Subject: Re: Magnetic Pole Navigation
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Unless you are right on top of the magnetic pole a compass will work. It may point east, west, or even south in the vicinity of the magnetic poles but the important things are:

1. The compass points in a consistent direction (it will unless you are going around the pole), and

2. You know how to use it, including how to compensate for declination.

3. You know other navigation things like paying attention to where you are, terrain etc., how to read a map etc.

Here is something I posted previously on rec.backcountry on how not to get lost:

How can a person avoid getting lost? A good question and there is probably no simple answer. However, there are some tried and true techniques which help. I think it is helpful to divide this subject into two rather broad categories:

I. Developing a "feel" for the land, a sort of mental map. I think we all do this more or less with our home territory. We know which streets intersect and approximately how they relate to each other. Most of us have little trouble finding our way between our homes, work, friends houses, etc. We usually have a sort of mental map of this familiar terrain. When we visit Joe we just go to his house, we don't have to think about going so many blocks one way

then looking for street names etc. When we arrive in unfamiliar surroundings it helps to quickly start developing something similar for them.

II. "Formal" navigation using compass, altimeter or other aids (including some natural ones). This is the technique which allows a person to go from one place to another based on information from a map or directions from someone else. This can be anything from following a road map to an unfamiliar town to a complicated cross-country hike with many intermediate landmarks requiring compass bearings etc. This type of navigation seems less natural and usually requires more effort to learn. However it is necessary in unfamiliar territory. It can also help us more quickly form the "mental map" of the first type of navigation.

In the following list I will not attempt to distinguish which techniques fit which category. Many of them fit both. The best navigators use both anyway. It is helpful to combine them, eg. use "formal" navigation to help develop a mental map and the mental map to supplement the formal techniques.

1. Simply be alert to your surroundings, especially as you travel. Most of us use a variety of clues to help know where we are. Most of these clues are visual although sounds and even smells can help. (The rotting animal carcass can provide a very memorable smell to be recognized on the way back). The person who pays attention to trees, rocks, hills, streams, etc. will have a great advantage over the guy who simply looks at the trail in front of him. Try to look at features from several different angles as you move. Try to put together in your mind how different features relate to each other and to your route. (Of course being alert to surroundings also enhances your enjoyment of the outdoors, the reason most of us are there in the first place.)

2. Try to keep track of your directions and associate them with the territory around you. For example, notice not only the odd shaped hill, but notice that it is northeast of you and runs approximately east and west. Try to be aware of the direction the trail is going. Notice that that hill is ahead of you on the trail, then off to the right a bit as the trail turns. A compass is handy to keep track of the direction the trail runs. Again you are trying to form a mental picture of the territory and how it is oriented. Some of us are better at this than others but I think we can all improve with practice.

3. Occasionally look behind you to see how the territory will look on the return trip. Be especially diligent at all junctions or anywhere else the trail is not glaringly obvious. All those odd tree branches and readily recognizable rocks will look very different from the other direction.

4. Learn to use a compass reasonably well. You may not need to take a bearing to within 2 degrees but you should be able to figure out which way is north. This means understanding declination (unless you will only be in areas where declination is less than about 5 degrees). Learn to go back the direction you came from using your compass (see "back bearing" below).

4a. If you are likely to travel after dark or in a whiteout, learn to use the compass *well*. Learn to follow a bearing, a back bearing, detour around something and get back on route, etc. Learn how accurately you can follow a bearing under different conditions and how to compensate for that inaccuracy (offset bearings, landmarks etc). If your night or whiteout travel will be in mountainous areas get an altimeter and learn to use it (and what its limitations are).

All compass, altimeter, and map techniques are best learned by

practice in familiar surroundings under good conditions. It's a bit late to learn when you are in a howling blizzard.

5. Use the compass *long before* you get lost, including at the trailhead and at several intermediate points. The object is to help develop a "feel" for which direction you are traveling and to learn which way you go out so you know which direction you must go to return. It does little good to know which direction is which when you are lost unless you have some idea of which way to go. (Well, let's see. North is that way, South is opposite and East is that way. But which direction is the $#^%^$@* car?) In fact it is a good idea at the trailhead to get out your map and compass and orient the map with the terrain. Put the map so that map north is true north and look around. Identify the direction you plan to travel and as many landmarks as you can. If you don't have a map, at least do this with the compass and look at terrain features, the direction the trail goes, etc. Be sure you know which direction *you* are facing when you look at landmarks.

6. Learn to recognize nature's direction indicators. For example moss does not always grow on the north side of trees but it commonly does grow on a preferred side which varies with location and depends on the prevailing winds. Be aware that these indicators may change from place to place as the prevailing winds change. This can occur in quite short distances if hills affect the wind. (Of course in places like the northwest, moss can grow on all sides of the trees. Maybe you can look for which side has the thinnest coat of moss.) Tree branches can also be affected by prevailing winds. The sun and shadows can also give indications of direction if you take time of day into account (remember to account for daylight savings time). These indicators are usually not very precise (except for the north star or astronomical readings taken with specialized equipment). However they can help you keep a general idea of which direction is which. If the moss on trees was to your left and suddenly you notice

it is toward you, maybe you changed direction without noticing. Check your compass or otherwise find out what happened.

7. Unless you are certain you will *never* leave the trail, learn to use an offset bearing and linear landmarks.

8. Learn to read a map. Try to carry a good map of the area you are in. However even if you don't have a map with you the experience of knowing how to use one will help with your ability to construct your own mental map of the territory.

9. *Never* place all your trust in someone else. Spouses, "knowledgable" friends, SO's, party leaders all make mistakes. Try to keep track of where you are yourself. If you feel lost ask the leader for help or for time to orient yourself. This will promote safety on that trip and help you learn for the times you are on your own. If the leader can't or won't help don't go with him/her again (if you get back that time). Good leaders recognize that (a) they make occasional mistakes and a crosscheck is useful and (b) occasionally people get separated from the group and they better have some idea where they are. The only exception I can think of is the rare case when speed becomes important to safety (eg. you gotta' get off the mountain before the storm hits). Then the leader may be justified in asking you to just follow. (He should, however, remain open to questions while you move.)

There are a couple of tricks which make use of the compass easier.

I. Shooting a "back bearing." The compass is handy for going back the way you came from. To use this you need to set the "direction of travel" when you go out. (See directions which come with your compass, I won't attempt to describe it here.) The usual technique is to add or subtract 180 degrees from that bearing to find the return bearing. It works if you don't make a mistake but is

unnecessarily complicated. Even the best of us can make simple arithmetic errors, especially when we're tired, cold, and in a hurry. A much simpler technique is to simply turn the compass around and pretend the south needle is the north. This always gives an exact reversal of direction.

II. Offset bearings (also known as "aiming off"). It's nice to know that if you travel for 5 miles on a bearing of 213 degrees magnetic you will be back at the trailhead. The problem is that most of us are doing very well if we can stay within 3 degrees of a bearing, even worse in anything but open country. In 5 miles a 3 degree error will put you off course by a quarter of a mile! You will probably miss your target and if you come to the road you won't know which way to walk. The solution is to make a deliberate error in a known direction. Determine how accurately you can set and follow a bearing, then aim that far to a given side. Pick a linear landmark (road, stream, etc., also known as a "handrail") and when you arrive at it follow it back to a known location such as your car or a recognizable stream crossing. This is the recommended technique, for example, to get off Mt. Hood in a whiteout. In that case, people can aim to the east or west of the lift line. Then when the altimeter (or a good guess) says they are well below the top of the lift they simply turn the appropriate direction, find the lift, and walk down under it. If somebody tried this without knowing which way to the lift he could easily go the wrong direction and end up either on White River Glacier or among the cliffs of Zig-Zag Canyon, both potentially dangerous places.

And one trick to make your maps easier to use: Draw north-south lines on them and declination lines (that is, lines running magnetic north-south as well as true north-south). These lines should be about an inch apart so when you place a typical compass on the map there is always a north-south line and a declination line under it. This is much easier if you have access to a drafting table.

This is not intended to be a comprehensive course in cross-country navigation. It is intended to give some suggestions. You won't learn navigation by reading anyway. Practice, practice, practice. When you try something and it doesn't work, try to figure out why and what you can do better next time. Try to find someone good at navigation and spend time with him/her in the field watching, asking questions, and learning. How much of an expert you need to become will depend on what activities you engage in but be sure your skills are up to your activity. If in doubt try something easier and save that particular trip for when you have improved.

Finally, be sure somebody knows where you are going, when you plan to return and who to notify if you don't come back. If all else fails and you get lost (or injured) nobody will come looking for you until the proper authority (usually the sheriff's dept.) is notified. Even when the search starts it will be much more effective if searchers know your destination, not just where you parked your car.

Even if you get very good with all these techniques there is no guarantee you will not get lost. If that happens, first sit down and relax a bit. Sometimes just a pause will allow you to reorient yourself. Your mind will be much more effective if you can remain calm. Get out your compass and see which way is north. (You do have one don't you? And you did orient yourself at the trailhead, right?) If you have no compass try to find a natural direction indicator (North Star, drive a stick in the ground and see which way the shadow moves etc.). Look around for distinctive landmarks (but be careful before you decide that that hill is the same one you saw from camp. Don't let similar hills fool you.) In the best case you may discover where you are and be able to return without problems. If this doesn't work consider yourself lost and act accordingly.