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Kenneth Hill

The Psychology of Lost

Editor's Introduction. *This introductory chapter, prepared specifically for this book, discusses the concept of being lost from a psychological point of view. Research on the behavior of lost persons is described, including their emotional reactions and the various methods they employ in their efforts to become "found."*

In all the lore of woods and wilderness, no story is quite so dramatic as that of the lost person. Man's struggle with a hostile environment, the threat of death from exposure or starvation, the separation from loved ones: these and other themes are all embodied in the tale of the lost prospector, the downed pilot, or the child who has strayed from camp. Indeed, the literature of the world abounds with fictional characters who lose their way in forest, desert, cave, or sea, isolated from humanity, wandering blindly toward tragedy or adventure, from the myths of Homer and the fairy tales of Hans Christian Anderson, to the novels of Defoe and Twain. Every traveler knows them.

Subject to the imagination of novelists, authors of survival books, and other story-spinners, the lost person's behavior is a topic that has acquired the status of a mythology, exchanged over campfires from one generation to the next in hushed and somber tones. Thus, for example, all of us have heard that the lost person, if he wanders far enough, will eventually return to the place where he started — a popular belief for which there is no documented evidence. Although search organizers are often advised to put themselves "into the lost subject's shoes," the truth is that little is known about the psychology of being lost. If search is indeed a classic mystery, rather than a plodding exercise in blanket coverage, then it's necessary to know the victim's motivations and behaviors in order to solve it. In this chapter we shall examine the lost person from the perspective of research, including studies on how persons become lost or disoriented, and what they do next.

What Is a "Lost" Person?

What exactly do we mean when we say a person is *lost*? Let's approach this question by considering some examples of people who are frequently the subjects of land search.

- A small child wanders away from his rural home into a large, forested area.

- A hiker underestimates the time it will take him to get to the trail head and is forced to strike camp along the way.
- An elderly Alzheimer's patient strolls into the woods near her residential center, having no idea that she's in danger.
- A hunter gets “turned around” and walks 20 miles on a woods road going the wrong direction.
- A lone skier on a remote hill breaks his leg in a fall and cannot move.
- A depressed woman sits down on a log and takes a handful of barbiturates, determined to commit suicide.

Clearly, not all of these individuals could be classified as “lost” in the sense that we normally understand that word in search and rescue, implicitly using such dictionary definitions as “Unable to find the way” (Webster’s Dictionary). In these cases, *the lost person is unable to identify or orient his present location with respect to known locations, and has no effective means or method for reorienting himself*. Note that this is a two-part definition, involving both a confusion with respect to geographical position as well as an inability to reacquire one's orientation. Consequently, it is possible (and indeed common) for someone to have little accurate knowledge of one's location and still not be “lost”. For example, in the hot pursuit of game, hunters often lose their orientation, but most have some sort of “plan” for finding their way out of the woods, such as following a predetermined compass bearing to a highway. Similarly, a young child is almost always “disoriented” with respect to the distance and direction of his home, once he's more than a block or two outside of his neighborhood; fortunately, there's usually an adult or older child around to reestablish his orientation for him. In these examples, it's only when the child strays alone into an unfamiliar environment, or the hunter forgets his compass, that we might reasonably define the person as lost.

However, there are other incidents where the person may know where he is, but for some reason is unable to return to safety, or to some location where others expect him to be. Certainly, the overdue hiker is the most prevalent example of this sort of person, who might better be described as “missing” rather than lost per se. The injured climber and skier are also common examples. In other cases, the missing person could perhaps be described as “lost” in a more abstract or psychological sense, such as the walkaway Alzheimer's patient or the severely depressed individual who doesn't respond to searchers' calls. In the case of the Alzheimer's patient who has walked away from an institution, the victim may be completely unaware of his disorientation (indeed, he may believe he's in some “familiar” location that hasn't actually existed for many years). The severely depressed or despondent individual, however, may have acute awareness of his location and reject any attempt by well-meaning searchers to locate and rescue him. For these examples, perhaps a slightly different dictionary usage of “lost” may be more appropriate, such as “Unable to function, act, or make progress; helpless” (American Heritage Dictionary).

Unless otherwise specified, the word *lost* in this chapter will refer to the more narrow sense of

being spatially disoriented, with no effective means of reorientation.

HOW DO PEOPLE STAY “FOUND”?

Becoming lost, as has been stated several times, is the result of losing one's spatial orientation, combined with the absence of an effective method of reorientation. In this section I'll elaborate on this two-part definition. I'll discuss ways that people stay oriented when moving around in the environment, how they find their way from one location to another, and how they reorient themselves once they get “turned around.”

On Knowing Where You Are

Let's begin by discussing several ways that we can be spatially oriented. Firstly, and most simply, we can be in a familiar location such as our home, where objects around us are familiar, meaning we have some personal experience or memory of interacting with them. We know the routes (paths and roads) to other familiar locations, and we know what approximate direction these routes will take us should we decide to travel them. More generally, we have some understanding of the relative position of this familiar place to other locations we know and, indeed, to many other places in the world.

As we move around in the environment, particularly places that are not so familiar to us, we are rarely able to maintain this degree of orientation. We may find ourselves in new settings and be forced to rely on wayfinding cues, such as road signs or trail markings, to find our way back to known locations. Much of the time, being spatially oriented means merely that we know the right route to travel in order to get home, such as the correct sequence of turns on city streets. In this case, “knowing where you are” actually means “knowing the way,” rather than being able to pinpoint your location on a map. It rarely occurs to us on such occasions that we lack “real” spatial orientation, such as knowing the direction home or the layout of the land. Rather, we may have the *illusion* of being oriented, such as (incorrectly) assuming that home is “that” direction merely because the road seems to take us that way (the road may have a gradual bend that eventually points it to some entirely different direction).

It is being suggested, therefore, that most people most of the time are much less oriented than they realize. Fortunately, this fact rarely becomes apparent to us, unless we make a wrong turn and have to regain our bearings. Even then, in most environments, there are usually sufficient wayfinding cues — or people to provide directions — to get us back on our way. Being *oriented*, then, lies as much in our confidence of getting “untuned around,” should the need arise, as in being able to determine the correct route. Thus, “knowing where you are” is a psychological state that may include certain *perceptual experiences* (recognizing scenes or landmarks), *beliefs* (often erroneous but unchallenged) concerning the direction and distance of known locations, *knowledge* of how to navigate to another location, and *feelings* of security and safety with respect to staying on

route or being able to recover the route, if necessary.

The Sense of Direction

Up until about 50 years ago, many scientists believed that people have a separate sensory mechanism for determining magnetic north. While the specifics of this “sixth sense” could not be described, it was considered to be very subtle and relatively undeveloped in most people, especially “civilized” people living in cities where such a sense is rarely needed. Consequently, it was believed that the sense of direction would be evidenced mainly in people from so-called “primitive” cultures in which wayfinding skills are especially critical.

Various studies on non-Western societies indicate that people of many of these cultures appear to have unusually good knowledge of direction, as well as other wayfinding skills. This appears to be especially true for those societies in which extensive travel is critical to survival, such as for hunting or ocean navigation. For example, the Australian aborigine is often mentioned in this regard, as well as the Puluwat Islanders of the South Pacific, who navigate their canoes many hundreds of miles to tiny islands through sheer dead reckoning, without benefit of compass or other technology (Gladwin, 1970). The “sense of direction” would seem to be natural to people of many non-industrialized cultures, and it's interesting to note that the Balinese consider “not knowing which way is north” as a symptom of insanity (Geertz, 1972).

However, closer examination of the wayfinders of these third-world cultures indicates that such directional “instincts” are the product of extensive training that typically begins in early childhood. Being the result of acquired expertise — rather than a natural instinct — even the most experienced navigators of these societies are subject to error. One such report, for example, is that African bushmen, who are normally expert wayfinders, will often become lost when a heavy mist sets in (Howard & Templeton, 1979). Another observation is that Arabs traveling in the Sahara desert, where wayfinding cues are scarce, will travel single file so that the person in the back can notice when the leader deviates from a straight line. Indeed, the Puluwats, considered to be among the world's most able wayfinders, get “turned around” occasionally and may be forced to spend considerable time getting back on course.

These observations cast serious doubt on the presence of a “magnetic sense of direction,” even among non-western cultures where navigation is a matter of survival. Although the belief in such a sixth sense still persists in some quarters, no controlled study to date has found reliable evidence of a human ability to directly sense the direction of magnetic north — or any other direction, for that matter. This is not to suggest, of course, that there are not vast differences among people in their abilities to stay oriented with respect to direction, and indeed psychological research does support the existence of such differences. However, it is clear from this research that having a good “sense of direction” is based on the ability to take advantage of environmental cues, including feedback from one's own body movements, rather than a mysterious sixth sense.

A study conducted nearly 70 years ago illustrates this point (DeSilva, 1931). The researcher

found a 12-year-old boy who had a remarkable ability to point to the cardinal directions of north, south, east, and west. However, DeSilva discovered that the boy would quickly lose this ability if spun sufficiently while blindfolded. Clearly, the boy's skill was not based on direct perception of magnetic north, because such a sense should not require the ability to see. Rather, DeSilva learned that the boy had been taught from an early age to reference objects and locations in the environment with respect to the cardinal directions. His mother, who allegedly could not tell right from left, compensated for her disability by referring to cardinal directions when communicating the location of objects, such as, "Get me the glass on the north side of the sink." Consequently the boy, according to DeSilva, learned to constantly keep track of geographical direction as a course of habit.

Indeed, more recent research confirms that people with a good sense of direction excel primarily in their tendency to mentally "update" their geographical position as they move around in the environment (Sholl, 1988). That is, while walking down a trail, and particularly when making turns, such individuals appear to continuously monitor their direction of travel as they go, using mostly visual cues but also kinesthetic feedback from their muscles. Moreover, unlike the remarkable 12 year old studied by DeSilva, people with a good sense of direction do not normally use the cardinal directions as reference points, but rather some other, anchoring direction which is relevant to their activities at the time, such as the direction from which they entered the woods.

Having a good sense of direction may be critical for those outdoor enthusiasts who enter unfamiliar territory, especially when out of sight of trails and other wayfinding aids. For example, deer hunting is one activity that puts the person at risk for getting disoriented, because it can require at times a concentration of mental resources on the activity to the detriment of monitoring direction. While circling through the brush to get downwind of a deer, the hunter may lose track of his anchoring direction or "safety bearing" back to camp or car. It's no wonder that so many lost hunters are found traveling the opposite direction from where they entered the woods, determined they're headed the right way out. On the other hand, in my view, activities that do not normally detract from mental updating of direction, such as recreational hiking or nature photography, put the individual at less risk for becoming disoriented, because they focus the individual's attention *upon* environmental cues rather than away from them. I should add, however, that this hypothesis is supported only by the apparent percentages of different types of outdoor enthusiasts who become the subjects of land searches.

Finding the Way

There is, of course, much more to being "oriented" than knowing the direction home. For example, good wayfinders, by definition, excel in learning the correct paths and routes through new environments. They can also retrace their steps with apparent ease, and they can readily discover shorter and more efficiently traveled routes between locations they wish to visit. In this section I'll discuss the component skills that are involved in such abilities.

A common occurrence during search incidents is the appearance of a local resident at the

search command post, claiming he knows the area “like the back of his hand.” Frequently such individuals prove to know much less about the topography of the area than they claim. However, it may be a serious mistake to write these local “experts” off as knowing nothing at all about the area. In fact, they often *do* have knowledge that can be useful, particularly of trails, survey lines, all-terrain vehicle roads, and other pathways not indicated on any maps (which are often 20 years or more out of date). Unfortunately, they can rarely specify the positions of such pathways in reference to a map. For example, they may look at the map for a moment, shake their heads in consternation, then say something like, “Well, I can’t find it on this, but I can *take* you there.” That is, they may lack what psychologists call *survey knowledge* of an environment, which is knowledge of the respective locations of trails and landmarks *relative to each other*.

Survey knowledge is assumed to be contained in what psychologists call a “cognitive map” (or mental map) of a particular environment. Apparently, the point of view of a cognitive map, like any other map, is some distance above the terrain, looking down upon it. We can gain survey knowledge most directly by perusing real maps and other symbolic representations of an environment, such as scale models of a town. There is some evidence that we may also “construct” mental maps of regions by traveling around within them, although for most people these maps tend to be somewhat inaccurate and incomplete. As I indicated, the local residents rarely have much survey knowledge of the regions with which they’re familiar, but they often have excellent *route knowledge* obtained from their travels. That is, they are familiar with routes, trails, or pathways connecting one location to another. In particular, they know what to expect to see as they traverse a particular pathway and, more importantly, they know which direction to turn when a route branches or intersects with another. The point of view of route knowledge, therefore, is of the person moving through the woods, rather than hovering some distance above them. What the person “knows” is a sequence of stimuli that should be perceived along the route, in a serial fashion, rather than some abstract “map” that can be perceived at one glance.

Cognitive maps of children. Research supports the conclusion that most children under the age of eight or nine may have difficulty constructing useful cognitive maps of their environments (Piaget & Inhelder, 1967). That is, whatever image of their terrain they may be able to construct in their mind may have little resemblance to the real world, and may consequently be useless for wayfinding purposes. For example, lacking survey knowledge of the layout of the land, they may be unable to stand at one familiar location and point to another which is not in view. Indeed, it appears that some children may not even understand that locations have a fixed, linear direction with respect to each other. For example, when asked to point to her home some distance away, the child may only be able to point to the start of the rambling path she uses to get there, despite repeated requests to point to her *house*.

Around age eight (give or take a year), the child starts to understand that the world they move around in has a metric, two-dimensional structure that remains constant. One realization that now occurs to them is that the *routes* they use to travel between locations is arbitrary: there are, indeed, many paths to Rome. Frequently this insight provides the seed for a new curiosity about their

environments, particularly a fascination with the very concept of a *short cut*. One intrepid scientist, for example, who spent months following children around their suburban neighborhoods, became fascinated with the observation that they would often go out of their way to take “short cuts” that were frequently longer and more hazardous than the original routes (Hart, 1979). It is no accident, therefore, that when children between the ages of approximately eight and twelve become lost, it's frequently the result of an unsuccessful short cut (Syrotuck, 1977).

The role of “meta-knowledge” in wayfinding. An important component of any realm of knowledge is “knowing what you know,” termed *meta-knowledge* (or meta-cognition). Without meta-knowledge you wouldn't know when to stop studying for a test or even when to stop reciting a phone number to yourself. Applied to wayfinding, meta-knowledge means tracking the quality of the information you have available to you that is useful for finding your way back to home or camp. Do you *know* which way to turn at all of these intersecting trails you're traveling? If this question occurs to you, you will more likely take steps to memorize the sequence of turns than the person who merely enjoys the scenery, and to look back over your shoulder as you exit each intersection (Cornell, Heth, & Rowat, 1992).

It is interesting to note that young children rarely have meta-knowledge of their own spatial abilities. For example, they “don't know that they don't know” their way around the woods, and it apparently doesn't seem to occur to them that they could get lost. This probably accounts for why young children (quite unlike the school-aged child) are rarely afraid of becoming lost per se (although they often fear being separated from parents), and will readily follow an animal into the forest or strike out on little exploring expeditions, paying no concern to the return trip.

While the school-aged child is usually *capable* of assessing his own spatial knowledge of an area, he frequently fails to do so successfully. For example, he may be reluctant to step out of his fantasy play, however briefly, in order to take a sobering account of his knowledge of spatial position. Moreover, he may not even know what kind of knowledge is necessary for wayfinding purposes, such as directions to turn at intersections in the trail, and may make little effort to memorize landmarks along the way. He may be easily deluded into believing that he knows the way, while being hopelessly disoriented.

Getting “Unturned Around”

Anyone who spends enough time in the woods will, sooner or later, become lost. Nearly all of the experienced outdoorsmen I have surveyed admitted to having been significantly “turned around” at least once. Even Daniel Boone, according to a popular SAR quotation, is purported to once having been “confused for several weeks.” In this section I'll discuss methods which people use to reorient themselves once they become lost. This information comes from structured interviews with rescued lost persons, conducted soon after (sometimes during) their recovery, and tested through survey research and interviews with 120 deer hunters in Nova Scotia (Hill, Farley, Cole, & Murphy, 1993). Generally, persons who become disoriented will use at least one of these

methods, some of which are considerably more effective than others, and most lost people will try more than one.

Random traveling. Totally confused, and usually experiencing high emotional arousal, the lost person moves around randomly, following the path of least resistance, with no apparent purpose other than to find something or some place that looks familiar. Although many lost people will move randomly during their initial reaction to being lost, most people will settle down and apply a more effective method. Only a few lost persons — such as some school-age children by themselves — will continue to move randomly during their ordeal. Most lost people show somewhat more purposeful behavior in their attempts to get out of the woods.

Route traveling. In this case, the lost person decides to travel on some trail, path, drainage, or other travel aid. The route is unknown to them and they are uncertain regarding the direction they're headed, but they hope that eventually they will come upon something familiar. When this hope is quashed, as it often is, they rarely reverse their direction on the route to go the other way. If the trail peters out, for example, they may revert to random traveling, as described above. Sometimes referred to as “trail running,” this is usually an ineffective method of reorientation, shown most often by school-aged children under 12 years of age.

Direction traveling. Certain that safety lies in one particular direction, the lost person makes his way cross country, often ignoring trails and paths leading the “wrong” direction. Sometimes, in fact, a person will cross railroad tracks, power lines, highways and even backyards in their conviction that they're headed the right way. Unfortunately, this strategy (which is rarely effective) often gets them into the thickest part of the woods, making them especially difficult to find. It takes considerable overconfidence about one's sense of direction to employ this foolish tactic, which is not uncommonly employed by subjects of land searches. Most typically, it is seen in some hunters who have come to exaggerate their outdoor skills to others and to themselves, believing there is some sort of shame in becoming turned around. (Variations on this method are recommended by Angier, 1956, and Brown, 1983, who suggest lining up landmarks in a straight line in order to ensure a consistent direction of travel.)

Route sampling. Here, the person uses an intersection of trails as a “base,” proceeding to travel some distance down each trail in search of something familiar. After “sampling” a particular route without success, they return to the intersection and try another path, repeating the process until all routes at that intersection have been sampled. Three possibilities then arise: (1) they may repeat the sampling procedure, but now traveling farther distances on each route; (2) they may choose instead to proceed down the likeliest trail until they come to another intersection, where they can repeat the strategy; or (3) they may decide to try another tactic altogether. Older children and adolescents sometimes report having tried this method of reorientation. It can be effective when combined with backtracking (see below).

Direction sampling. This is similar to route sampling, except that the lost person does not have the advantage provided by an intersection of trails. Rather, the person selects some identifiable landmark as a “base,” such as a large tree or outcropping. From there, they go in selected

directions, always keeping the base in view, looking for something that will help them figure out where they are. When they're just about to lose sight of the base, they return to it and sample another direction, repeating the process until all possible directions seem to have been tried. Often, however, they *do* lose their base before the sampling procedure can be completed. At that point they tend to move around in the woods somewhat randomly until they find a landmark suitable for serving as a new base, and the directional sampling strategy may be started anew. (This method is recommended by Brown, 1983, and Fleming, 1994.)

View enhancing. Unable to find anything familiar after traveling around in the woods, the lost person attempts to gain a position of height in order to view landmarks in the distance. The person attempts to enhance his view by climbing a hill, ridge, or tree. A knowledgeable adult with a topo map or at least some survey knowledge of the area, surrounded by dense vegetation, might attempt to reorient himself by climbing a hill (sometimes a tree, if this can be done safely) and matching visible terrain features with those on his map. Indeed, many experienced outdoorsmen report view enhancement as a favored method of reorientation (e.g., Fleming, 1994).

Backtracking. Once getting turned around, the person reverses himself and attempts to follow the exact route that brought them into the woods. This can be a very effective method if the lost person has the skills and patience to employ it. Unfortunately, lost persons seem reluctant to reverse their direction of travel without good reason, believing perhaps that it would just be a waste of time and safety might be over the next hill or around the next bend in the trail. If a person becomes confused on a route that has numerous branches, he can backtrack to each intersection and employ a route sampling tactic to determine the correct fork (Roberts, 1988). If the person is in the bush — and competent at reading tracks — he should be able to follow his own sign back. However, this can sometimes be a very difficult task, and SAR lore includes the tale of one hapless, formerly renown tracker who could not follow his own trail out of the wilderness, having to be rescued by a smirking colleague following his sign.

Using folk wisdom. This is a miscellaneous category that refers to an attempt to reorient oneself by using any of the numerous adages on how to find your way safely out of the woods, usually passed on over camp fires or even disguised as “facts” in survival books. The most common of these is the advice that “all streams lead to civilization,” a principle that, if followed in Nova Scotia, will more than likely lead the lost person to a remote and bug-infested swamp. One popular and otherwise useful survival text advises the lost person to reorient himself by locating his or her “place of birth” by facing various directions and having a friend test one's arm strength at each orientation (Fear, 1979, p. 156). The idea is that you are strongest when you face your birthplace, and that you can use this information in determining the direction out of trouble. I include this notion — which seems a bit exotic, if not far-fetched — only to illustrate the diversity of ideas often proffered as wayfinding advice.

Staying put. Every woods safety program stresses the importance of “staying where you are” when becoming lost, which can be considered an excellent — if somewhat passive — strategy for reorientation, so long as the lost person can reasonably expect a search to be organized on his

behalf in the very near future. Sadly, very few people apply this method of getting out of the woods safely. While it is true that most lost persons are found in a stationary position (especially after the first 24 hours of the search), this is usually because they are fatigued, asleep, or unconscious. In my review of over 800 Nova Scotia lost person reports, I found only two cases in which the subjects had intentionally stayed in one place in order for searchers to find them more easily. One was an 11-year-old boy who had received Hug-a-Tree training at school, while the other was an 80-year-old apple picker who settled down comfortably within 5 minutes of being turned around, just 100 meters from where she had entered the woods.

Our survey of experienced outdoorsmen revealed that they are aware that staying put is the recommended course of action, though they may be disinclined to stay in one place for any length of time, especially during the day (Hill, Farley, Cole, & Murphy, 1993). As mentioned above, a popular reorientation strategy reported by these individuals was *view enhancement*, such as climbing a hill in hope of spotting something familiar. Interestingly, respondents in this survey who had experienced several or more occasions of having been lost were significantly *less* inclined to indicate “follow a stream to civilization” as a useful strategy, possibly because this advice had merely brought them in contact with the aforementioned swamps.

THE ROLE OF EMOTION

There can be no question that becoming lost is normally accompanied by high emotional arousal, and almost every lost person the author has interviewed has confessed to having been upset during their ordeal, some (particularly with children) to the point of nausea and stomach pain. In this section I shall describe the effects of general arousal on the lost person's behavior, as well as the specific effects of fear.

Arousal

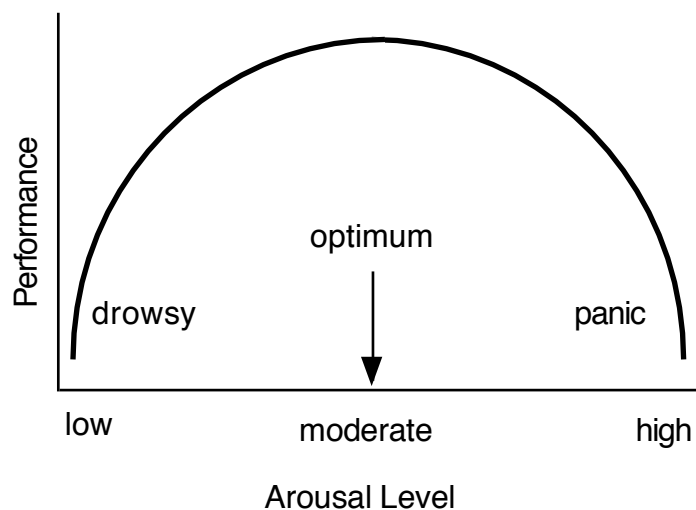
All emotional experience is part mental or *cognitive* and part *physiological*. The physiological component involves certain glandular secretions (such as sweaty palms or a rush of adrenalin) as well as stimulation of a part of the brain called the *limbic system*. It is this latter structure where the physiological and cognitive reactions appear to interact. It has long been known that a moderate level of arousal is optimal for mental functioning, such as learning, reasoning, and problem solving, while levels too low or too high tend to have detrimental effects (Yerkes & Dodson, 1908). The relationship between arousal and thought therefore defines an *inverted U-shaped function*, as shown in Figure 1. Thus, when the brain is under aroused, such as when the person is drowsy, thought processes are diffuse and unfocused. More importantly, for our purposes, when arousal is intense, thoughts tend to scatter in irrelevant directions, making the person unable to concentrate on solving even simple problems. Also, too much arousal can reduce the number of environmental cues the person can *perceive*, thus interfering with the recognition of familiar objects, people, or places

(Easterbrook, 1959).

Fear

Fear, of course, is a specific type of emotional reaction, having effects beyond those of general physiological arousal. Fear stimulates a heightened concern for self-preservation, mobilizing the body for *flight* through the secretion of adrenalin and increased blood supply to the legs. It's no wonder, therefore, that the lost person's impulse is to move rather than stay put — this is exactly what his body is telling him to do. Fear — like general arousal — interferes with higher mental functioning, such as concentration and problem solving, and may cause a regression to more “primitive” modes of thought. Older children, for example, may revert to using the reasoning processes of preschoolers, which they have long outgrown.

Figure 1. Inverted U-shaped function between level of arousal and performance effectiveness. Note that moderate arousal is associated with peak performance, and that extremely low or high arousal leads to poor performance.



Fear of the woods. Several studies report that children and teens are frequently afraid of the woods, although the source of such fears may be varied (e.g., Kaplan, 1976). In one study, children were asked to name the “scary” places in and around the suburban area where they lived, and forested areas were second only to haunted houses in scariness (interestingly, the same children also indicated interest in visiting these woods, although they rarely went there; Hart, 1979). Indeed, much anecdotal evidence from many quarters supports the conclusion that most children and many adults have apprehensions about entering the forest, especially alone. It's important to note, however, that the woods themselves are rarely the stimulus for such fears, but are feared for what objects or experiences may be found there. That is, people don't fear clumps of trees so much as the bears, wild dogs, and other dangerous animals, as well as the darkness, the ghosts, and the strangers lurking there, no matter how unrealistic these fears may be.

Fear of getting lost. One of the oldest studies of fears, reported a century ago by G. Stanley Hall, revealed that the “dread of getting lost is common” in children and adults alike (Hall, 1897). The author described many examples of such fear, such as one woman who was “haunted by the thought of losing the points of the compass in some wood. . . accompanied by a sickening sensation.” More recent studies confirm that many people fear getting lost, especially in wooded environments. For children beyond the age of approximately four years of age, such fear will be exacerbated by numerous other fears, described above, with the result that the child may become terrified and nearly non-functional. It is common for lost children to hide from searchers, to ignore their calls, and to stand petrified at the approach of a helicopter — not simply because they've been taught to avoid strangers, as is often believed, but because every strange stimulus under such conditions is a source of terror.

Woods shock. There are various reports of high arousal having detrimental effects on the mental processes of lost persons, going back more than a century. For example, a comment in the 1873 volume of *Nature* mentions a kind of woods “shock” experienced by West Virginia hunters who become disoriented, apparently affected their reasoning capacity and causing them to “lose their heads” (cited by Binet, 1894). Similarly, one anthropologist observed members of an African tribe who, having become disoriented, were “stricken with panic, and plunged wildly into the bush” (Howard & Templeton, 1979). A popular theme in search and rescue lore is seen in stories of lost persons who, in a state of shock, have walked trance-like past search parties, or had to be chased down and tackled by their rescuers. Such observations confirm that it is not only the child or the inexperienced outdoorsman who is vulnerable to the adverse effects of emotional arousal. Indeed, the extent of one's outdoor experience is not always a very good indicator as to how rational someone will behave upon becoming lost.

Strength in Numbers

One of the least studied aspects of lost person behavior is the possibility that people act differently when they're lost in the company of one or more companions than when they're alone.

As anywhere from one-third to one-half of lost person incidents are *multiple-subject searches*, it should be important indeed to know whether the number of persons in the party should effect the search plan. In my review of numerous multiple-subject searches in Nova Scotia, I found that the lost persons stayed together in all instances, and that they traveled about the same distance as comparable subjects lost alone. Unfortunately, there was no basis in this study from which to draw conclusions about differing emotional reactions to the experience of being lost. Nevertheless, it is my strong impression, from interviewing scores of lost persons soon after rescue, that people lost with companions are much less scared and considerably more rational during their ordeal than are people lost by themselves. This seems to be especially true for children of school age, who almost never show the same panic reaction when in groups than when alone. For example, one late night rescuer of four boy scouts lost in freezing weather was condescendingly informed by one of the 12-year-olds, from the comfort of his sleeping bag, that the searcher should just mark the direction out of the woods so that the boys could go back to sleep and walk out in the morning by themselves. Fortunately, the searcher was not receptive to this suggestion.

An Illustrative Example: Two Lost Children

In an attempt to integrate some of the ideas discussed in this chapter, I'll describe a Nova Scotia search for two children, a 13-year-old boy and a 9-year-old girl, lost together in the vicinity of their rural neighborhood. The month is November and the temperature hovers near freezing. The children, described by their parents as inseparable friends, are playing on the edge of a forested area across the street from the girl's house. The boy, named Jimmy, decides it would be fun to stomp down dead trees, and the girl, named Susan, joins in the game. Unfortunately, their search for such trees leads them increasingly further astray, until, just before nightfall, they realize they are lost.

The children are extremely frightened. They fear "freezing to death," and they are afraid of being attacked by "wild dogs" which they can hear barking in the distance (it's actually a junkyard Doberman about a kilometer away). Both children are especially afraid of becoming separated and take special care to stay together. At first they try retracing their steps (backtracking) by following stomped trees, but there are many deadfalls in every direction and this tactic proves useless. Then they wander around for some time (random traveling), looking for some sign of civilization, particularly houses. Their wandering puts them in further danger, for they stumble into a boggy area and get wet. They hear a siren in the distance, but don't realize it's a policeman trying to provide a direction out of the woods. Indeed, it does not occur to them that a search would be organized on their behalf, apart from their parents, whom they know would be worried. While Susan follows, Jimmy climbs a hill (view enhancing) in order to scan the area for houses. When this doesn't work, he climbs several trees for the same purpose, with similar results. Eventually, they settle down for the night, trying to keep warm by hunkering inside their clothing. They do not try to build a shelter or to keep each other warm. Despite their friendship, they take no steps to console each other or

even to discuss their predicament. Indeed, there is markedly little social interaction between them, apart from their need to retain proximity to each other.

Although the night affords little sleep, particularly for Jimmy, the morning brings renewed effort to find their way out of the woods. Using the open area where they'd spent the night as a base, Jimmy tries a direction sampling strategy, venturing forth some short distance, breaking more trees in order to keep the base in view, then returning when visibility is no longer possible. This tactic also fails. He resorts to climbing trees again, and is up one tree, not long after daylight, when he hears someone calling in the distance. Believing it's his father (it is actually a searcher), he returns the call, and the children are rescued.

SUMMARY

In this chapter I've described the lost person as someone who is unable to determine his current position with respect to other, known locations, and has no effective means for regaining his orientation. It was proposed that an effort to describe the psychology of becoming "lost" should begin with an examination of the concept of being "found." The discussion revealed that "knowing where you are", on any given occasion, may mean anything from having information concerning one's exact geographical position, to merely knowing the right path to travel in order to get somewhere else. Indeed, for a child it may simply mean being in proximity to someone who takes responsibility for his or her location. It was suggested that one's orientation is usually less than perfect and often much less accurate than we believe it to be, but sufficient for most wayfinding purposes.

Our discussion of human navigational competence described wayfinding skills as learned rather than instinctive. For example, there is no good evidence for an innate "sense of direction." The ability to orient oneself to geographical position is a learned skill, and is perhaps best evidenced in certain non-Western societies whose lifestyles require long-range navigation. Research supports the conclusion that wayfinding competence is determined by the individual's ability to attend to the appropriate environmental stimuli, such as landmarks indicating a change of direction along a route, and the ability to remember the course of the routes one has traveled. There is an important distinction between *survey knowledge* and *route knowledge* of a particular environment. Survey knowledge is maplike in that the person is able to accurately determine the relative positions of landmarks and connecting routes within the terrain. Such knowledge is sometimes referred to as a "mental map." On the other hand, route knowledge is an acquired familiarity with specific roads, trails, or other pathways and being able to use such knowledge to travel between locations. Such knowledge does not require knowledge of direction or even distance between locations, but rather that the person merely stay on the correct route. It was proposed that people sometimes overestimate their knowledge of the spatial layout of an environment, perhaps mistaking route knowledge for accurate survey knowledge, which may make them vulnerable to becoming "turned around."

A comparison of adults and children revealed that children of school age and younger may have considerable difficulty constructing useful mental maps of their environments. Moreover, it was also suggested that they may lack *meta-knowledge* of their own wayfinding performance. That is, they may fail to monitor their knowledge of “where they are” in a continuing fashion, and not take steps to remember the course of a new route they are traveling. Mental development typically makes the grasp of survey knowledge possible at about eight or nine years, but this discovery often brings with it a fascination for the concept of a short cut, which is itself a potential source of disorientation.

A number of *reorientation strategies* were discussed, by which lost people attempt to find their way out of the woods. These strategies include: (1) *random traveling*, in which the person moves randomly through the woods, with no particular motivation except to find safety, (2) *direction traveling*, in which the lost person attempts to travel a specific direction regardless of terrain factors, (3) *route sampling*, in which the person tries out or “samples” various routes leading away from an intersection, (4) *direction sampling*, in which the person travels short distances in various directions leading away from a base or landmark, (5) *view enhancement*, in which the person climbs a hill or tree in an attempt to see landmarks in the distance, or to determine the layout of the land, (6) *backtracking*, in which the lost person attempts to follow his own tracks back to safety, (7) *using folk wisdom*, in which any of various adages or other bits of wayfinding advice are applied, and (8) *staying put* until searchers arrive.

Becoming lost is normally accompanied by high emotional arousal, which, if high enough, tends to interfere with mental functioning, specifically the application of rational thought processes toward solving the problem of getting reoriented. Fear of the woods and especially fear of being lost are common among children and adults alike. Even experienced outdoorsmen may sometimes react to being lost with an extreme form of fear termed “woods shock,” evidenced as a nearly complete loss of rational thought accompanied by an apparent inability to recognize scenes or landmarks normally familiar to them. However, there are indications that when people are lost in groups of two or more, their arousal levels may be somewhat lower and they may behave in a much more rational manner than when lost alone.

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