down into its components and that he makes the distinction between this road and that road in just the same way that he learns to distinguish between the phoneme *d* and the phoneme *b* in initial position in the spoken language.

Using roads for cross-cultural contrast, the reader will recall that Paris, being an old city as well as a French city, has a street-naming system that puzzles most Americans. Street names shift as one progresses. Take Rue St.-Honoré, for example, which becomes Rue du Faubourg St.-Honoré, Avenue des Ternes, and Avenue du Roule. A child growing up in Paris, however, has no more difficulty learning his system than one of our children learning ours. We teach ours to watch the intersections and the directions and that when something happens—that is, when there is a change of course at one of these points—you can expect the name to change. In Paris the child learns that as he passes certain landmarks—like buildings that are well known, or statues—the name of the street changes.

It is interesting and informative to watch very young chil-

dren as they learn their culture. They quickly pick up the fact that we have names for some things and not for others. First, they identify the whole object or the set—a room, for instance; then they begin to fixate on certain other discrete objects like books, ashtrays, letter openers, tables, and pencils. By so doing they accomplish two things. First, they find out how far down the scale they have to go in identifying things. Second, they learn what are the isolates and patterns for handling space and object nomenclature. First children are often better subjects than second children, because, having learned the hard way, the first one will teach the second one without involving the parents.

The child will ask, "What's this?" pointing to a pencil. You reply, "A pencil." The child is not satisfied and says, "No, this," pointing to the shaft of the pencil and making clear that she means the shaft. So you say, "Oh, that's the shaft of the pencil." Then the child moves her finger one quarter inch and says, "What's this?" and you say, "The shaft." This process is repeated and you say, "That's still the shaft; and this is the shaft, and this is the shaft. It's all the shaft of the pencil. This is the shaft, this is the point, and this is the eraser, and this is the little tin thing that holds the eraser on." Then she may point to the eraser, and you discover that she is still trying to find out where the dividing lines are. She manages to worm out the fact that the eraser has a top and sides but no more. She also learns that there is no way to tell the difference between one side and the next and that no labels are pinned on parts of the point, even though distinctions are made between the lead and the rest of the pencil. She may glean from this that materials make a difference some of the time and some of the time they do not. Areas where things begin and end are apt to be important, while the points in between are often ignored.

The significance of all this would undoubtedly have escaped me if it hadn't been for an experience on the atoll of Truk. In a rather detailed series of studies in technology I had progressed to the point of having to obtain the nomenclature of the canoe and the wooden food bowl. At this point it was necessary for me to go through what children go through—that is, point to various parts after I thought I had the pattern and ask if I had the name right. As I soon discovered, their system of carving up microspace was radically different from our own. The Trukese treat open spaces, without dividing lines (as we know them), as completely distinct. Each area has a name. On the other hand, they have not developed a nomenclature for the edges of objects as elaborately as Westerners have done. The reader has only to think of rims of cups and the number of different ways in which these can be referred to. There is the rim itself. It can be square or round or elliptical in cross section; straight, flared, or curved inward; plain or decorated, and wavy or straight. This doesn't mean that the Trukese don't elaborate rims. They do; it just means that we have ways of talking about what we do and not as many ways of talking about what happens to an open area as they do. The Trukese separate parts which we think of as being "built in" to the object.

A certain decoration or carving at either end of a canoe-shaped food bowl is thought of as being separate or distinct from the rim in which it has been carved. It has an essence of its own. Along the keel of the canoe the carving, called the *chunefatch*, has characteristics with which it endows the canoe. The canoe is one thing, the *chunefatch* something else. Open spaces without obvious markers on the side of the bowl have names. Such distinctions in the dividing up of space make the settling of land claims unbelievably complicated in these islands. Trees, for instance, are considered

separate from the soil out of which they grow. One man may own the trees, another the soil below.

Benjamin Whorf, describing how Hopi concepts of space are reflected in the language, mentions the absence of terms for interior three-dimensional spaces, such as words for room, chamber, hall, passage, interior, cell, crypt, cellar, attic, loft, and vault. This does not alter the fact that the Hopi have multi-room dwellings and even use the rooms for special purposes such as storage, grinding corn, and the like.

Whorf also notes the fact that it is impossible for the Hopi to add a possessive pronoun to the word for room and that in the Hopi scheme of things a room in the strict sense of the word is not a noun and does not act like a noun.

Since there is a wealth of data on how strongly the Hopi feel about holding onto things which are theirs, one has to rule out the possessive factor in Whorf's references to their inability to say "my room." It's just that their language is different. One might be led to assume by this that the Hopi would then lack a sense of territoriality. Again, nothing could be farther from the truth. They just use and conceive of space differently. We work from points and along lines. They apparently do not. While seemingly inconsequential, these differences caused innumerable headaches to the white supervisors who used to run the Hopi reservation in the first part of this century.

I will never forget driving over to one of the villages at the end of a mesa and discovering that someone was building a house in the middle of the road. It later developed that the culprit (in my eyes) was a man I had known for some time. I said, "Paul, why are you building your house in the middle of the road? There are lots of good places on either side of the road. This way people have to knock the bottoms out of their cars driving around on the rocks to get

to the village." His reply was short and to the point: "I know, but it's my right." He did have a right to a certain area laid down long before there was a road. The fact that the road had been used for many years meant nothing to him. Use and disuse of space in our terms had nothing to do with his ideas of possession.

SPACE AS A FACTOR IN CULTURE CONTACT

Whenever an American moves overseas, he suffers from a condition known as "culture shock." Culture shock is simply a removal or distortion of many of the familiar cues one encounters at home and the substitution for them of other cues which are strange. A good deal of what occurs in the organization and use of space provides important leads as to the specific cues responsible for culture shock.

The Latin house is often built around a patio that is next to the sidewalk but hidden from outsiders behind a wall. It is not easy to describe the degree to which small architectural differences such as this affect outsiders. American Point Four technicians living in Latin America used to complain that they felt "left out" of things, that they were "shut off." Others kept wondering what was going on "behind those walls." In the United States, on the other hand, propinquity is the basis of a good many relationships. To us the neighbor is actually quite close. Being a neighbor endows one with certain rights and privileges, also responsibilities. You can borrow things, including food and drink, but you also have to take your neighbor to the hospital in an emergency. In this regard he has almost as much claim on you as a cousin. For these and other reasons the American tries to pick his neighborhood carefully, because he knows that he is going to be thrown into intimate contact with people. We do not understand why it is that when we live next to people abroad

the sharing of adjacent space does not always conform to our own pattern. In France and England, for instance, the relations between neighbors are apt to be cooler than in the United States. Mere propinquity does not tie people together. In England neighbor children do not play as they do in our neighborhoods. When they do play, arrangements are sometimes made a month in advance as though they were coming from the other side of town!

Another example has to do with the arrangement of offices. In this case one notices great contrast between ourselves and the French. Part of our over-all pattern in the United States is to take a given amount of space and divide it up equally. When a new person is added in an office, almost everyone will move his desk so that the newcomer will have his share of the space. This may mean moving from positions that have been occupied for a long time and away from favorite views from the window. The point is that the office force will make its own adjustments voluntarily. In fact, it is a signal that they have acknowledged the presence of the new person when they start rearranging the furniture. Until this has happened, the boss can be sure that the new person has not been integrated into the group.

Given a large enough room, Americans will distribute themselves around the walls, leaving the center open for group activities such as conferences. That is, the center belongs to the group and is often marked off by a table or some object placed there both to use and save the space. Lacking a conference table, members will move their chairs away from their desks to form a "huddle" in the middle. The pattern of moving from one's place to huddle is symbolized in our language by such expressions as, "I had to take a new position on that point," or "The position of the office on this point is . . ."

The French, by contrast, do not make way for each other

in the unspoken, taken-for-granted way that we do. They do not divide up the space with a new colleague. Instead they may grudgingly give him a small desk in a dark corner looking toward the wall. This action speaks eloquently to Americans who have found themselves working for the French. We feel that not to "make a place" accents status differences. If the rearrangement which says, "Now we admit you to the group, and you are going to stay," fails to take place, Americans are likely to feel perilously insecure. In French offices the key figure is the man in the middle, who has his fingers on everything so that all runs smoothly. There is a centralized control. The French educational system runs from the middle, so that all students all over France take the same class at the same time.

It has already been mentioned that ordering is an important element in American patterns. As a general rule, whenever services are involved we feel that people should queue up in order of arrival. This reflects the basic egalitarianism of our culture. In cultures where a class system or its remnants exist, such ordinality may not exist. That is, where society assigns rank for certain purposes, or wherever ranking is involved, the handling of space will reflect this.

To us it is regarded as a democratic virtue for people to be served without reference to the rank they hold in their occupational group. The rich and poor alike are accorded equal opportunity to buy and be waited upon in the order of arrival. In a line at the theater Mrs. Gotrocks is no better than anyone else. However, apart from the English, whose queueing patterns we share, many Europeans are likely to look upon standing in line as a violation of their individuality. I am reminded of a Pole who reacted this way. He characterized Americans as sheep, and the mere thought of such passiveness was likely to set him off crashing into a line at whatever point he pleased. Such people can't stand the

idea of being held down by group conformity as if they were an automaton. Americans watching the Pole thought he was "pushy." He didn't bother to hide the fact that he thought we were much too subdued. He used to say, "What does it matter if there is a little confusion and some people get served before others?"

FORMAL SPACE PATTERNS

Depending upon the culture in question, the formal patterning of space can take on varying degrees of importance and complexity. In America, for example, no one direction takes precedence over another except in a technical or utilitarian sense. In other cultures one quickly discovers that some directions are sacred or preferred. Navajo doors must face east, the mosques of the Moslems must be oriented toward Mecca, the sacred rivers of India flow south. Americans pay attention to direction in a technical sense, but formally and informally they have no preference. Since our space is largely laid out by technical people, houses, towns, and main arteries are usually oriented according to one of the points of the compass. The same applies to roads and main highways when the topography allows, as it does in the flat expanses of Indiana and Kansas. This technical patterning allows us to locate places by co-ordinates (a point on the line). "He lives at 1321 K Street, N.W." tells us that he lives in the northwest part of town in the thirteenth block west of the line dividing the town into east-west halves and eleven blocks north of the line dividing the town into north-south halves, on the left side of the street, about one quarter of the way up the block.

In the country we will say, "Go out of town ten miles west on Highway 66 until you get to the first paved road turning

north. Turn right on that road and go seven miles. It's the second farm on your left. You can't miss it."

Our concept of space makes use of the edges of things. If there aren't any edges, we make them by creating artificial lines (five miles west and two miles north). Space is treated in terms of a co-ordinate system. In contrast, the Japanese and many other people work within areas. They name "spaces" and distinguish between one space and the next or parts of a space. To us a space is empty—one gets into it by intersecting it with lines.

A technical pattern which may have grown out of an informal base is that of positional value or ranking. We have canonized the idea of the positional value in almost every aspect of our lives, so much so that even children four years old are fully aware of its implications and are apt to fight with each other as to who will be first.

In addition to positional value, the American pattern emphasizes equality and standardization of the segments which are used for measuring space or into which space is divided, be it a ruler or a suburban subdivision. We like our components to be standard and equal. American city blocks tend to have uniform dimensions whereas towns in many other parts of the world are laid out with unequal blocks. This suggests that it was no accident that mass production, made possible by the standardization of parts, had its origins in the United States. There are those who would argue that there are compelling technological reasons for both mass production and parts standardization. However, an examination of actual practice indicates that Europeans have produced automobiles in the past—and very good ones too—in which the cylinders were all of different sizes. The difference in dimensions was not great, of course, a matter of a very few thousandths of an inch. This, however, was enough to cause the car to make noise and use too much oil

if it was repaired by an American mechanic unfamiliar with the European patterns that lack the uniformity isolate.

Japan, too, has a passion for uniformity, though it is somewhat different from ours. All mats (*tatami*) on the floors of Japanese houses and all windows, doors, and panels are usually of identical dimensions in a given district. In newspaper advertisements of houses for sale or rent the dimensions are usually given in terms of the number of mats of a specific area. Despite this example of uniformity, the Japanese differ from us in a way which can have considerable economic results. In one case, for example, they manufactured a very large order of electronics parts according to rigid specifications which they were quite able to meet. When the product arrived in the United States, it was discovered that there were differences between various batches of these parts. The customer subsequently discovered that while the whole internal process of manufacture had been controlled, the Japanese had failed to standardize their gauges! It is no accident that in the United States there is a Bureau of Standards. Much of the success of this country's technical skill and productivity, which we are trying to pass on to other nations, rests on these and similar unstated patterns.

HOW SPACE COMMUNICATES

Spatial changes give a tone to a communication, accent it, and at times even override the spoken word. The flow and shift of distance between people as they interact with each other is part and parcel of the communication process. The normal conversational distance between strangers illustrates how important are the dynamics of space interaction. If a person gets too close, the reaction is instantaneous and automatic—the other person backs up. And if he gets too

close again, back we go again. I have observed an American backing up the entire length of a long corridor while a foreigner whom he considers pushy tries to catch up with him. This scene has been enacted thousands and thousands of times—one person trying to increase the distance in order to be at ease, while the other tries to decrease it for the same reason, neither one being aware of what was going on. We have here an example of the tremendous depth to which culture can condition behavior.

One thing that does confuse us and gets in the way of understanding cultural differences is that there are times in our own culture when people are either distant or pushy in their use of space. We, therefore, simply associate the foreigner with the familiar; namely those people who have acted in such a way that our attention was drawn to their actions. The error is in jumping to the conclusion that the foreigner feels the same way the American does even though his overt acts are identical.

This was all suddenly brought into focus one time when I had the good fortune to be visited by a very distinguished and learned man who had been for many years a top-ranking diplomat representing a foreign country. After meeting him a number of times, I had become impressed with his extraordinary sensitivity to the small details of behavior that are so significant in the interaction process. Dr. X. was interested in some of the work several of us were doing at the time and asked permission to attend one of my lectures. He came to the front of the class at the end of the lecture to talk over a number of points made in the preceding hour. While talking he became quite involved in the implications of the lecture as well as what he was saying. We started out facing each other and as he talked I became dimly aware that he was standing a little too close and that I was beginning to back up. Fortunately I was able to suppress my

first impulse and remain stationary because there was nothing to communicate aggression in his behavior except the conversational distance. His voice was eager, his manner intent, the set of his body communicated only interest and eagerness to talk. It also came to me in a flash that someone who had been so successful in the old school of diplomacy could not possibly let himself communicate something offensive to the other person except outside of his highly trained awareness.

By experimenting I was able to observe that as I moved away slightly, there was an associated shift in the pattern of interaction. He had more trouble expressing himself. If I shifted to where I felt comfortable (about twenty-one inches), he looked somewhat puzzled and hurt, almost as though he were saying: "Why is he acting that way? Here I am doing everything I can to talk to him in a friendly manner and he suddenly withdraws. Have I done anything wrong? Said something that I shouldn't?" Having ascertained that distance had a direct effect on his conversation, I stood my ground, letting him set the distance.

Not only is a vocal message qualified by the handling of distance, but the substance of a conversation can often demand special handling of space. There are certain things which are difficult to talk about unless one is within the proper conversational zone.

Not long ago I received a present of some seeds and chemicals along with the information that if I planted the seeds the chemicals would make them grow. Knowing little about hydroponics except that the plants should be suspended above the fluid in which chemicals are dissolved, I set out to find a suitable flowerpot. At every flower shop I was met with incredulity and forced to go through a routine involving a detailed explanation of just what it was I wanted and how hydroponics worked.

My ignorance of both hydroponics and florist shops made me feel somewhat ill at ease, so that I did not communicate in the manner that I use when I am speaking on a familiar subject in a familiar setting. The role that distance plays in a communication situation was brought home to me when I entered a shop in which the floor was filled with benches spaced at about twenty-inch intervals. On the other side of the benches was the female proprietor of the shop. As I entered, she craned her neck as though to reach over the benches, raised her voice slightly to bring it up to the proper level, and said, "What was it you wanted?" I tried once. "What I'm looking for is a *hydroponic* flowerpot." "What kind of flowerpot?" still with the neck craned. At this point I found myself climbing over benches in an effort to close up the space. It was simply impossible for me to talk about such a subject in a setting of this sort at a distance of fifteen feet. It wasn't until I got to within three feet that I was able to speak with some degree of comfort.

Another example is one that will be familiar to millions of civilians who served in the Army during World War II. The Army, in its need to get technical about matters that are usually handled informally, made a mistake in the regulations on distance required for reporting to a superior officer. Everyone knows that the relationship between officers and men has certain elements which require distance and impersonality. This applied to officers of different ranks when they were in command relationship to each other. Instructions for reporting to a superior officer were that the junior officer was to proceed up to a point three paces in front of the officer's desk, stop, salute, and state his rank, his name, and his business: "Lieutenant X, reporting as ordered, sir." Now, what cultural norms does this procedure violate, and what does it communicate? It violates the conventions for the use of space. The distance is too great, by

at least two feet, and does not fit the situation. The normal speaking distance for business matters, where impersonality is involved at the beginning of the conversation, is five and a half to eight feet. The distance required by the army regulations borders on the edge of what we would call "far." It evokes an automatic response to shout. This detracts from the respect which is supposed to be shown to the superior officer. There are, of course, many subjects which it is almost impossible to talk about at this distance, and individual army officers recognize this by putting soldiers and junior officers at ease, asking them to sit down or permitting them to come closer. However, the first impression was that the Army was doing things the hard way.

For Americans the following shifts in the voice are associated with specific ranges of distances:

- | | |
|---------------------------------------|---|
| 1. <i>Very close</i> (3 in. to 6 in.) | Soft whisper; top secret |
| 2. <i>Close</i> (8 in. to 12 in.) | Audible whisper; very confidential |
| 3. <i>Near</i> (12 in. to 20 in.) | Indoors, soft voice; outdoors, full voice; confidential |
| 4. <i>Neutral</i> (20 in. to 36 in.) | Soft voice, low volume; personal subject matter |
| 5. <i>Neutral</i> (4½ ft. to 5 ft.) | Full voice; information of non-personal matter |

- | | |
|--|--|
| 6. <i>Public Distance</i>
(5½ ft. to 8 ft.) | Full voice with slight overloudness; public information for others to hear |
| 7. <i>Across the room</i>
(8 ft. to 20 ft.) | Loud voice; talking to a group |
| 8. <i>Stretching the limits of distance</i> | 20 ft. to 24 ft. indoors; up to 100 ft. outdoors; hailing distance, departures |

In Latin America the interaction distance is much less than it is in the United States. Indeed, people cannot talk comfortably with one another unless they are very close to the distance that evokes either sexual or hostile feelings in the North American. The result is that when they move close, we withdraw and back away. As a consequence, they think we are distant or cold, withdrawn and unfriendly. We, on the other hand, are constantly accusing them of breathing down our necks, crowding us, and spraying our faces.

Americans who have spent some time in Latin America without learning these space considerations make other adaptations, like barricading themselves behind their desks, using chairs and typewriter tables to keep the Latin American at what is to us a comfortable distance. The result is that the Latin American may even climb over the obstacles until he has achieved a distance at which he can comfortably talk.

chapter

eleven

LOOSENING

THE

GRIP

The first profound scientific understanding of the nature of culture dates back almost a hundred years. Yet to this day the concept of culture is resisted or ignored by a world which has accepted many more abstract and complex notions. Why? Oddly enough it is not the differences between cultures that breeds resistance. These are usually acceptable. Rather, years of experience in trying to communicate the basic discoveries about culture have taught me that the resistance one meets has a great deal in common with the resistance to psychoanalysis which was so strong in its early days. Though the concepts of culture (like those of psychoanalysis) are abstract, they turn out, in fact, to be highly relevant to the deepest personal concerns. They touch upon such intimate matters that they are often brushed aside at the very point where people begin to comprehend their implications. Full acceptance of the reality of culture would have revolutionary consequences.

As a means of handling the complex data with which culture confronts us, I have treated culture as communication. This approach has broad implications for future study, but it offers no quick road to complete understanding. The universe does not yield its secrets easily, and culture is no exception. Yet this insistence on culture as communication has its practical aspects. Most people's difficulties with each other can be traced to distortions in communication. Good will, which is so often relied upon to solve problems, is often needlessly dissipated because of the failure to understand what is being communicated.

By broadening his conception of the forces that make up and control his life, the average person can never again be completely caught in the grip of patterned behavior of which he has no awareness. Lionel Trilling once likened culture to a prison. It is in fact a prison unless one knows that there is a key to unlock it. While it is true that culture binds human beings in many unknown ways, the restraint it exercises is the groove of habit and nothing more. Man did not evolve culture as a means of smothering himself but as a medium in which to move, live, breathe, and develop his own uniqueness. In order to exploit it he needs to know much more about it.

The realization that formal culture can exert a stabilizing influence on our lives should not be mistaken for conservatism. In fact, an appreciation of the nature and purpose of formal culture should eventually prevent our blind acceptance of the teachings of psychologists and educators who, in their zeal to correct past faults in the system, insist that we spoil our children by not setting any limits and being overly permissive. This permissiveness only means that somebody else, perhaps a policeman or a judge, has to define the limits in life beyond which people simply cannot be permitted to go. We must realize that each child must learn

the limits just as he must learn that there are certain things upon which he can always depend.

A real understanding of what culture is should rekindle our interest in life, an interest which is often sorely lacking. It will help people learn where they are and who they are. It will prevent them from being pushed around by the more voracious, predatory, and opportunistic of their fellow men who take advantage of the fact that the public is not usually aware of those shared formal norms which give coherence to our society. These social misfits who lack the security of support which formal culture provides, want to destroy things and build power around themselves. The case of the late Senator McCarthy was a classic example of this type of opportunism. If the American public had greater realization that formal norms are not individual but shared, they might save themselves from McCarthyism in any of its future manifestations.

Probably the most difficult point to make and make clearly is that not only is culture imposed upon man but it *is* man in a greatly expanded sense. Culture is the link between human beings and the means they have of interacting with others. The meaningful richness of human life is the result of the millions of possible combinations involved in a complex culture.

As I mentioned in the Introduction, the analogy with music is useful in understanding culture. A musical score is comparable to the technical descriptions of culture that the anthropologist is beginning to make. In both cases, the notation system, i.e., the vocabulary, enables people to talk about what they do. Musically, the process of making shorthand notes does not diminish the artist in any way. It simply enables him to transmit to others who are not present what he does when he plays. In music it enables us to share and preserve the genius that would ordinarily only reach those

who were in the physical presence of the artist. Bach, Beethoven, and Brahms would have been lost to us if they had not had at their disposal the means for writing music.

Like the creative composer, some people are more gifted at living than others. They do have an effect on those around them, but the process stops there because there is no way of describing in technical terms just what it is they do, most of which is out of awareness. Some time in the future, a long, long time from now when culture is more completely explored, there will be the equivalent of musical scores that can be learned, each for a different type of man or woman in different types of jobs and relationships, for time, space, work, and play. We see people who are successful and happy today, who have jobs which are rewarding and productive. What are the sets, isolates, and patterns that differentiate their lives from those of the less fortunate? We need to have a means for making life a little less haphazard and more enjoyable. Actually, we as Americans have progressed quite a long way on this road, compared with people of the Arab Middle East and Turkey, for example. Professor Daniel Lerner, a sociologist at M.I.T., discovered when he interviewed villagers in Turkey that the idea of achieving happiness did not mean anything to them. It had never entered their mind that happiness was one of the things you had a right to expect from life and might strive to achieve. This does not mean that these villagers never have happy moments. Quite to the contrary. It just means that their culture does not include this isolate.

All cultures have developed values in regard to what I have called Primary Message Systems. For example, the values in bisexuality center around preferred and not-preferred types of men and women, idealized models for the children of each sex to follow. Most of these models are formal, some are informal. However, what most cultures do

not do is provide anything more than labels for the different types of males or females who are the models for their children. Modern society has complicated matters because of the increased number of alternatives that are provided the young. If one considers the Comanche of the early western plains, by way of contrast to present-day Americans, it is possible to get some idea of how increasingly complex life has become. A young Comanche boy knew that he had only two alternatives. He could grow up to be a warrior or a transvestite, the term used for a man who wears women's clothes and does women's work. Everyone had a clear idea of what it meant to be a warrior and the qualities that went with it. If for some reason or other a boy lacked the bravado and bravery necessary to be a good warrior and he was afraid he would fail, his alternative was to put on the dress of a woman and take up bead work. There were in Comanche life only two models for adults; warriors and women. Life in American culture is not that simple. There is not even a satisfactory inventory of the categories of males and females for American culture, although some of the types are reasonably well known because of a persistent interest in this subject on the part of contemporary novelists. Not only must we know more about the alternatives that confront each of us in our daily lives, but we must also know the overall pattern of life as well.

For the layman and scientist alike I would like to say that I feel very strongly that we must recognize and understand the cultural process. We don't need more missiles and H-bombs nearly so much as we need more specific knowledge of ourselves as participants in culture.

APPENDIX I SCHEMA FOR SOCIAL SCIENTISTS

For the social scientist, the basic contribution of this study lies in eight interrelated ideas:

1. Culture is communication and communication is culture.
2. Culture is not one thing, but many. There is no one basic unit or elemental particle, no single isolate for all culture. There are at least ten bases for culture, all deeply rooted in the biological past, that satisfy the rigid criteria imposed by using a linguistic model for culture.
3. The study of institutions and their structure and the study of the individual and his psychological make-up are excluded from the specific study of culture as it is used here, although they are involved in it on a higher organizational level.
4. Man operates on three different levels: the formal, informal, and technical. Each is present in any situation, but one will dominate at any given instant in time. The shifts from level to level are rapid, and the study of these shifts is the study of the process of change.
5. Culture is concerned more with messages than it is with networks and control systems. The message has three components: sets, isolates, and patterns. Sets are perceived and constitute the point of entry into any cultural study. They are limited in number only by the patterned combination of isolates that go to make them up. Isolates are abstracted from sets by a process of comparing sets on the level of differential meaning. Controlled experiments are set up and the subject is asked if he differentiates between event A and events B, C, D, X, Y, and so on, until all the distinctions he makes have been isolated. Isolates are limited

in number. Patterns emerge and are understood as a result of the mastery of sets and isolates in a meaningful context. Patterns are also limited in number.

6. There is a principle of indeterminacy in culture. Isolates turn into sets when they are studied in detail and are therefore abstractions. The more precise the observer is on one level, the less precise he will be on any other. Only one level can be studied with precision at any one time, and only one level can be described at one time.

7. There is also a principle of relativity in culture, just as there is in physics and mathematics. Experience is something man projects on the outside world as he gains it in its culturally determined form. Man alters experience by living. There is no experience independent of culture against which culture can be measured.

8. Cultural indeterminacy and cultural relativity are not easy concepts for the layman to grasp. They mean more than what is good by one set of standards may be bad by some other. They mean that in every instance the formulae must be worked out that will enable scientists to equate event A^2 in culture A^1 with B^2 in culture B^1 . A proper cultural analysis has to begin with a microcultural analysis on the isolate level once the sets have been perceived.

APPENDIX II A MAP OF CULTURE

One of the by-products of our studies of culture as communication is a chart that has proved helpful at one phase in our work. A good deal was learned in the course of developing it, and it still represents the only thing of its kind in existence today. I pass it on to others who may be interested.

My colleague, Trager, and I operated on the assumption that culture was bio-basic and had its wellsprings in a

number of infra-cultural activities. We were reasonably certain that we had the basic components of culture since all the systems we developed satisfied the necessary criteria. But what did the totality amount to? Given these systems, could you derive culture out of such a base? Remember one of our criteria for cultural systems had been that each system had to be reflected in the rest of culture as well as reflecting all other cultural systems. This led to the creation of a chart that would show in one place the various combinations of the Primary Message Systems with each other. We began by constructing a two-dimensional grid with the PMS on the left and their adjectival counterparts across the top (see chart).

In this way it was possible to see the types of activities resulting from the various combinations of the PMS, with a chart that turned out to be a sort of cultural equivalent of the periodic tables of chemistry. We took two PMS like subsistence and interaction and asked ourselves the following question: "What are the *economic extensions of interaction* and its reciprocal, the *interactional extensions of subsistence*?" We came up with "exchange" and "the ecological community." *Economic patterns of association* and *organizational patterns of subsistence* gave us "economic roles" and "occupational groupings"; *instructional results of subsistence* and the *economic results of learning* gave us "learning from working" and "rewards for teaching and learning." In some cases we were puzzled at first as to what to indicate under a given heading. The *protective patterns of territoriality* gave us pause for quite a while until it occurred to us that this was, of course, "privacy" on the individual level, while the *territorial patterns of defense* have to do with the organization of territory as a part of a system of defense (natural barriers, like rivers, mountains, canyons, forests, etc.).

It was discovered that in working with the grid the pattern of analysis imposed its own rules. Whatever we decided on in one part had to be consistent with everything else. For example, we thought for a time that the *recreational extensions of interaction* were pleasure, but the over-all pattern of the chart plus certain self-checking features indicated that "participation in the arts and sports" was a better choice.

Notice of the self-checking features mentioned above came about in the following way: By turning to the chart the reader will note that there is a diagonal from the upper left to the lower right formed by the intersection of each PMS with its adjectival counterpart. We observed that in filling in the spaces in the grid those activities above the diagonal were concerned with the individual, those below the diagonal with the group counterparts. Thus the *recreational results of association* are "entertainers and athletes," while the *organizational results of play* are "play groups, teams, and troupes."

The chart as it now stands, along with the rules for its use, is actually a kind of mathematics of culture that will be useful to the specialist and will also have certain other applications worthy of mention. It is, of course, limited by the fact that it has only two dimensions. A three-dimensional chart represents the next logical step but would be vastly more complex.

By looking at the chart the reader will observe that it has no content or substance and is restricted entirely to headings. Its present potential is as a classification system and a check list for behavioral scientists, who, when working on large projects, can be sure that no major categories have been overlooked. It is also a special kind of map of the categories of human activities. As a map it can be useful in allocating and keeping track of work responsibility in group projects by assigning a given area to each worker. The mature student

may also find it stimulating to experiment with the chart and what can be done with it. There is more than the one axis indicated by the basic systems that intersect. The various areas of the chart are concerned with quite different things; the upper left portion tends toward formal activities, the middle toward the informal, and the whole lower right side toward the technical. While it is quite apparent that each category is discrete, activities which are related occur in adjacent areas. When developed in detail by the breaking down of each category into its formal, informal, and technical aspects, new dimensions are added.

In recent years a constantly recurring problem is the classification and codification of data which is accumulating too rapidly for most people to handle. The system presented here has 100 major slots, each representing complexes of activities which can be broken down indefinitely. Each number is permanently identified with a major field—0, interaction; 2, subsistence; 6, learning; 8, defense, and so on. Each of the 100 categories can be quickly subdivided by 10 and each of the resulting sub-categories by 10 again. Thus 80 is community defenses, 80.2 the economic aspects of community defenses, and 80.5 the temporal aspects. The advantage of such a system over some others is that it has a theoretical base that gives it a consistency and design lacking in the empirical models.

At this point it's important to draw the reader's attention to the fact that the order in which the PMS are given appears to be highly important. Originally this order was chosen because, given these activities, it was closest to the actual phylogenetic order; that is, the activities are learned and integrated in the life history of each organism. The same order can be found in that organism's evolution. Having established this order we also later observed that each system is paired in a functional way with one another; viz., time

Primary Message Systems	Interactional 0	Organizational 1	Economic 2	Sexual 3
Interaction 0	Communication Vocal qualifiers Kinesics Language 00	Status and Role 01	Exchange 02	How the sexes interact 03
Association 1	Community 10	Society Class Caste Government 11	Economic roles 12	Sexual roles 13
Subsistence 2	Ecological community 20	Occupational groupings 21	Work Formal work Maintenance Occupations 22	Sexual division of labor 23
Bisexuality 3	Sex community (clans, sibs) 30	Marriage groupings 31	Family 32	The Sexes Masc. vs. Fem. Sex (biological) Sex (technical) 33
Territoriality 4	Community territory 40	Group territory 41	Economic areas 42	Men's and women's territories 43
Temporality 5	Community cycles 50	Group cycles 51	Economic cycles 52	Men's and women's cyclical activities 53
Learning 6	Community lore—what gets taught and learned 60	Learning groups— educational institutions 61	Reward for teaching and learning 62	What the sexes are taught 63
Play 7	Community play—the arts and sports 70	Play groups— teams and troupes 71	Professional sports and entertainment 72	Men's and women's play, fun, and games 73
Defense 8	Community defenses— structured defense systems 80	Defense groups —armies, police, public health, organ- ized religion 81	Economic patterns of defense 82	What the sexes defend (home, honor, etc.) 83
Exploitation 9	Communica- tion networks 90	Organizational networks (cities, build- ing groups, etc.) 91	Food, resources, and industrial equipment 92	What men and women are concerned with and own 93

Territorial 4	Temporal 5	Instructional 6	Recreational 7	Protective 8	Exploitation 9
Places of interaction 04	Times of interaction 05	Teaching and learning 06	Participation in the arts and sports (active and passive) 07	Protecting and being protected 08	Use of telephones, signals, writing, etc. 09
Local group roles 14	Age group roles 15	Teachers and learners 16	Entertainers and athletes 17	Protectors (doctors, clergy, soldiers, police, etc.) 18	Use of group property 19
Where the individual eats, cooks, etc. 24	When the individual eats, cooks, etc. 25	Learning from working 26	Pleasure from working 27	Care of health, protection of livelihood 28	Use of foods, resources, and equipment 29
Areas assigned to individuals by virtue of sex 34	Periods assigned to individuals by virtue of sex 35	Teaching and learning sex roles 36	Participation in recreation by sex 37	Protection of sex and fertility 38	Use of sex differentiating decoration and adornment 39
Space Formal space Informal space Boundaries 44	Scheduling of space 45	Teaching and learning individual space assignments 46	Fun, playing games, etc., in terms of space 47	Privacy 48	Use of fences and markers 49
Territorially determined cycles 54	Time Sequence Cycles Calendar 55	When the individual learns 56	When the individual plays 57	Rest, vacations, holidays 58	Use of time-telling devices, etc. 59
Places for learning 64	Scheduling of learning (group) 65	Enculturation Rearing Informal learning Education 66	Making learning fun 67	Learning self- defense and to stay healthy 68	Use of training aids 69
Recreational areas 74	Play seasons 75	Instructional play 76	Recreation Fun Playing Games 77	Exercise 78	Use of recreational materials (playthings) 79
What places are defended 84	The When of defense 85	Scientific, religious, and military training 86	Mass exercises and military games 87	Protection Formal defenses Informal defenses Technical defenses 88	Use of materials for protection 89
Property— what is enclosed, counted, and measured 94	What periods are measured and recorded 95	School buildings, training aids, etc. 96	Amusement and sporting goods and their industries 97	Fortifications, armaments, medical equipment, safety devices 98	Material Systems Contact w/ environment Motor habits Technology 99

with space, work with play. The order is also consistent with these paired relationships. An interesting sidelight on order is that most societies rank the systems differently from the order given. The ranking a society assigns to the systems provides a quick way of getting at a cultural profile that can be compared with others. For example, the United States informants questioned on this departed from the basic order as regards materials, recreation, and bisexuality. As could be predicted for Americans, materials were placed near the top, recreation and bisexuality competed for the last place. An Arab informant differed considerably from the Americans. He separated time and space, putting time last; materials were ranked low, while defense systems were ranked with communication at the top.

Laying out a map of culture is a unique way of proceeding. In the past our data has not lent itself to presentations of this sort. The whole theory of culture as presented in this volume differs in many important respects from previous thought. The principal differences are: (a) the use of a linguistic model; (b) the observation of the whole of culture as communication; (c) the concept of the PMS rooted in biology; (d) the formal, informal, and technical types of integrations; (e) the derivations of these integrations: sets, isolates, and patterns.

The writer and his colleagues who worked with him developing this analysis have found it to be one that is rewarding to work with, enlightening, and conducive to further research. It satisfied our demands for specificity, concreteness, and teachability. We have also discovered that, by sticking to one of the PMS at a time when working with an informant, it is possible to keep a firm footing in the known at the same time that one is getting into new and unknown areas. For example, temporal isolates of the informal variety as elicited from an Arab also shed new light on Arab values

in a way that would have otherwise been difficult to achieve.

It is hoped that this brief explanation will serve two purposes: to enlighten the non-specialist interested in cross-cultural work as to the nature of culture and to stimulate students to further work. Much progress needs to be made in the definition of cultural isolates as a means of handling values. It would seem that here we have a few leads as to how this might be done.

APPENDIX III THREE EXAMPLES OF CHANGE

This appendix has been added for the specialist and represents three clinical case studies of change. They illustrate the progression from formal to informal to technical. The introduction of the initial *v* into English from the French in the eleventh century is an example of diffusion from one culture to another. The screw thread example is picked up at the point where different manufacturers are in the process of giving up their own informal thread design and are willing to submit to the standardizing dictates of the technical. The southwest pottery case is the most technical of all and is reproduced here because of the interest of colleagues in new ways of testing historical reconstructions of the past. It concerns the transfer of an entire technological process, so that it is possible to get a step-by-step picture of how the new technology became integrated, how it also at one moment was freed from the bonds of tradition, and how it later became fettered, but within a new frame of reference.

In England prior to the Norman Conquest *v* and *f* were variants of the same sound (what the linguist calls allophones of the same phoneme). *F* tended to be used in initial position in words, whereas *v* was more commonly used in the middle. The French conquerors, on the other

hand, used these two as completely separate sounds, just as we do today.

Included in the cultural impedimenta which the French brought to England were various foods. Among these was veal. Englishmen who spoke French had to learn to make the distinction between *v* and *f*, because now, not only did it make a difference to the finicky French, but a new English word had to be differentiated. Undoubtedly, lower-class Englishmen in time went on talking as though there were no difference. Eventually these informal adaptations of the English were technicalized and the *v* as well as the *f* as an initial consonant began appearing in print in English words as well as in anglicized French words. Today the initial *v* is part of our formal system, and it is unthinkable that anyone would ever seriously consider going back to the old form. The fact that we think of it as right and natural marks it as formal.

THE STANDARDIZATION OF THE SCREW THREAD

One would not expect that something as technical and mundane as the screw thread of nuts and bolts would illustrate, by its history, how changes are made at one point in time and deeply resisted at another. The fact that there is a demonstrable need for change does not necessarily mean that change takes place. How change occurs is a function of whether a given cultural item is treated formally, informally, or technically.

The history of the screw thread begins in earnest with the industrial revolution in England and in this country. In the early days of manufacturing, each factory designed its own nuts and bolts. There was no standardization. Obviously this situation could not go on indefinitely. Yet it was quite a revolution when the American inventor and industrialist,

William Sellers of the Franklin Institute, standardized the thread designs of the Americans into one thread which was eventually adopted by the Society for Automotive Engineers. While Sellers was working out the fate of the American nuts and bolts, an Englishman by the name of Whitworth was doing a similar job for the British. Both men's technical solutions to the problem of standardization were so close that the end products were almost but not quite identical. This didn't bother anyone very much until World War I, when the United States began producing war goods for the English and vice versa. When one side made a machine gun for the other, it either had to retool all thread-cutting operations or else make a product that was held together with nuts and bolts that wouldn't fit anything else the end user had. The retooling and stockpiling of nuts and bolts that were almost but not quite identical ran into many millions of dollars. Everyone realized that it would make more sense for both nations to decide on a common thread design, but the idea was strongly resisted. Engineers and administrators treated the problem as a technical one. Actually, once the technical solutions of standardization were separately arrived at by Sellers and Whitworth, each nation treated its own thread design as a formal matter. This meant that those who were involved would resist logic and technical arguments with all sorts of rationalizations, none of which had any technical validity.

Two world wars, the lives of an unknown number of troops who died because they couldn't scavenge ordnance parts in the field, and millions of dollars of added expense all failed to bring about a change.

Informally, different individuals tried to work out solutions. But it wasn't until World War II that William L. Batt, an American engineer and business executive, managed to mobilize enough support to obtain agreement on a thread

design that would be used by both nations in the manufacture of equipment that the other was to use. Finally, with the English conceding more than the Americans, compromise was achieved. The screw thread had been born technically, drifted through a long formal phase, and had at last returned to the technical sphere.

In much the same way, American resistance to adoption of the metric system (a Napoleonic innovation) is without logic. There is no reason why we should hold out, except that weights and measures are to most people formal systems. As Americans we respond viscerally to the idea that we should give up the pound and take the kilo in its place, in spite of the fact that in science and engineering the metric system is gradually taking over.

AN EARLY CASE OF TECHNICAL ASSISTANCE

The next example comes from southwestern archaeology and is concerned with the transfer of pottery making from one group to another approximately fifteen hundred years ago. Pottery is a good topic for examination of change, because pottery fragments are virtually indestructible. Besides, clay has such qualities that it is almost impossible to manufacture pottery without leaving a good deal of evidence as to the method of manufacture. In addition, pottery provides a long, uninterrupted record of any culture.

The example here begins at a time when one of the principal prehistoric cultures of the Southwest had been making pottery for several hundred years. These people are known in the literature as the Mogollon. The name is from the area where their remains were first discovered. The northern neighbors of the Mogollon, ancestors of the present day Pueblo Indians, were known as the Anasazi, a Navajo term for "the old people."

Sometime near the beginning of the Christian Era, the Mogollon learned to make pottery, probably from people to the south of them. Later on the Anasazi borrowed pottery making from the Mogollon. The nature of the culture contact between Mogollon and Anasazi as recorded in the pottery made at the time tells something of the tradition of these two peoples and also provides some psychological insights into their attitudes toward change.

Besides making a pot on a wheel, it can be built up with a coil of clay or patched together or beaten out of a ball. The Mogollon used a very thin coil approximately $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, starting the pot either in the base of another pot (or basket) or by spiraling the coil into a plaque and then working the edges upward into a bowl or a pitcher. Each coil was attached to the one below it by pinching the two together at very close intervals. Before the clay had dried, the pinch marks left as a result of the process of manufacture were partially but not completely obscured by being polished with a smooth pebble. The polished-over corrugations left a dimpled surface characteristic of Mogollon pottery. The pot was then fired in an oxidizing atmosphere, which turned any iron in the clay a bright red. The firing method insured that the pottery would be red in the majority of cases, because the clays of the southwestern part of the United States almost always have iron in them. These processes had been established and were pretty much unchanged for three or four hundred years by the time of the initial Anasazi contact at about A.D. 500-600.

It is possible to reconstruct a good deal about the process that took place when the Anasazi borrowed pottery techniques from the Mogollon. The Anasazi apparently observed pottery making in the process but were not technically instructed, possibly because of a language barrier. It may also have been that the men saw Mogollon women mak-

ing pots and reported back to their wives and sisters. The reason we know there couldn't have been instruction is because the Anasazi pottery, instead of being red, *turned out* gray, showing that it was fired in a reducing atmosphere without oxygen. We know the Anasazi looked on this as an error in their technique, because they went to the trouble of finding red clay which they ground to a fine powder and used to paint the entire surface of the gray pots. Their image of a proper pot was that it should be red. Even after hundreds of years of weathering, minute traces of this powdered clay can be seen clinging to the sides of small pits in the surface of these early pots. The red unfired clay could not be polished because it was put on an already fired surface. The Mogollon pots all show some polishing.

By A.D. 800-900 the contact between the two peoples apparently was a little closer and some actual instruction took place, at least the Anasazi became more technical in their imitation of the Mogollon techniques. They learned to fire in an oxidizing atmosphere on a wide scale which also enabled them to polish red pots before they were fired. Interestingly enough, having learned how to fire a red pot, they didn't give up their original reduced-firing technique but maintained the two ways of firing side by side for several hundred years thereafter. At the same time, they learned to make the obscured neck-coil pottery so characteristic of their southern neighbors. In order to make this type of pottery, the indented coil has to be left unobscured and smoothed over in a particular way. Unlike the Mogollon, the Anasazi did not have a tradition for smoothing over coils and indentations, and they saw the possibilities in retaining the earlier steps in the process. To them the pinch marks had decorative value. At first they may have seen no reason to go through the additional steps of smoothing out the pinch

marks and following this up with polishing, when the pot was to be used as a cooking pot. Some of the early examples of this ware are sufficiently sloppy to give one this impression. It did not take them long, however, to develop the corrugating to an art in itself, and they even went so far as to vary the pinch marks so as to produce a design similar to those seen on baskets. This is one of the many cases whereby a process is freed from tradition (the formal) as it moves across a cultural boundary and becomes a technical matter.

The archaeologist can see tradition (the formal) very clearly at work in both the Mogollon and the Anasazi and can also see in the one instance how an informal adaptation—the use of the red slip painted on after the pot was fired—continued to be used even after the Anasazi knew how to produce permanent red by firing. The development of corrugating itself was an informal adaptation which was later technicalized and finally became a traditional form of southwestern pottery. The same applies to the two firing techniques, one arrived at informally but later technicalized and finally worked into a new formal system that persisted for several hundred years.

One of the most important aspects of a study of change of this sort is that it can be used to test theories concerning the cultural history of the Southwest. For many years there was a big difference of opinion as to whether the Mogollon constituted a branch of the Anasazi or was actually a separate culture. On the one hand, it seemed obvious that each culture had clusters of traits common to both. On the other hand, each had distinctive ways of making pots, houses, and stone tools. If it had been possible to see the actual transfer of pottery making in dynamic terms as functions of a process of change, there could not have been much doubt about the fact that the two were in reality very different even though

one borrowed from the other. The Mogollon had different traditions and were also only sporadically in contact with the Anasazi. In this light, it would be hard to argue commonness of culture.

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