AT THE EDGE MOUNTAINEERING

"Your greatest failure is not to try"

Part 5 of my Navigation Techniques series will look at Advanced compass work and how we can use our compass to aid navigation further.

Advanced Compass Work

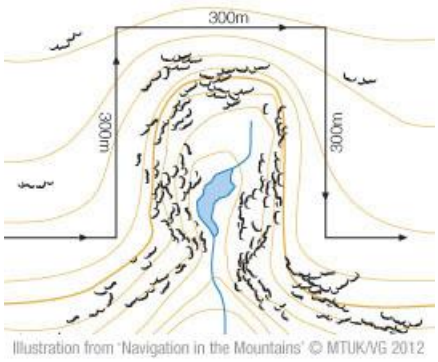


Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

As mentioned before, the compass is a versatile tool for us navigators. Once you have learnt and practiced the basics of compass work, we can then transfer these skills into a more advanced setting, using the compass to aid our navigation further.

The four advanced compass techniques we will look at in this article are:

- **Aspect of Slope**
- **Aiming Off**
- **Boxing**
- **Attack Points**

Aspect of Slope

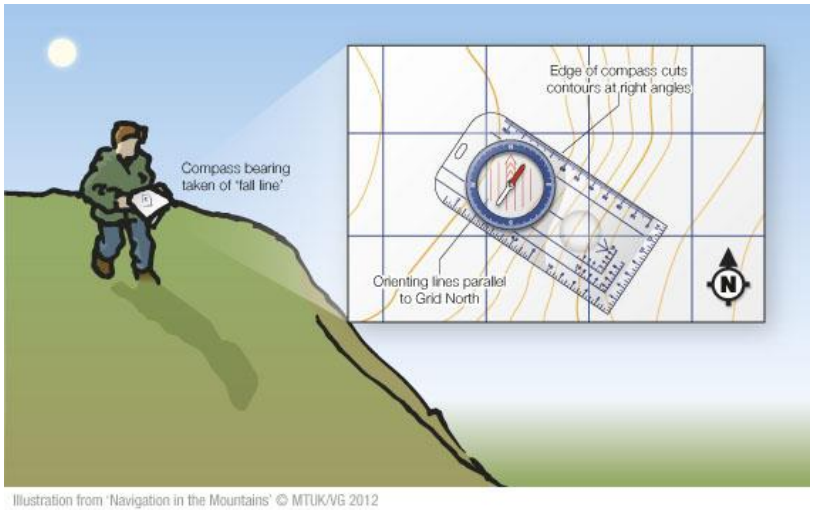


Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

In featureless terrain and in poor visibility, sometimes your only reference is the shape of the slope you are on and the direction it faces. This is known as the slope aspect. Knowing the direction the slope faces can help you relocate your position on the map and pinpoint your position.

To find out the aspect of the slope:

- First, sight a bearing directly down the fall line of the slope. The fall line is an imaginary line that a ball or stone would roll down, straight down the slope.

- The bearing alone will give you an indication of which direction the slope faces. For example, if you sighted a bearing of 210 degrees, you know you are on a slope facing South west. Therefore, you can eliminate all other slope aspects on your map apart from SW facing slopes to help determine your position.

- Once you have taken into account magnetic variation, you can then transfer this bearing to the map.

- Place the compass on the map and rotate the whole compass so the orienting lines line up and are parallel to the Easting grid lines (enduring the north orienting arrow is pointing grid north)

- Making sure you keep the compass in the same position, you can now move the compass across the map.

- When moving the compass across the map, the edge of the compass will cross the contour lines at right angles on any slope with the same aspect as the bearing you have taken. If you know your rough position, for example, if you know what footpath you are on, you can use the aspect of slope to pinpoint your position along this footpath.

When taking the initial bearing down the fall line, you need to ensure that you are taking the bearing down the main slope and not just a small incline as this may confuse the matter.

Aiming off

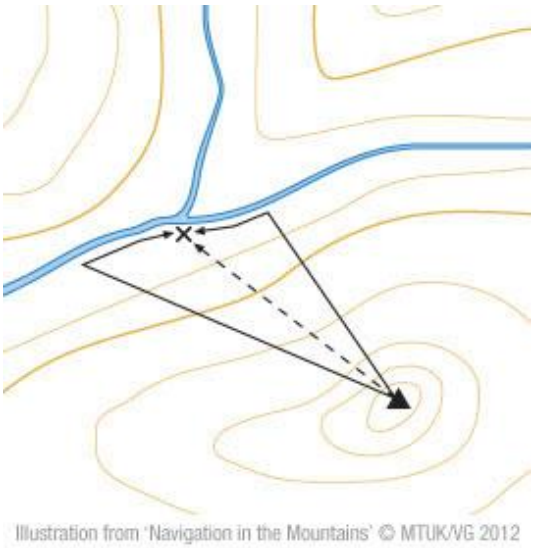
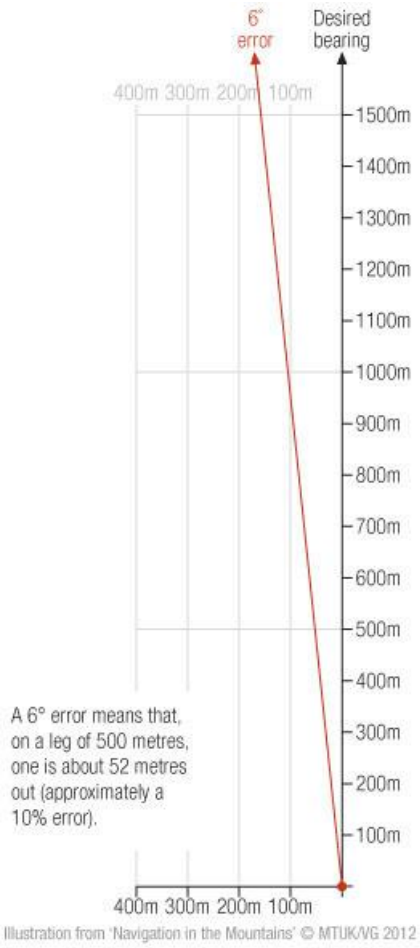


Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

It can be difficult to walk in a straight line on a bearing in poor visibility. With this in mind, if you are walking on a bearing in poor visibility to try and find a footbridge along a stream, it is all too easy to wander off your bearing and miss the footbridge altogether.



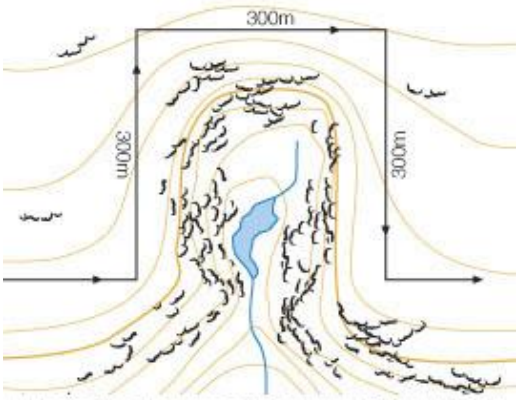
So how do we know whether to walk up or down stream to find the footbridge?

This is where aiming off comes in handy. If we are trying to find a spot feature along a linear feature, we can take a bearing on the spot feature. However, to ensure we can find it and know which way to follow the linear feature in case we miss the spot feature, we aim the bearing slightly off to one side of the spot feature by a few degrees.

In our example, we would aim off a few degrees up stream of the bridge. When we reach the stream, we can then use it as a handrail to walk down stream until we find the footbridge.

Aiming off is useful to find track junctions and other features along a linear feature.

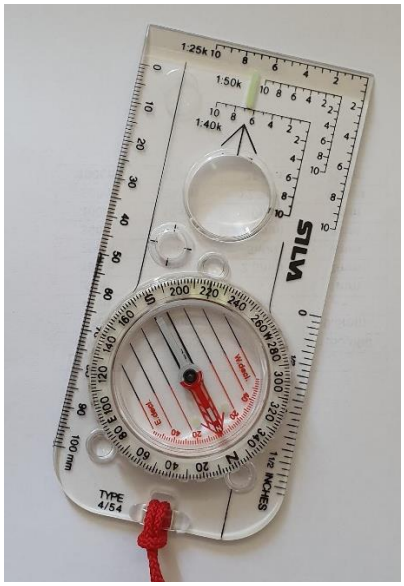
Boxing



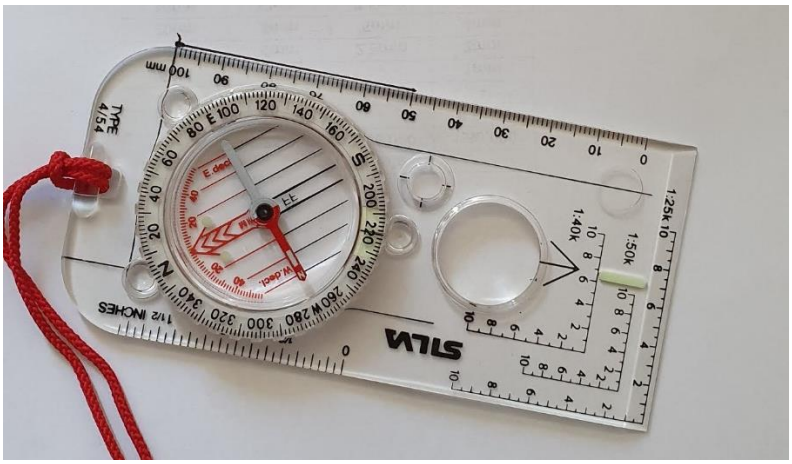
Sometimes, when walking on a bearing, we may encounter obstacles that we have to detour around, such as boggy ground, ponds and lakes or even steep gullies. This detour will take us off our bearing.

Boxing helps us detour around this obstacle but enables us to get back on our initial bearing so as to not to have to change it.

The easiest way to do this is by using 90 degree turns. See the example above.

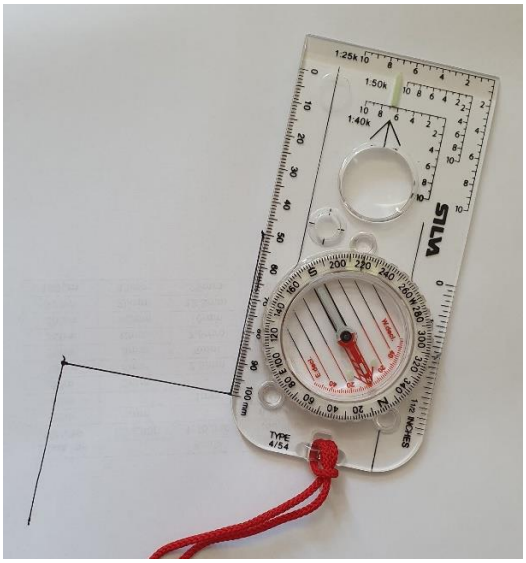


First we need to turn at a right angle to our bearing. In the above example, our bearing is 220 degrees. The easiest way to do this without adjusting the bearing is by turning the whole compass so the North-South magnetic needle aligns with the East - West markings on the compass housing. See below:

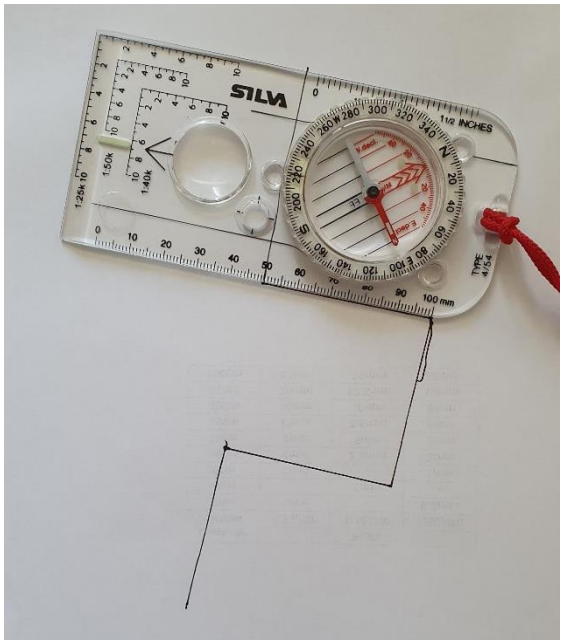


Once we have turned our bearing by 90 degrees, the direction of travel arrow now points us in the direction we need to walk in. We measure the distance along this bearing, using pacing, until we are clear of the obstacle.

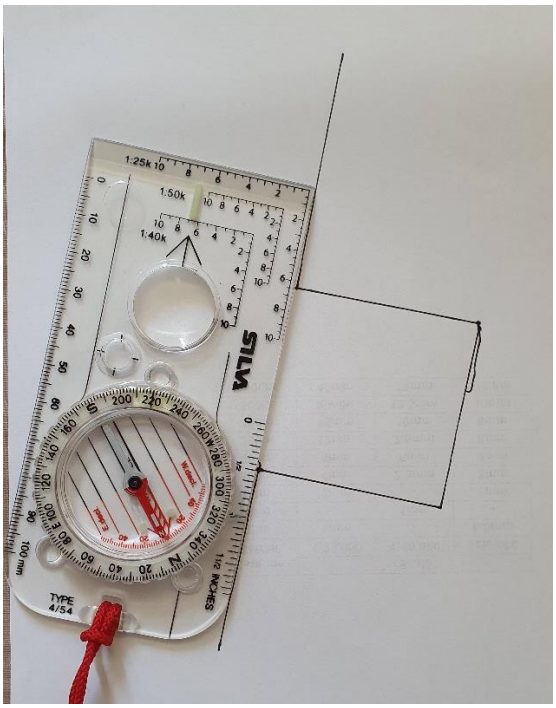
We remember this distance and then continue on our original bearing.



Again, once we are clear of the obstacle, we then turn our bearing 90 degrees using the same method as before. This time in the opposite direction to the first 90 degrees.



Remember the distance you measured? You now need to measure this distance again along this bearing. This will bring you back in line with your original bearing and you can continue along your route.



If you are pacing or timing a distance and you come across an obstacle that you need to box around, you must only add the distance for the side of the box that is parallel to your original bearing, to your total distance. The distances paced on the detours do not count towards your total distance and/or time of your leg. Remember to stop a stopwatch on the detours and restart it when walking only on your original bearing.

Attack Points

When learning navigation techniques, we can refer to two types of navigation styles:

- **Rough Navigation**
- **Fine Navigation**

Rough navigation involves being able to find a large feature easily.

Fine navigation involves lots of micro adjustments and techniques used over a shorter leg to find a feature.

In poor visibility, it may be difficult to find small features, for example a trig point on a large, open summit. It is easier to locate a large, easy to find feature that is close by to the small feature, a few hundred metres away, and use this as an attack point. For example, a boundary or stream junction or a lake/pond.

An attack point uses both rough and fine navigation: Rough navigation to find the attack point, fine navigation to find the actual feature.

See the below example:

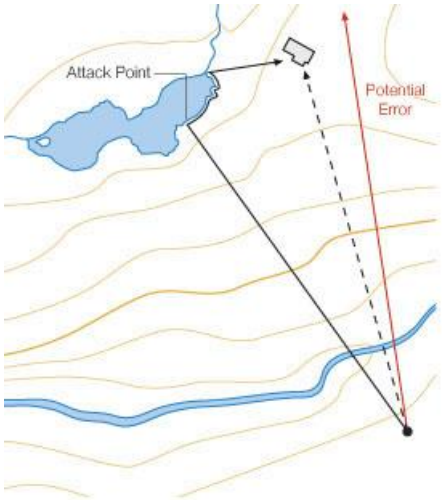


Illustration from 'Navigation in the Mountains' © MTUK/VG 2012

We can use rough navigation to find the lake. A simple bearing to the lake and we walk until we get there. From the lake, we then handrail the shore until we reach the stream that feeds the lake.

We now use fine navigation from this known point to find the small spot feature. We can measure distance, work out timings and take a bearing to this feature.

It is important you chose an attack point you can find with rough navigation otherwise it will offer no benefit to you.

This brings us to a close of my **Navigation Techniques** series.

If you have been following this series, I hope you have found it useful and informative and inspired you to learn more!

To put these skills into practice and to learn more, take a look at my Navigation Courses I offer.

All **confirmed bookings** will receive a **10% discount** code to use on **Harvey Maps** products from their site.

Next Up:

My next series in navigation will be **CONTOURS**

See you At The Edge!