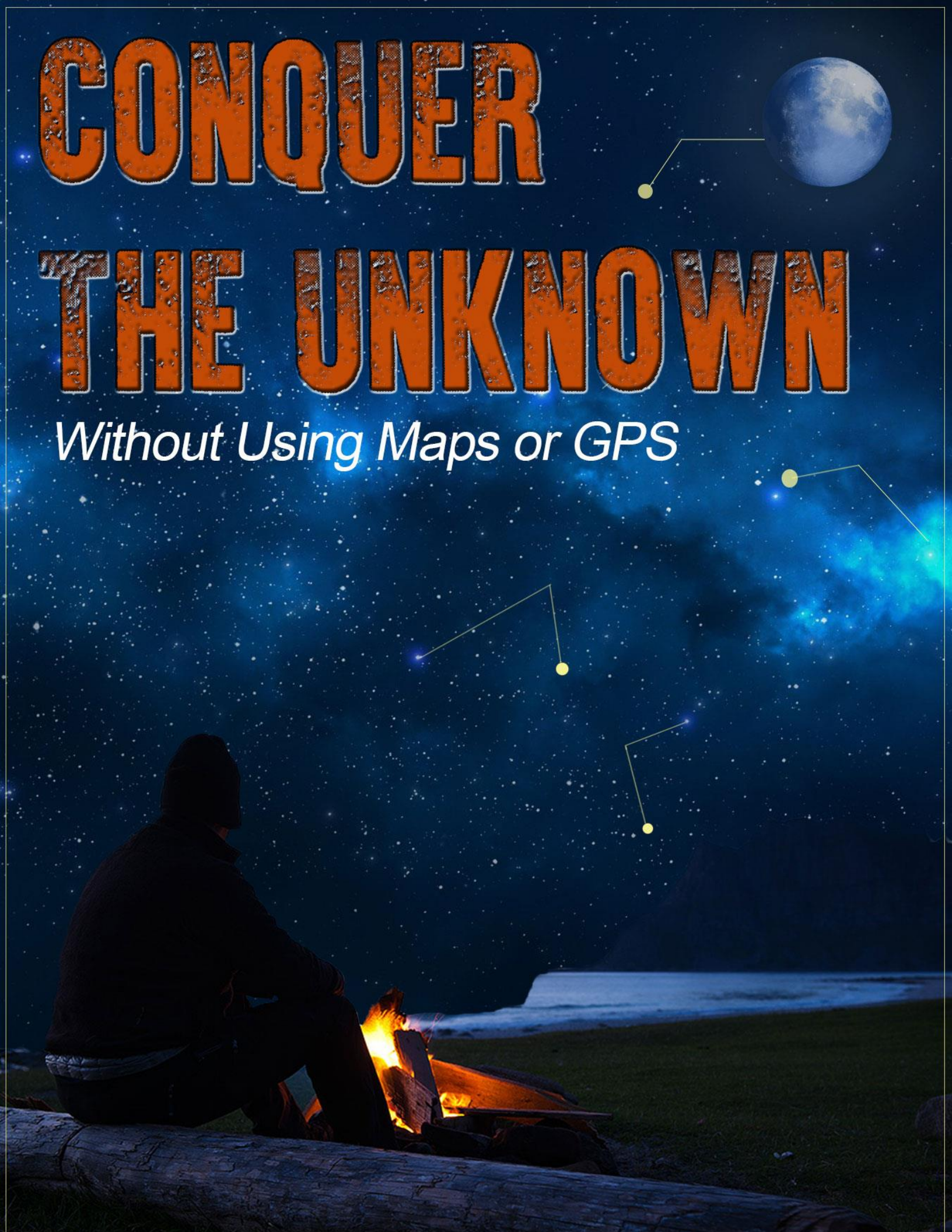


CONQUER

THE UNKNOWN

Without Using Maps or GPS



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I. Nature Can Guide Your Way

Ask, and it will be given to you; seek, and you will find; knock, and it will be opened to you. (Matthew 7:7)



Perhaps thanks to my adventurous past as a survivalist, I have learned that God writes the gospel not in the Bible alone, but on trees and flowers and clouds and stars. There is a subtle magnetism in nature which I sometimes unconsciously yielded to and I have to tell you, it always helped. From my experience, I can tell you this: you can achieve great things even if you are stranded in the middle of nowhere.

From ancient to modern times the number of natural clues that have been used for finding direction show that nature has its own compasses – even in a city. Natural navigation is rich, diverse and a challenging subject. Moreover, it is one that can enrich every journey.

Have you ever wondered how is it that native people all over the world traveled without the merit of a compass, with great precision? The answer... they used natural navigational aids—wind, smells, animal patterns, sun, moon, terrain features, and so much more. So, natural navigation is the art of finding your way by decoding the signs in nature. It consists mainly of the

amazing skill of being able to determine direction without the aid of instruments and only by reference to natural clues.

Earth and sky, woods, fields, lakes and rivers, the mountain and the sea are amazing schoolmasters that can teach you more than we can ever learn from books. Natural navigation is a multidisciplinary art that requires putting together different pieces of information to work out which direction you're facing. It is about using your senses and then deducing what you can do to find your way. Your senses will sharpen and the world will come to life right before your eyes, even if you don't have a map, compass or GPS.

Always Getting Lost? It May Be in Your Genes...

I'm sure you experienced the fear of getting lost at some point in your life. This is largely due to having a poor sense of direction, but it can also be an innate characteristic that some people have to live with. This fear really restricts you from going to new, unfamiliar places. You simply don't want to venture too far from where you live.

Some people find it hard to go places riding the bus, due to a fear of getting off at the wrong place and getting lost. They also find it hard to tell anyone about it, because people might think they're silly. But this is serious business. In fact, this kind of social anxiety seriously contributes to you getting lost.



Some will find it extremely hard to go up to people asking for directions - and if they do, they simply can't take in what they're. What they might be really afraid of is being in an uncomfortable situation that triggers a set of reactions - the alarm response that can make your heart race, palms sweat, hands shake and breathing quicken.

But fear doesn't only affect you physiologically; it can also cloud your judgment. Once the alarm response is activated, you lose some ability in the rational part of your brain. That doesn't mean you can't make rational decisions, but your ability to think clearly and logically in that moment becomes difficult.

Here's what you can do if you experience this kind of anxiety:

- Stop and assess the situation!
- Stay calm. This is perhaps the most important thing to remember: If you don't stay calm, you can't think straight. If you can't think straight, you won't be able to help yourself.
- Orient yourself. If you have no cell phone, map or compass, you can still get a general idea of your location. Remember: the sun rises in the east and sets in the west.
- If you still can't find the trail, follow a river or stream downstream. You will eventually come to civilization.
- If possible, familiarize yourself with major landmarks in the region, before you venture into the unknown.
- After nightfall, it's usually wiser to stay put and try to find your way out in the daylight.
- If you have a whistle, blow it. The sound may attract help. (The sound from a whistle travels farther and is more easily located than the sound of a shout.)

I learned that Nature can actually be a devoted friend when I was just a young boy. I went camping with my friends and we got lost in the woods. I'm sure you know that strange feeling of helplessness and the panic that sometimes goes along with it. With no sense of control over the situation, most of us panicked.

We were completely lost and the prospect of having to spend the night in the woods didn't sound too appealing. Strangely enough, for me being in the middle of nowhere didn't feel like being lost. When I saw that everyone else panicked, I started thinking about how to solve this situation and started looking around for clues. It took me a couple of minutes to pull myself together and then I began to observe the surroundings.

The first thing I needed to do was to calm down my cousin, Adam, as he was on the verge of a nervous breakdown. I knew almost instinctively that if we were to find a way out of the woods, we'd have to look for any signs that could help.

Any significant detail we'd remember from our way back into the woods would count and, as I told these things to my friends, they became more aware of the situation. I knew the area pretty well as I had previously been there with my father and that made a difference. Moreover, judging by the position of the sun, I figured we would have about 4 hours until sunset.



Establishing my coordinates was just a matter of awareness and observation. My father had told me about different types of lichens and that they can be found on the northern part of trees, thus indicating where the north is. Of course, I also knew that the sun rises in the East and sets in the West. So, I thought that if we were to keep the sun to our left as we traveled, we'd certainly be travelling in the opposite direction. And then I took over and said we would head out west.

Even though I was pretty self-confident, my friends told me I was off my rocker and that we'd end up walking in circles, yet that never happened. Within an hour I found the way out of the deep woods. Oh, you can't imagine my cousin jumping for joy and the astonishment on my friends' faces. Then I said "Hey, let's do this again! Who's with me?" but all they wanted was to get home. "You're crazy; I don't want to go through this again, ever!" my cousin said. All I could do was laughing my way home, being thankful and thinking about how wonderful nature really is.

Nowadays, many of us are still fearful of getting lost - actually, our dependence on all our "getting-there" gadgets has made some of us even more fearful of losing our way, especially if alone or at night. If such fear is significantly interfering with your life, cognitive behavioral therapy can help you get over it.

Such therapy can help you overcome the constant fear of getting lost, but you should be aware that this may be a long and painstaking process. Moreover, statistics say that the cure rates only approach 40%. Some psychologists claim "the fear of getting lost" is called "mazeophobia", but that term doesn't appear in any medical dictionary or scientific literature searches, and it's not mentioned in any psychological textbook. Scientists haven't been able to tell the exact reasons why some people experience this trauma with such intensity.

It is not my intention to frighten you, but the possibility of an EMP disaster should make you aware of the situation you will be confronted with, when the electrical substations go down permanently. Then what? No lights. No gadgets and no hospitals. No civilization! As discussed in my book "Survive the End Days", life will never be the same after an EMP, which is why you need to take immediate action towards a survival plan.

I know this is the worst case scenario, but don't worry! I will tell you, step by step, what you need to know to avoid getting lost in the first place. And even if you do get lost, after you've read this book, you'll know what you have to do. Together, we'll go through the most important clues that nature has to offer, so that figuring out which direction you're facing won't be a problem anymore.

Over the past decade, Americans' dependence on electricity and the power grid has changed dramatically. Electricity started as a convenience and has transformed into something that our very lives depend on.

It's happened so gradually that most people haven't even noticed that this society would collapse without electricity. A massive power grid failure could threaten to kill as much as 90% of the population. This is why it's best to rely on your knowledge and senses in determining your direction. No matter where you are, even if you don't have a map or rely on your GPS system, you can always use nature to find your way.



Going Low-Tech: the Essentials

Well trained survivalists take along with them carefully selected items to survive the unexpected. And you should, too. In case of an EMP, most people will get out of their vehicles and talk with others. Speculation sets in about what has occurred. Within minutes everyone will know something is seriously wrong. Roads are blocked. Panic sets in. It's "every man for himself!"

People head to the stores for food, water, fuel and survival essentials on bicycles and by foot. But without power, the stores will be unavailable to calculate receipts or process money. Managers and shop owners take defensible actions as looting sets in...

This scenario is most likely to become reality and this is why you should be prepared for anything. The EMP can catch you off guard, since it may strike anytime; and when it does, chances are you won't be at home. And of course you want to get home and stand by the ones you hold most dear in those moments... Among the first things to consider is that you have to know where you are and how to find your way.

1. Navigation

Always carry a detailed topographic map of the area you live in and place it in a protective case or plastic covering. Now, the problem with these good old time maps is that they can't determine your exact location when disaster strikes. So figuring out your position is most important. But here is where nature comes in, as you will soon see. If you are in the mountains, or in an unfamiliar place, additional aids include route markers, route descriptions, and your knowledge about all kinds of clues that nature has to offer.

2. Insulation (Extra Clothing)

How much extra clothing is necessary for an emergency? Your bug-out bag should include many things (for details see *Survive the End Days*, page 49). As far as the basic outfit is concerned, this should include inner and outer socks, boots, underwear, pants, shirt, sweater or fleece jacket, hat and raingear.

You should select extra clothing according to the season and the area you live in. Ask yourself this question: What do I need to survive the worst conditions that could realistically be encountered in case of an EMP?

3. Illumination

It is essential to carry a flashlight. Your best bet is to toss one wrapped in a few alternating layers of plastic. This should be enough to protect your device from the EMP. Batteries and bulbs do not last forever, so carry spares. Lights vary greatly in their brightness; in general, brighter illumination consumes more battery power.

Technological improvements continue to make lights and batteries more efficient—xenon or halogen bulbs, brighter light-emitting diodes (LEDs), but remember that these devices **will** most certainly **be damaged** by the EMP. Solar flashlights are a great alternative. You might as well give manual powered flashlights some serious thought since they are very useful and don't need batteries. You can purchase such a device for only \$3. Please ctrl +click (or copy paste) the following link:

<http://www.amazon.com/HDE-Battery-Dynamo-Emergency-Flashlight/dp/B0027EFFGG>

4. First-Aid Supplies

Carry and know how to use a first-aid kit, but do not let a first-aid kit give you a false sense of security. The best course of action is to always take the steps necessary to avoid injury or sickness in the first place. The first-aid kit should be compact and sturdy, with the contents wrapped in waterproof packaging.

Commercial first-aid kits are widely available, though most are inadequate. At a minimum, a first-aid kit should include gauze pads in various sizes, roller gauze, small adhesive bandages, adhesive tape, scissors, cleansers or soap, latex gloves, and paper and pencil.

5. Fire

Carry the means to start and sustain an emergency fire. You never know where you might end up in the hours following an EMP attack. Fire starters are indispensable for igniting wet wood quickly to make an emergency campfire. Common fire starters include candles and chemical heat tabs.

6. Nutrition and Hydration

Extra food is very important. The food should require no cooking, be easily digestible, and store well for long periods. A combination of jerky, nuts, candy, granola, and dried fruit works well. There are many possibilities, but make sure you are always prepared. It's best to have

canned food on you, as it can last for a long time and give you the nutrition you need as well as a sense of self-confidence. You will be able to concentrate on your way to get home rather than on your immediate needs.

You should carry sufficient water and have the skills and tools required for obtaining and purifying additional water. Always carry at least one water bottle or collapsible water sack. In most environments, you need to have the ability to treat—by filtering, using purification chemicals, or boiling—additional water that is encountered (also see chapter *Stockpiling Food and Water Procurement*, page 65;87 - Survive the End Days).

Daily water consumption varies greatly. Two liters daily is a reasonable minimum. In dry environments, carry even more water. Plan for enough water to accommodate additional requirements, depending on the area you live in - due to heat, cold and altitude.

The Cardinals within You



Our ancestors were incredibly competent at using natural clues to navigate. The same principles still apply today, although mastering ancient methods requires some practice. But keep in mind that natural clues are specific to certain regions and may not work in your area.

The best way to learn about natural navigation is to make observations of the surroundings. But there's always more than that. For example, once you understand the sun's

arc, it is possible to use it to find direction. For everyone north of the Tropic of Cancer, including the US, the sun is always due south when highest in the sky at midday.

With some practice, it is possible to work out what it is doing at any time during the day and from anywhere in the world. As you will see in this book, a similar technique can be used with the moon, but it takes a bit of practice, too. Moreover, the easiest way to understand how to use the stars to find your way is remembering that if a star is overhead your destination, then it is pointing the right way!

But using nature to find direction is also possible because of the influence of the sun and weather on the ground. Natural navigation is often about spotting subtle differences. Trees, like all green plants, need sunlight to grow and so their growth can be used to deduce where most of the sunlight is coming from.

Moreover, north-facing roofs near where you live may have lots of moisture-loving green moss, whereas the south-facing ones may have colonies of golden lichen that are able to thrive in the sun. It is even possible to find your way from puddles and bare earth, too. The sun reaches different parts of the ground more easily than others, which means that two sides of a path often reveal a clue: if one side is dry and dusty and the other is wet and muddy then it is time to solve the puzzle of where the sun has been and then use this to find direction.

It is not just the sun that leaves footprints, but the wind too, which combs the tops of trees and each day moves clouds in a way that can be helpful. The wind can even be used just from the feel on your face and the buffeting sound in your ears.

Even animals can teach us a great deal about finding your way in the wild. Observing the birds' daily patterns can reveal the location of land from sea or vice versa and watching their annual migratory patterns can give you some clues to the location of islands in the ocean.

But there are also clues in the water itself. Did you know that sailors from Ancient Greece have learned to use the motion of the ocean swell to understand more about their location and the direction a boat is moving? And to this day, some travelers travel through the great deserts by looking at the sand dunes.

So you see that natural navigation is very helpful, always has and always will be. There are many ways our ancient ancestors would navigate without modern instruments. It seems, however, the more advanced we become, the more some tend to be in disbelief that it is possible, let alone even ever done.

Endowed with reasoning, we have lost the privilege of finding our way naturally and we have created other means of orientation (compass, maps, GPS, etc). Unlike all the other creatures

on our planet, human beings need to learn how to read these signs, whereas animals and birds have it encoded in their DNA.

Moreover, few people are able to carry a mental map in their mind (and if they do, it is often restricted to a specific area). And we also seem to lack the instinct that helps animals with simple migrations. For example, gray whales mostly follow the west coast of Canada and the United States as they migrate between Alaska and Baja, Mexico. Dolphins follow the topography of the ocean floor.

*I will lead the blind by a way they do not know, In paths they do not know, I will guide them
I will make darkness into light before them And rugged places into plains. These are the
things I will do, And I will not leave them undone. (Isaiah 42:16)*

But what are these cardinal points and what do they stand for? Of course, they are representations, but the ambivalent nature of the symbols of the four cardinal directions seems based on the fact that evil was perceived to be present everywhere and that God's saving presence was always accessible to His people from any corner of the world.

1. The East

The importance of the east as a main point of orientation may be related to the rising of the sun and its importance in the religions of the ancient Near East. In the Bible its symbolism emerges for the first time in Genesis. The Garden of Eden was placed in the East and its entrance faced the east. If you ever get lost and there's an Orthodox Church nearby, you can find your direction easily, because the altar always faces east. So you will be able to determine all cardinal points.

2. The West

This cardinal point symbolizes both negative and positive elements. The positive meaning is its association with the Israelite Temple. Although it faced east, access to it required movement toward the west. In that sense the west pointed toward restored unity with God; a return to the Garden of Eden. It is also a symbol of divine blessing. Once the exiles were liberated from their enemies in the east, they traveled west, to the land of Israel. In that journey, the Lord Himself traveled with them.

3. The North

North is a symbol of the permanent or the eternal, perhaps because the polar stars were permanently visible in the sky. It is the place of God's celestial dwelling and from which His glory descends with blessings or judgments. He is the true King of the North. But the north—

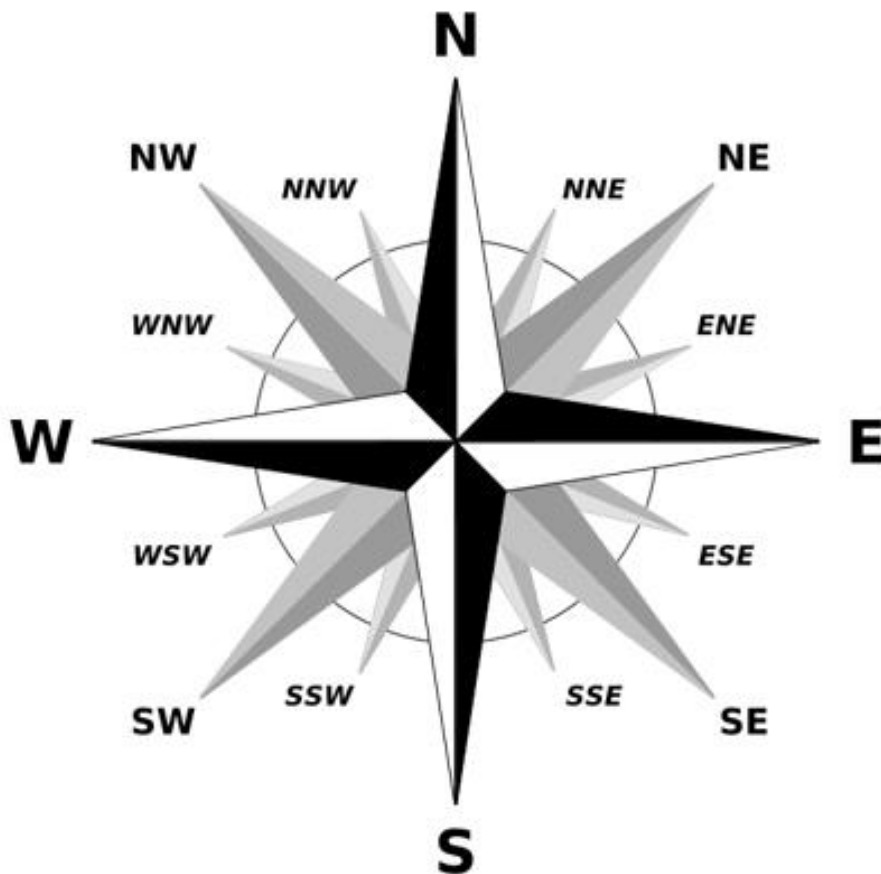
represented by the left hand—is also a symbol of disaster. The enemy of God’s people came from the north, bringing destruction.

4. The South

The south is primarily a negative symbol. But the fact that it is represented by the right hand makes it also a positive one. It is negative because to the south of Israel was the wilderness, a region where life does not prosper. But the south was also the place where the Lord appeared to Moses, liberated His people, and appeared to them on Mount Sinai.

So **cardinal directions** are the four main points of a compass: north, south, east, and west which are also known by the first letters: N,S,E, and W. But there are also the **ordinal directions**, which refer to the direction found at the point equally between each cardinal direction. Ordinal directions are: northeast (NE), southeast (SE), southwest (SW), and northwest (NW). Ordinal directions are also known as intercardinal directions.

Directions midway between each cardinal and ordinal direction are referred to as **secondary-intercardinal directions**. Examples of secondary-intercardinal directions are: NNW, NNE, and ENE, as you can see in the diagram below.



The Three Wise Men and the Star

One of the most evocative images from any Christmas scene must be that of the Wise Men attending Jesus' birth, and the star hovering over the stable where He was born.

Indeed, the Magi used Natural Navigation, perhaps without even being aware of it. We are first told this by the wise men: "We have seen His star in the East". The wise men knew that this was not just any star. It was His star — that is, the star of the Messiah. So it was God's will that the Wise Men would follow the star to Bethlehem to bring their gifts and blessing to our Lord, Jesus Christ.



As far as their journey is concerned, it might have taken quite a long time. The star appeared at the moment of Jesus' birth, and was visible to the wise men in Babylon. But there's another aspect that is most interesting.

Most probably, the star was not astronomical; however, the Bible does not say that this star was a natural phenomenon. Of course, God can use natural law to accomplish His will. In fact, a biblical definition of natural law is the way that God normally upholds the universe and accomplishes His will.

After Jesus was born in Bethlehem of Judea, in the days of Herod the king, magi from the east arrived in Jerusalem. (Matthew 2:1)

Before being replaced by technology, navigating by the stars was commonly used by all people to work out their position and which direction they should be heading – and was successful enough to cross even oceans.

For example, travelers in the northern hemisphere might use the star Polaris in the constellation Ursa Minor – also known as the North Star - as it's close to the celestial North Pole. So if you're facing Polaris, you're looking approximately north. But it's no good knowing which direction you're going if you don't know where you are.

Walking in Circles and Walking in a Straight Line

When lost in the desert or a thick forest, people tend to walk in circles. It has been proved that blindfolded people show the same tendency. As frustrating as this might be, this is the tendency of the human mind when there is no location reference within an unknown area. In other words, you might end up in the exact same place you started off hours ago, or even days, all the while believing you were walking in straight lines.



By conducting a series of experiments with blindfolded test subjects, a group of researchers have systematically ruled out several plausible explanations for loopy walking. Body asymmetries has been posed as one theory, but the team found no correlation between factors such as uneven leg lengths and right or left-side dominance and walkers' veering directions.

The researchers also ruled out random physical errors, such as incorrect gauging of how you need to move your legs to walk straight, arguing that these would cause walkers to meander back and forth in a zigzag fashion rather than to trace out circles.

Other researchers believe that loopy paths follow from a walker's changing sense of "straight ahead." With every step, a small deviation is likely added to a person's cognitive sense of what's straight, and these deviations cause the real error.

So if you're lost in the woods and you feel like you're walking in circles, you probably are. Without landmarks, you might go around and around. I want to emphasize the importance of being prepared if you're lost in the wilderness or even into a maze of city streets.

Fortunately, I learned quickly how to deal with this kind of situations when was in the Rockies, with my friends. The afternoon was getting on, and the September days were shorter, but it was supposed to be just a quick hike.

The woods were darker and wetter than expected, but we were young and in good shape, and I pretty much knew this area. After spending 45 minutes on a hike that should have taken 20 – 30 minutes, it was becoming apparent that taking the shortcut was not such a good idea. We didn't have a compass or any other device that could give us a clue to our location and direction.



By the third time in an hour that I said "Haven't we seen this tree before?" I decided to mark the tree with a small blaze to remove any doubt should we come across it again. And I made a few slight changes in direction to ensure we weren't going in circles. But ten minutes later we came upon the tree again, and the blaze removed all doubt. We had indeed been travelling in circles.

Once my friends and I realized we were going in circles, we made efforts to sight a distant landmark and keep as straight a course to it as the terrain would allow. Going from point to point, we eventually found a familiar glade, just as the last light was giving way to the fall evening darkness.

We took the long way and made it home with the last shadowy glimmer of light. I can tell you for sure that anyone can experience disorientation in the absence of clear visual cues, but back-country guides and hiking experts prepare themselves, as we did not, for this possibility.

This is why my advice is to always be prepared. As pointed out before, at least bring a flashlight, layered clothing, matches and some snack bars to sustain you should you fall victim to the "circle route".

The following strategies can help prevent you from the tendency to walk in circles:

1. Consult a topographic map before setting out – advance knowledge of the lay of the land will help you stay on track, or help you know when you're off track.
2. Mark your trail – a simple system of setting stones in a pyramid or making an "X" with crossed branches will let you know if you're walking in a circle. Don't place your mark directly on the trail or other people may remove them.

3. Try point to point navigation – set your sights on a nearby landmark and walk to it, then repeat the process. This can help you maintain a relatively straight line.

Moving efficiently in nature by going in a straight line or going the easiest route may be challenging, but there are some further clues that I want to share with you.

- ✓ **Stay Straight by Lining up Landmarks** (either keep a far-off object like a mountain on the same side of you, or choose your direction by looking for the furthest landmark and add 2 additional landmarks between you and it. When you reach the first of the 3 landmarks, add another one beyond the third if you can.
- ✓ **Stay Straight by Looking to the Skies** and keep clouds/stars/sun in the same direction for a while.
- ✓ **Stay Straight by Listening** - keeping noises in the same direction for a while.
- ✓ **Eliminate Errors by Measuring Your Distance.** Measure 100ft and walk several times. Multiply your 100-ft pace by 52.8 (one one-hundredth of a mile). The result is the number of steps you take with one foot in a mile = your pace. Most walk about 1000 paces per mile. Pick up a pebble per 100 to help you keep track.

Of course, every region has its own anatomy and topography. You must be careful not to generalize from a particular tree or a type of rock, a particular hillside or stream course. You should know that back marks are just as important as, if not more important, than fore marks; and in the absence of natural grown back marks, you can make your own.

Estimate each detour in length and related in direction to both origin and objective; in a dense forest, these calculations should be committed on paper if the mind is not trained enough to store them. Each intentional detour should be kept as much as possible on a straight line.

Please help us improve and rate this chapter at:<http://www.surveygizmo.com/s3/2524797/CTU?squid=c1>

II. Calibrating to Nature

The heavens are Yours, the earth also is Yours; The world and all it contains, You have founded them. (Psalm 89:11)



It has become a certainty that our world will soon come to a change. By learning survival skills, (natural navigation included) you will become self-reliant, no matter what will happen next.

Preparing for any disaster that would bring darkness and confusion into our world is vital; this is why I'd like to underline the idea that knowing where you are at all times and knowing how to always find your way is crucial. Imagine how frustrating it would be for you to not be able to reach your beloved ones simply because you have no idea about navigation.

Here is a set of general rules that can make you aware of your direction and your role as a survivalist:

- ✓ Plan your route carefully whenever you set off. Risk manage your route in advance.
- ✓ Every person needs to bring the essentials mentioned in the first chapter.
- ✓ Always tell someone where you're going and when you'll be back. Then go there! If you do this, then you know someone will come looking for you.
- ✓ Whenever you change your plans, stop and go back to number one.

- ✓ If you travel in a group, never separate from your party.
- ✓ Lead and don't follow, at least in your mind, at all times.
- ✓ Halt when HHALTT (hungry, hurt, angry, lonely, tired, thirsty)
- ✓ Regularly look behind you, so you can recognize it as the way back.
- ✓ The second you feel a twinge of feeling lost, stay where you are unless it's dangerous. If you must move, then mark the area (you are lost and need help, your direction of travel, date/time, name, etc.) and move to a safe place as close by as possible.

Being able to determine the cardinal directions using various methods can help you win orienteering challenges, help you find your way if you're turned around, or could even save your neck if you're lost alone somewhere.

There are some easy ways to figure out directions, but if you don't have a compass and can't rely on any electronic instruments, you can still determine north, south, east, and west. This involves working out which way to go simply by relying on awareness and deduction.

So natural navigation also depends on retaining some awareness of direction throughout each journey you make. It is in fact a wonderful exercise, but one that can save your life and the life of others.

To Him who made the great lights, For His loving kindness is everlasting: The sun to rule by day, The moon and stars to rule by night, For His loving kindness is everlasting.
(Psalm 136:7-9)

Directions from the Stars

Even today, when we're distracted by indoor living and artificial lights, most of us find the stars beautiful and fascinating. But imagine how they must have captivated our ancestors, who spent countless hours under the starry night sky! People have wondered about the stars for ages. What are they? How far away are they? What is the meaning of their arrangement in the sky? How do their locations in the sky change over time, and why?

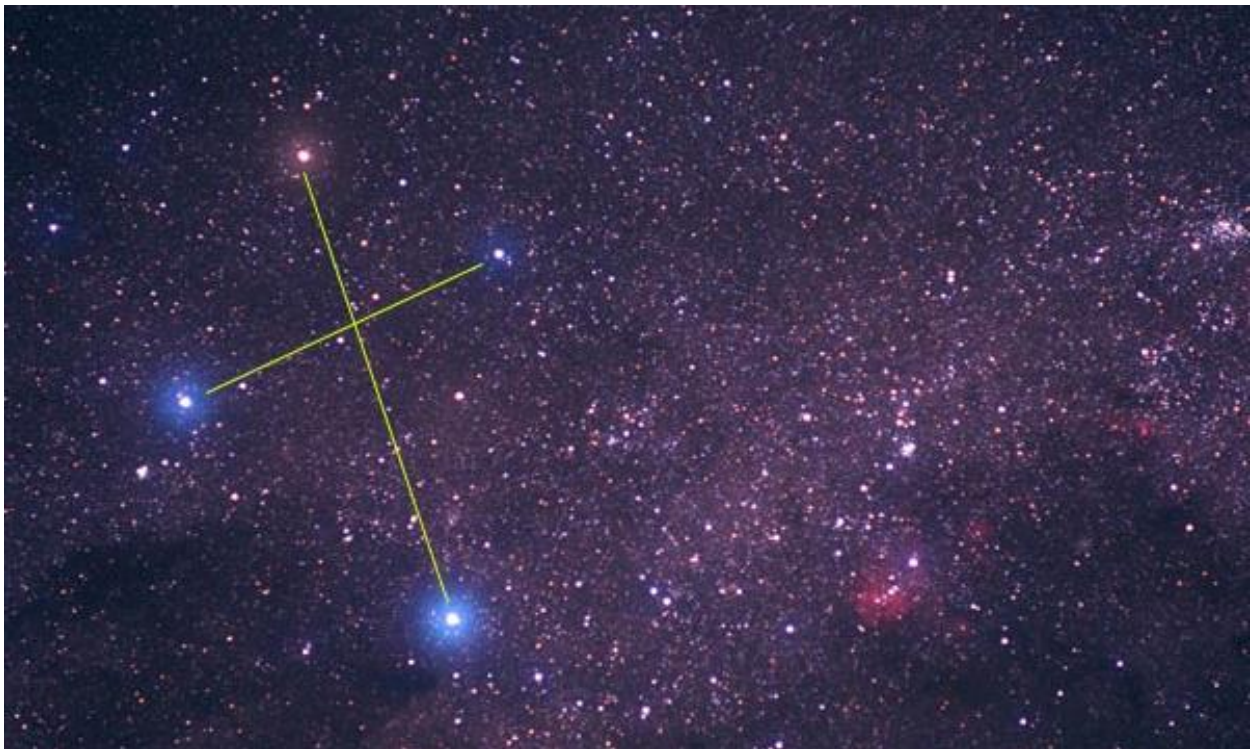
This last question turns out to be the easiest to answer, so it's a natural place to begin our study of astronomy. As you'll see, the answer ends up telling us only a little about the stars, but a great deal about the earth.

Lots of people love the idea of finding direction and navigating using the stars, but are put off because they fear it's complicated. It doesn't need to be complicated at all, but something you can learn to do in minutes. In fact, finding direction using the stars is much quicker and easier than using a compass.

Moving east or west makes no difference, except to determine when you see things. If you live farther east, you'll see any given star rise and set sooner; if you live farther west, each star rises and sets later. We actually compensate for these differences, in an approximate way, by setting our clocks according to different time zones.

But how can you find south using stars? Moving north or south is more interesting. The farther north you go, the higher in the sky you'll see the north celestial pole and the stars around it—and the lower all the stars will appear in the south. In fact, the angle between your northern horizon and the north celestial pole is equal to your latitude.

If you are in the Southern Hemisphere you are fortunate in being able to enjoy a view of the bright stars that form the ***Southern Cross***. They are also useful for they can provide a calendar, a clock as well as indicators for finding south.



The first step is to identify the Southern Cross – it is a compact group of bright stars close together in the sky with the two pointer stars always pointing to them from nearby.

Note that the Cross, known to astronomers by its Latin name of *Crux*, rotates in the sky during a night so that it can be found at different seasons and at different times low in the south, in the south-east, high in the south or in the south-west. But how can you find it?

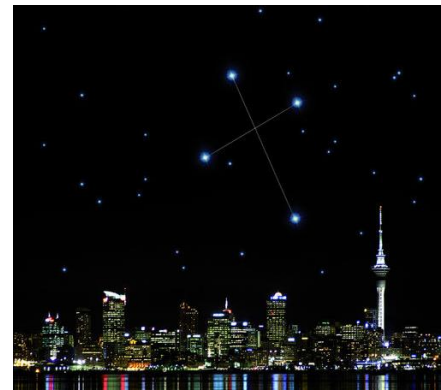
Method 1

Extend the main axis of the Cross from and in the direction of its brightest star by four and a half times its length (the span of the main axis of the Cross is approximately 6° , while the distance from its brightest star to the South Celestial Pole is approximately 27°). You have now reached the South Celestial Pole – the point about which the Cross and all stars turn in the sky. From the Pole drop a line straight down to the horizon – that is south.

Method 2

Draw a line perpendicular to the line joining the two stars of the pointers and about halfway between them. Where that line meets the line formed by the two most widely separated stars in the Southern Cross is the south point in the sky (the South Celestial Pole). From the Pole drop a line straight down to the horizon – that is south.

It is worth practicing these methods from your backyard as knowing directions would be essential if you were ever lost at night in the bush or in a small boat at sea!



The motions of the night sky were intimately familiar to ancient people. Today this familiarity has been partly lost, so you'll need to make a special effort to remember and visualize the patterns. It helps to stand under the night sky and point with your hands, tracing out the paths of different stars. You should know that:

- Some stars rise east, heading to the right, then cross the high southern sky, and eventually set west.
- Other stars rise in the southeast and follow shorter, lower arcs across the south before setting in the southwest.
- In the north, there are stars that never rise or set at all; these ones follow counter-clockwise circles. (In fact, it is the center of these circles that defines what we *mean* by "north".)

Do You Know Where the North Star Is?



Determining your position often becomes a matter of knowledge rather than intuition. Sometimes it should be enough to determine one cardinal point, and the rest will simply appear on your mental map. First of all, you need to know that north is at noon, east at three o'clock, south is at six o'clock and west at nine o'clock. And the sun rises in the east and sets in the west. So if you want to walk south in the morning, the sun should be on your left. If it's evening, substitute the stars for the sun.

For many thousands of years, Polaris (the North Star) has been used as the ultimate guiding star and reference point for navigators and astronomers. Through experience and observation, humans discovered the North Star lights the way to true north. Know the secret of finding the North Star in the northern sky, and you will know how to find direction even in the darkest of nights!

Thus, when you are facing the North Star you are looking toward true north. This is because by chance this star lines up with the celestial sphere almost perfectly, so that all other stars appear to rotate around it. You then will be able to determine all the points of the compass: westward would be on your left, eastward to the right, and southward in back of you.

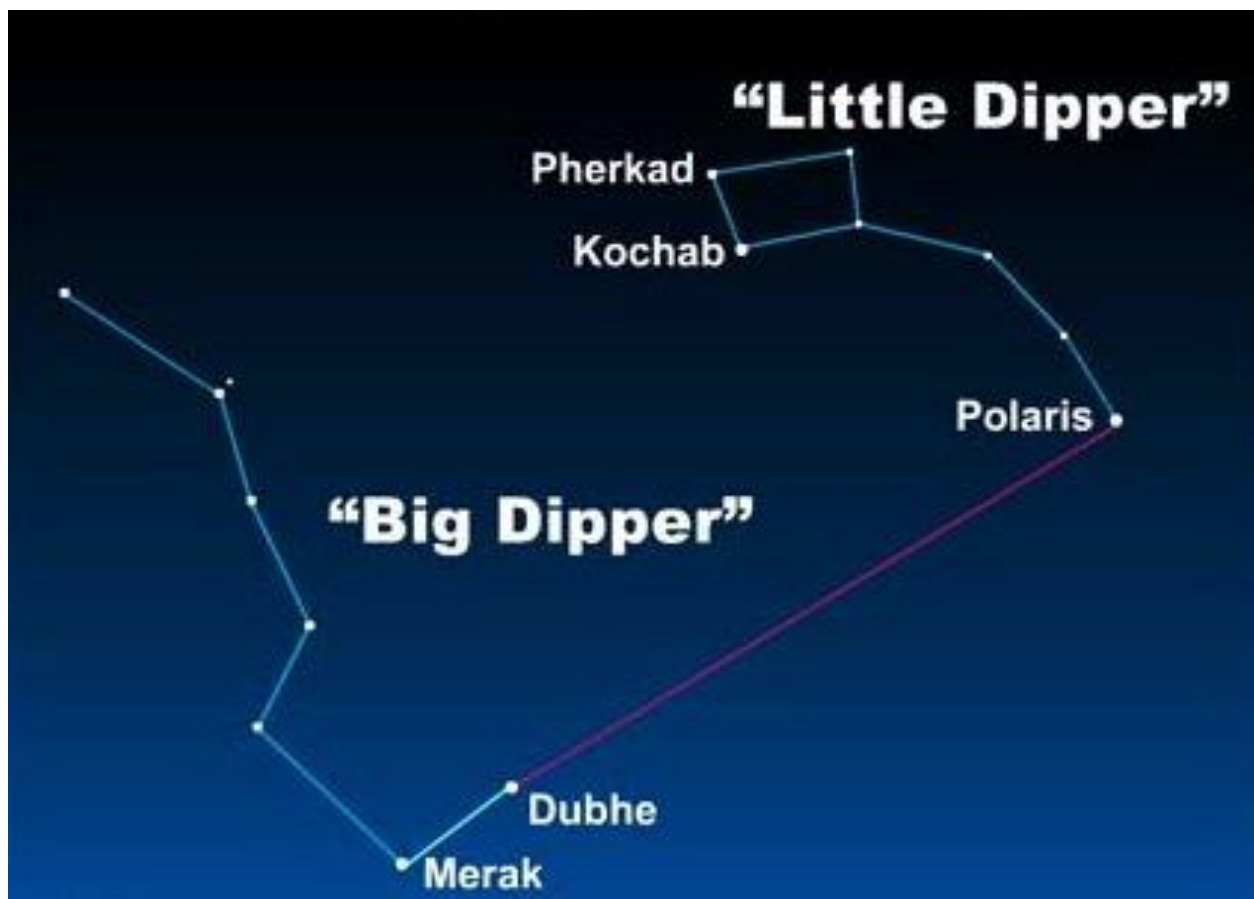
Knowing how to find Polaris in the northern hemisphere is one of the most basic survival skills. Those of you in the north are fortunate to have the North Star as a handy survival tool for

determining direction without a compass. Visible from the surface of the earth during clear nights, nearly everybody has heard of this celestial body and most probably feel confident they would be able to find the North Star whenever they choose.

Finding the Big Dipper is Key to Finding the North Star

The first key to locating the North Star in the night sky is to first find the Big Dipper, a constellation of stars known as Ursa Major. The Big Dipper is perhaps the best known group of stars in the northern sky and is easy to distinguish from all others. Also known as the Great Bear, the Big Dipper is located just north of the celestial pole.

The second key to finding the North Star is a similarly shaped constellation of stars known as the Little Dipper. The Little Dipper, also known as Ursa Minor, is smaller and more difficult to find in the night sky. Fortunately its big brother the Big Dipper points the way. The North Star (Polaris) we are seeking is the brightest of the Little Dipper stars and is located at the tip of the dipper's handle, as shown below.



Directions to Find the North Star

1. Locate the Big Dipper in the northern sky. Knowing how to find the Big Dipper is easy due to its large size and distinct shape. Depending upon the time of the year, constellation of stars may be tipped in different directions as it rotates around the polestar.
2. As shown in the picture, locate the two stars that form the outer edge of the Big Dipper.
3. Draw an imaginary line straight through the two stars of the dipper edge and toward the Little Dipper. The line will point very close to the handle of the Little Dipper.
4. The brightest star in the Little Dipper is at the end of its handle. This is the North Star.

You can also use the North Star to determine your latitude north of the equator, by measuring the angle formed between the North Star and the horizon. Of course, you can determine the direction of the four cardinal points using the North Star. The opposite direction will be south, the sun will rise on your right and the west is on your left.

The Helping Moon



The moon is a fascinating object for the natural navigator to tame. Unfortunately, there are no known fast accurate methods for finding direction using the moon. But this doesn't make the moon less interesting when it comes to finding your direction. Except some new moon phases,

half of the Moon is lit by Sun and half is in shadow. Its appearance to us is determined by the relative positions of Sun, Moon and Earth.

Since we know that the reason we can see the moon's light at night is because it reflects the light of the sun, this relationship of the moon to the sun can help us use moonlight to determine general direction.

Method 1

The first technique to learn is beautifully simple and extremely quick. Although not perfectly accurate, it can be an excellent guide for getting your general bearings. The 'crescent method' works as follows:

Mentally draw a line that connects the horns of a crescent moon and then extend this line down to the horizon. In northern latitudes this will give an indication of south. But you should know that it works best when the moon is high in the sky and not too near the horizon.

The reason this method works is not very complex; the sun and moon move across the sky in an east-west trajectory. When they are not aligned (a new moon) then they are roughly either east or west of each other. Since the moon reflects the sun's light, its bright side will be 'pointing' to the direction of the sun, approximately east or west. The line that joins the horns of a crescent moon together is at right-angles to this east/west line and any line that is perpendicular to an east/west line must be a south/north line.



Method 2

There is an even more accurate method that can be used with the moon, but note that it is not fast and can seriously dent your sleeping time. All celestial objects – sun, stars, planets and moon – arc across the southern sky when viewed from northern latitudes. They all reach their highest point in the sky when they cross your meridian or line of longitude and this will occur when they are exactly due south of you.

In other words, the moon will be highest in the sky when it is due south from the US. The best way of working out when a bright object is at its highest point in the sky is by watching and marking shadow tips.



It does not need to be a full moon, only a moon that is bright enough to cast a shadow. The curve that joins the tips of the shadow over an evening will make clear when the shadow is shortest and this will be a perfect north-south line. Thus, similar to the sun, the moon will appear to generally (roughly) move in an east to west direction as it moves across the night sky. This method will take a long time while observing the moon's arc across the sky.

Method 3

Visualize the following in '3D' space: The light of the moon (the reflection of the sun onto the moon) will generally be facing west between sunset and midnight (because the sun sets in the west and is where the light source is originating during this time period). The light of the moon (the reflection of the sun onto the moon) will generally be facing east between midnight and sunrise (because the sun rises in the east and is where the light source is originating during this time period).

There is one glory of the sun, and another glory of the moon, and another glory of the stars; for star differs from star in glory. (1 Corinthians 15:41)

Directions from the Sun



The best time to learn how to find your way using the sun is the start of the day itself. You know that the sun rises in the east; determining the other three cardinal points is easy.

But as the Earth moves around the Sun and you constantly change your location throughout the day, finding your way using this amazing celestial body becomes more difficult.

The exact bearing of sunrise and sunset is given by your latitude and the time of year. The greater your latitude and the closer you are to one of the solstices, the further from east and west the sun rises and sets.

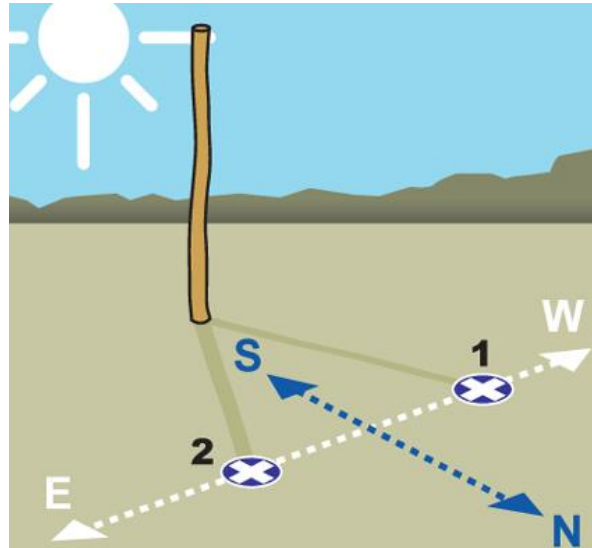
The trick for avoiding confusion and keeping it as simple as possible is to think about the season and then use that to work out which pole is pointing towards the sun. Whichever pole, north or south, is pointed towards the sun will give the answer to which side of east and west that the sun will rise and set that day – anywhere in the world.

The Next Step

The next stage in using the sun to find your way is being confident which direction the sun will be at midday. The shortest shadow cast by a stick each day will form a perfect north-south line anywhere in the world and this happens at midday. By marking the end of a stick's shadow tips over the course of the middle part of the day and joining them, a curve is made. The closest point on this curve to the stick will be a perfect north/south line, as you can see in the diagram below.

For natural navigation purposes midday is the moment that the sun is highest in the sky. This is important because this is the moment that the sun has stopped rising, so it is no longer east of you, and before it starts setting and heads west of you.

Anywhere in the world that is north of the Tropic of Cancer, the sun will be due south at midday. The tip of the shortest shadow cast by a stick during the course of a day, or any other object like a tree, will point north, the base of the stick will point south. So you see, finding your way using the sun is not difficult at all.



Bird Migration

Without using a map, a compass, or GPS device, birds nonetheless find their way south to new homes for the winter and back north again the following season. Birds are often faced with the need to return to a particular location, such as a nest or roost site, a source of food or water, or, for migratory species, a breeding territory or wintering area.

Birds locate their position easily, whether in a familiar or unfamiliar area, with respect to where it wants to go. Orientation, on the other hand, is more simply the ability to move in a given compass direction. True navigation (as it is the case with birds) is a two-step process:

1. Determining the correct direction of travel, and
2. Being able to correctly identify that direction.

So birds must determine the direction that will take them toward their goal, just as we would when using a map, then, as we might using a compass, locate or identify that direction.

Among birds, true navigation is typically accomplished only by 'experienced' birds - birds that have become familiar, on a smaller scale, with a local area or, on a larger, migratory scale, have successfully completed a migratory journey at least once.

Geese winging their way south in wrinkled V-shaped flocks is perhaps the most well-known picture of migration - the annual, large-scale movement of birds between their breeding (summer) homes and their non-breeding (winter) grounds. But geese are far from our only migratory birds. Of the more than 650 species of North American breeding birds, more than half are migratory.



The mystery of how birds exploit the Earth's magnetic field using an internal compass may have been solved by scientists who have discovered how molecules in the eye can be orientated by weak magnetic lines. About 50 species of animals are known to use the direction of Earth's magnetic field to help them find their way, but scientists have been mystified as to how they could do it because the field seems to be too weak to have an effect on the nervous system.

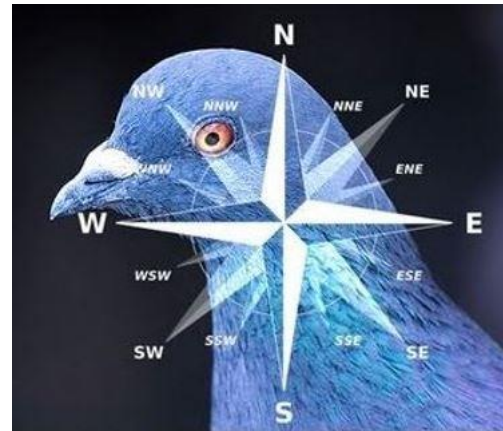
Then God said, "Let the waters teem with swarms of living creatures, and let birds fly above the earth in the open expanse of the heavens." (Genesis 1:20)

Of course, birds can use the sun, for example, which means that they permanently "know" what time it is, in order to know the right direction on the basis of the sun's position. They are also sensible to the ultraviolet rays which penetrate the clouds but are invisible for human beings. Even the nocturnal birds use the position of the sun at sunset to know their position.

Birds also use their knowledge of the landscape: they follow rivers, valleys or roads. Nocturnal birds also use the stars. This has been proved by letting birds fly in a planetarium and changing the stars' position. As previously mentioned, another tool is the earth's magnetic field (earth's north and south magnetic poles).

Some birds, like pigeons, have a small zone in their brain made of magnetite (magnetic mineral), just like a small compass. But other scientists think it's rather in their eyes that some birds have a system which indicates them where the magnetic north is.

However they do it, birds constantly amaze scientists and they are a great way for us to determine direction. Migratory birds head south so that can give us a clue to where you might be by just observing their direction of flying.



However, this method is not very precise and it would need other crucial information and clues provided by nature. People's brains also contain traces of magnetite, and experiments have shown that it helps give us a sense of direction. We can also learn direction from other creatures. For example, spider's webs are found in the lee of trees, fences and buildings, sheltered from the wind. If we know that the wind blows most commonly from the southwest, these webs become basic compasses.

Directions from Trees and Plants

The sun and stars remain the best known methods for using nature to point the way. However, natural navigation becomes more fascinating when we look closer to the ground. Trees, for example, are never symmetrical and tend to be 'heavier' on one side. So you can determine where the south-east is.

There are three methods for using the trees to find your way. We can look for how the tree's growth is influenced by the sun and how their shape is altered by the wind. The third method is to use a tree's preferences to work out the nature of the terrain.

These methods will give you only a general direction, but, in combination with knowledge of the terrain, they will let you come up with fairly true direction to help you navigate without a compass. In northern temperate climates, there is a marked tendency for the flowers of plants to face the sunny side, south or east.

Also, trees affected by the prevailing wind can be of help to the natural navigator. However, trees are affected by many factors and confirm your findings by observing several trees in the same neighborhood.

A couple of pointers can be useful in using trees for finding direction. In northern parts of the world the sun spends most of its time in the southern part of the sky. Trees, just as all green plants, need the sun to survive and so they reflect the sun's arc in the way they grow.



This leads to trees growing asymmetrically. Actually, a huge amount of natural navigation is about looking for asymmetries in nature. Moreover, no two sides of a tree will be identical. The side that gets the most sun, the southern side in the US, will grow more densely and appear 'heavier' than the side that is shaded by the trees' own leaves.

The sun also shapes individual branches. The branches on the southern side tend to grow more horizontally, out towards the sun, whereas the shaded northern branches tend to grow up, closer to vertical, in their search for more sunlight, thus indicating north.

Navigating by Moss

Moss is probably the best known natural navigation indicator in the world. It is also excellent at demonstrating how easy it is to go wrong if you take unnecessary shortcuts. If you learn the trick that moss grows on the north side of trees, rocks and buildings then it may help you sometimes, but it can also confuse you.

You should know that moss does not actually care about north or south, but it requires a moist surface to reproduce and thrive on. If a surface is shallow then rainwater will run slowly off it and moss will thrive there, regardless of north or south.

Also, the air within 60 centimeters of the ground is always moist since water is constantly evaporating from the ground. So it is best to ignore mosses this close to the ground. If water is

dripping from overhanging branches it will likely create a heavenly environment for mosses to thrive, even on a south-facing wall.

If you manage to find a vertical, smooth surface that is not too close to the ground and it has moss growing on it then there is likely to be only one reason for that surface staying moist: it's shaded in the middle part of the day when the sun is doing most of its drying. It is very likely to be on the northern side in northern latitudes.

This process of elimination is quick and painless with practice and leads to far greater confidence in your conclusion about direction. So when using mosses on trees for navigation look at a number of trees and take an average to give a rough idea of north but not rely on it.



Trees can indicate the cardinal directions by the way they grow. What's even more interesting is that the bark is often thicker on the side facing away from the sun, also indicating north. The branches on some species of tree grow bigger and more horizontal in the direction of the sun, thus providing a clue to where the south is.

One of the most reliable ways to tell the direction from a tree is to look at a stump. Tree rings are usually closer together in the direction of the prevailing sun. However, there are other factors to be taken into account – factors that influence growth, such as soil, wind and precipitation rates, which can mask the effects of sunlight.

This is why it's best to analyze a large sample of plants in the same area before drawing a definite conclusion.

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III. Extreme Environments

For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse. (Romans 1:20)



Extreme environments such as the deserts, arctic regions and impenetrable mountains cover more than one fifth of the Earth's land, and they are found on every continent. Lack of water and food creates a survival problem for all organisms, animals, plants and people. However, for people, lack of orientation can pose serious problems as well.

The sun, moon and stars can of course still be used in these environments, but several techniques that are specific to these parts is a close understanding of the way nature works here.

For example, the North American Inuit are able to read the shape of the ice's surface and from this work out which wind caused the each ice ridge to form. This gives them a strong sense of direction in even the worst visibility. Of course, such knowledge is passed from one generation to the next, and it would take years of practice for the average natural navigator.

In mountain regions, most mountain ranges are arranged in an orderly way and the rivers there show orderly trends, too. Only in flat plains do streams and rivers meander to a very great

extent and if you get lost, you have to follow a river to reach some form of civilization. All over the world, mountain ridges and valleys tend to be grouped in more or less parallel series.

For instance, all the way from New Hampshire into Maine and the Provinces of Canada is found a consistent group of low ridges called "horsebacks". They run in a northeasterly - southeasterly direction, nearly parallel with the Appalachian Chain.

It is my belief that anyone should consult a map to get a general idea of the trends in the topological map, thus increasing their chances of survival in case a disaster forced their way into the wilderness of those regions.

Finding Your Way in the Desert

The deserts of the United States are grouped into four distinct categories:

- 1. Chihuahuan Desert:** A small area of southeastern New Mexico and extreme western Texas, extending south into a vast area of Mexico.
- 2. Great Basin Desert:** The northern three-quarters of Nevada, western and southern Utah, to the southern third of Idaho and the southeastern corner of Oregon. According to some, it also includes small portions of western Colorado and southwestern Wyoming.
- 3. Mojave Desert:** A portion of southern Nevada, extreme southwestern Utah and of eastern California, north of the Sonoran Desert.
- 4. Sonoran Desert:** An arid region covering approximately 100,000 square miles in southwestern Arizona and southeastern California.

These distinctions are made on the basis of floristic composition and distribution - the species of plants growing in a particular desert region. Plant communities, in turn, are determined by the geologic history of a region, the soil and mineral conditions, the elevation and the patterns of precipitation.

Three of these deserts -- the Chihuahuan, the Sonoran and the Mojave -- are called "hot deserts," because of their high temperatures during the long summer and because the evolutionary affinities of their plant life are largely with the subtropical plant communities to the South. The Great Basin Desert is called a "cold desert" because it is generally cooler and its dominant plant life is not subtropical in origin.

Of course, surviving in the desert requires a lot of preparation but finding your way is a different thing. You can use the sun to determine your direction, as you have learned from the previous chapter.



Vegetation (cactus, grasses, shrubs, trees and wildflowers) is also important, because it can give you a clue to where the south is, but this only during spring. However, there are a few things to be aware of when trying to find your direction in the desert.

Patterns of Sand Dunes

First of all, if you have decided to make a move toward getting back to civilization, be sure to mark your original location and direction of travel, using rocks, sticks, scratching it into the ground, and if you have the means, leave a message for anyone who might stumble across it.

Before moving, take a sighting on a distant object in the direction you're traveling, and use that landmark to keep you on track. Leave small rocks on the ground at intervals, either for yourself to backtrack to or for anyone who may come across your tracks and could find you that way. Go as visual as possible when leaving tracks (you will find also find forms of vegetation along the way), because the sand might cover these tracks in no time.

Pattern of sand dunes is dictated mostly by wind. A temporary wind blowing across a desert in a direction other than that of the dominant wind may leave its marks.



The first thing you have to learn in this extreme environment is the direction of the prevailing wind and the main ways it arranges the sand. Sand is blown, but not at random; it piles up into definite features.

Determining your direction can be accomplished by observing longitudinal dunes. These sand hills are running northwest to southeast in most deserts in America, so it takes a little bit of practice, but you can determine your direction quite easily. The tip of the dune is most likely to point southeast. Using a shadow stick increases your chances of avoiding mistakes.

Finding Your Way in the Mountains

Mountain navigation requires both a good understanding and the right approach to Natural Navigation. The first thing to realize is that in good conditions, with good visibility, you can quite successfully navigate without a compass or other techniques of timing and pacing to gauge your distance.

Accuracy is important, but one of the key overriding aspects of accurate Mountain Navigation is your ability to manage error. It's a fatal mistake to place an over reliance on the absolute accuracy of a few skills and ignore the importance of strategies that reduce the effect

of error. Most folks get lost in the mountains when they allow the error to become greater than the range of visibility. One such strategy is to keep your navigational legs short.



Moreover, bad visibility encourages you to abandon any attempt at interpreting the lie of the land. This is the last thing you want to do and it's even more important that you keep a close eye on the terrain. It all comes back to you contour interpretation and this is the crux of good mountain navigation and around which all the other navigational skills fit and relate. You should take into account:

1. Ponds

The terrain has a lot to offer in terms of navigation. In North American mountains, for instance, many lakes and ponds are embraced by vegetation where natural drainage has somehow become plugged with accumulations of silt. Interestingly, these ponds have a blank several feet above the water behind which the ground slopes away into a swampy area. When it does so, it is in a consistent direction – northeasterly.

2. Rivers

In nine cases out of ten rivers will lead, if not home, at least to somebody else's home. It is often difficult to follow a river by its precise bank, but you may follow ridges which are periodically in sight of the river.

But river beds often dry up, but nearly always the river's last flow will have carried shrub and debris or at least a certain amount of vegetation. The position in which this is held on the

dried bed will indicate which way the river runs. Most rivers in our country flow eastward - except Colorado River and the Snake River.



The one thing you can really count on is that water flows downhill; so if you're high in the mountains and you want to get down to the valley, follow a river. It's helpful, because most towns, cities and population centers tend to be at lower elevations.

Other Tips for Finding Direction

Finding direction by simply following Nature's characteristics is based on several basic principles and mainly relies on the fact that the Sun (especially the light and heat) has a tremendous impact on Nature. The vast majority of plants and animals need this light and heat in order to thrive. Many of the following natural indicators are valid only in the Northern Hemisphere, as follows:

North:

- Vegetation is scarcer and less luxuriant, but on the northern part of forest clearings, there's thicker grass;
- Molehills entrances always face north;
- Strong winds that carry snow usually come from north;
- Soil under rocks is damper towards north;
- Snow lasts longer on the northern part of trees, buildings, rocks etc.;

South:

- Vegetation is more abundant;
- Anthill entrances face south;
- Resin is more abundant on fir trees;
- Bird nest entrances usually face south;

Once lost:

- Do not panic. That is the worst thing you can do and will likely cause things to get worse.
- Follow the **STOP** rule.

Stop – The moment you realize may be lost, stop, stay calm and stay put. If you keep going you are likely to get even more lost.

Think – How did you get to where you are? What landmarks should you be able to see? Were you heading North or West? Where were you when you were last sure you knew where you were? Try to answer this questions and if you can't try to remain as calm as possible.

Observe – What can you see? Where is the sun in the sky? Roughly how long until sunset? What does the weather look like it is going to be? What supplies do you have? How long will they last?

Plan – Never move until you have a plan. Based on your thinking and observations, come up with some possible plans and then act on the best one.

- Use a whistle to try and attract attention. Three blasts is the universal signal for help.
- If you have any bright items get them out as it will make it easier for a rescuer to find you.
- If you are confident enough you may wish to try and retrace your steps to find the path you were on earlier.

Staying the night can save your life, provided you maintain a good spirit. Here's what you can do in order to increase your chances of being saved:

- Find a sheltered spot that will keep you from the rain and wind before it gets too dark.
- You will likely need to put on extra layers to avoid hypothermia setting in.
- Do not sleep beside a river as the noise might mean you cannot hear a rescuer.
- Start a small controlled fire. This will give you some warmth but also, the smoke is a good way to signal for help.

- Create a HELP or SOS sign with rocks in a clearing. This will make you more visible from the air.
- Hang any colorful items of kit from tree branches around you. This will make it easier for a rescuer to find you.

Learn How to Gauge Distance

Judging distances is important particularly when your journey involves many detours. Not only should you keep an accurate account (mental or otherwise) of the direction of each detour but you should also try to remember the distance travelled on each route.

Distances can be counted in number of paces which can be translated into miles, depending on the average length of the pace; distances can also be calculated in relation to the speed of walking in miles per hour.

To determine or "calibrate" your pace follow these directions:

- **Step 1:** Accurately measure out a course that you will pace over several times. 200 feet is a good distance.
- **Step 2:** Walk the course with a natural stride and count each pace (double-step).
- **Step 3:** Calculate your pace by dividing the length of your course by the amount of paces it took to travel it. So if your course was 200 feet and you counted 40 paces then that equals a 5 foot pace.
- **Step 4:** Walk the course multiple times to figure your average pace. Try pacing while wearing your full backpack to see if it changes your results.

Estimated Paces Chart

Distance to Pace	If you have a 4 foot pace	If you have a 4.5 foot pace	If you have a 5 foot pace	If you have a 5.5 foot pace	If you have a 6 foot pace
100 feet	= 25 paces	= about 23 paces	= 20 paces	= about 19 paces	= about 17 paces
200 feet	= 50 paces	= about 45 paces	= 40 paces	= about 37 paces	= about 34 paces
300 feet	= 75 paces	= about 67 paces	= 60 paces	= about 55 paces	= 50 paces
400 feet	= 100 paces	= about 89 paces	= 80 paces	= about 73 paces	= about 67 paces
500 feet	= 125 paces	= about 112 paces	= 100 paces	= about 91 paces	= about 84 paces

You can also try counting only the right-foot paces and multiply it by two when you reach a hundred. When judging distance ahead of you by eye, certain conditions can cause overestimation, while others will result in an underestimation.

Objects look much nearer than they actually are when:

- Looking up or down a hill
- There is a bright light on the object
- Looking across water, snow or flat sand
- The air is clear.

Objects look much farther than they actually are when:

- The light is poor
- The color of the object blends with the background
- The object is at the end of a long avenue
- You are looking over undulating ground

A simple means of judging distances which can be used either on land or at sea is the finger method. It is based on the principle that the distance between the eyes is about one-tenth of the distance from the eye to the end of the extended finger. So when the width of a distant object is known and you wish to determine how far away it is, proceed as follows:

With the right arm extended in front of you, hold the forefinger up and align it with one eye on the end of the distant object. Without moving the finger, observe with the other eye and note how many feet along the length of the object it appears to have moved. The range of the object will be ten times this distance. When the height of a distant object such as a mountain or a building is known, hold the head sideways and follow the same procedure.

When I was about 13 years old, I remember reading somewhere that you could estimate distance by holding your thumb out in front of you and sight an object with one eye closed, then, without moving, open that eye and sight the object with the other eye closed; then estimate how far your thumb appeared to move and multiply that number by eight. This seems about right and I always use this method successfully. Try it yourself and you'll find it pretty accurate.

Keep your environment in mind and remember that it can also play tricks on your mind. Dense bush, for instance, will make objects appear closer than they are, while open space makes objects look farther away than they actually are. Practice, practice, practice. As with everything worth having, judging distance by sight is a skill that takes time, but eventually you will be able to use your body to judge distance.

Bonus: 5 Ways to Never Get Lost in a City

Many people now rely on their smart phones or other GPS devices to find their way around. But when these fail us, and there's no-one to ask for directions, there's a more natural way to navigate in a city. An EMP could knock out the GPS network and if there's no-one around to ask and no paper map on hand, you could be in trouble. But what do you do when you don't know where you are?



Here are the most important clues to consider if you can't find your way in a city:

1. TV Satellite Dishes

These really are the "get out of jail free" cards in an urban area. This is because the dishes point at a geostationary satellite, one that stays over the same point on the Earth's surface. In the US there are some dominant satellite broadcasters and nearly all the dishes tend to point in the same direction - close to southeast. The same applies in rural areas.

2. Religious Buildings

From earliest times, religious buildings and sacred sites have been laid out to give direction related clues. Christian churches are normally aligned west-east, with the main altar at the eastern end to face the sunrise. Gravestones, too, are aligned west-east.

To find direction from a church, you need to go inside and look for the altar. It will always indicate the east.

3. Road Alignment

Roads do not spring up randomly, they grow to carry traffic - and the bulk of traffic is either heading into or out of a town. The biggest roads tend to be aligned in a certain way, depending on whether you are in the center or on the outskirts. In the north or south of town, the major roads will tend to be aligned north/south. In the northwest or southeast, they will have a bias towards northwest/southeast. It is common sense, but very few people realize this when they get lost in a big city.

4. Clouds

One of the best ways not to lose your sense of direction is to hold onto it. My favorite way of doing this in a city is to orientate myself - using some of the clues above - and then note the direction the clouds are moving.

Unless there's a dramatic change in the weather, the wind pushing the clouds will remain quite constant. Simply look up before you head underground, and remember the direction of the clouds. When you emerge in a strange part of the city, look up again and you'll be able to work out which way is which from the clouds overhead.

5. Look for Big Landmarks

In most American cities there are some tall, famous buildings - usually visible no matter where you stand - that can help you. Even the roughest New Yorkers sometimes emerge from the subway and need to find the Empire State Building so that they can orientate themselves.

Also, when you first check into a hotel, always take a business card (so you have the address with you at all times). It will be easier to have a point of reference and be able to ask anyone for directions.

Another important clue is to retrace your step. Always make a mental note of landmarks as you pass them, so that you can retrace your steps later if necessary. And most important, remember not to panic. No matter how difficult the situation is, you are lost in a city, not an Amazonian jungle. Figuring out a new city, its infrastructure, its transportation, and its layout can sometimes be frustrating, but also quite rewarding once you've learned certain routes.

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IV. Keep an Open Mind

Make my joy complete by being of the same mind, maintaining the same love, united in spirit, intent on one purpose. (Philippians 2:2)



Survival training is more than just learning basic survival skills necessary to endure hardship. The mechanics of constructing a shelter, finding food and water, and building a fire are crucial, but they're only part of the whole. The art of survival is a dynamic philosophy, a doorway to greater understanding of yourself and the world in which you live.

You can learn a whole lot more about what it takes to be a true survivalist; I'm sure many of you can enjoy access to *Survive the End Days*. However, for the purpose of the present book, I have deliberately covered only the area of interest related to Natural Navigation. However, there's much more to say about life in the wilderness...

The conveniences of our civilization have separated most of us from nature. Because we no longer have to live directly from the earth, because we no longer have to hunt and gather our food, many of us can't understand the basics of life. Unfortunately, we have lost many of the skills that our ancestors possessed and successfully made use of for millennia.

This is regrettable enough, but also dangerous. As a species, the more we remove ourselves from nature, the more likely we are to unthinkingly destroy it. As individuals, we place

ourselves at risk each time we enter the natural world without a full knowledge of the ancient truths and realities of that world. It is a different universe, but we can always grasp its meanings along the way if we keep an open mind.

Finding direction in nature should be equivalent to finding direction in life and learning that our mind is capable of generating solutions all the time. The attitude and perspective you'll gain while mastering survival skills (navigational skills included) will be useful to you always.

Such skills are often basic ideas and abilities that ancients invented and used themselves for thousands of years. We have the privilege of mastering them, but we must first learn how to reconnect with nature. And in so doing, you will become a much more aware, involved, vital creature of the Earth.

It becomes more and more obvious that the future will belong to the nature-smart; that it is to those individuals who develop a deeper understanding of the transformative power of the natural world and who balance the virtual with the real.

Our society has developed such faith in technology that we have yet to further study how human capacities are enhanced through the power of nature. We are part of the most creative period in the history of mankind and it would be a shame not to realize that belief, love, knowledge and desire to live are attributes that should remain with us. We should be confident that the human race can and will thrive.

In our fast paced lives, distraction and multi-tasking keep attention so captive that we risk becoming blind to important aspects of the natural world that surround us. Create that nature-balanced existence and the best of things will come your way!

Godspeed.