

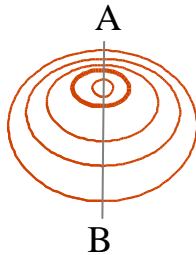
## Coaching Corner

### Contours

OK so now we get into the tricky stuff. Are you reading carefully? – especially those who use words like “brown spaghetti stuff”. Contours on the map show two things

- How steep the ground is
- What shape the ground is

So if we set off with our basic hill



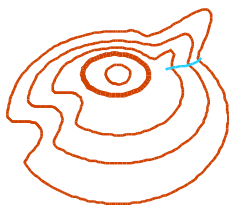
Firstly we can see that the N side of the hill is steeper than the S side because the contour lines are closer together. If we draw the profile from A to B it would look like this



So you can maybe run from B to the summit but probably not from A to the summit. Secondly we can see that the hill is remarkably symmetrical, close to a circle at the base and rising smoothly on all sides.

The contour next to the top is thicker. This is an *index contour* and every fifth contour is drawn like this so if you just want a quick idea of how big and how steep a hill is just use these heavier contours.

Sadly hills are not all just inverted christmas puddings. They have shape – like this, our basic hill which has now changed quite a lot with a spur and a re-entrant ( a re-entrant is a truly stupid word used by orienteers to show how clever they are – it is a little valley. French orienteers call it a vallon!)



The SW side of the hill now has its contours pulled in towards the summit – a re-entrant whilst the NE side has its contours pulled away from the summit – a spur. Almost inevitably a spur creates a re-entrant. Often the re-entrant has a stream in it as shown here ( a good way to tell which are the spurs and which are the re-entrants is to look for water features as they usually are in the re-entrants).

Once we get into multiple spurs/re-entrants things can get tricky. If we start with a simple version with just two re-entrants



What can we learn from all these brown lines? Well firstly we can see that the NW re-entrant is broader and less steep sided and more or less straight ( the contours are further apart = less steep and a line drawn up the apex of the contours would be straight). The SE re-entrant is narrower with steeper sides and it is curved. This re-entrant is also longer as it deflects more contours. If we are looking for a control in the SE re-entrant then we are looking for a narrow steep-sided re-entrant with a noticeable curve rather than a broad shallow straight re-entrant. This will save many a “parallel error”. Notice that the two re-entrants have created a spur between them, broad at the base and then narrowing as it gets higher.

But what if we don't have hills but rather we have holes. A situation which is not uncommon in sand-dune and limestone areas. We get this



It is just like our original hill BUT it has little tags on the contours to show which side of the contour is downwards (the tags are on the down side). The hole is just like the hill – it is steeper on the N side and has a fairly constant slope all round. It is very easy to miss the tags and look for a “hill” which is, in fact, a hole - so be careful!

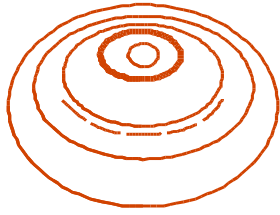
If all slopes were smooth and regular life would be easier in some respects and harder in others. It would be easier to map and interpret the area but finding controls on such featureless stuff would be difficult. Always beware of controls on smooth, featureless slopes!

Many slopes however are not even in gradient so we can use this information to navigate by. Often hills (and holes) go up or down in steps which reflect the underlying rock strata. Contours show this quite clearly.



Here we have a hill which is initially quite easy but then ramps up quite steeply before another shallower bit with a small steeper lump at the summit ( a cherry on top?). A sudden change in steepness is called a “break of slope” If the control we want is on the flatter area nearer the top then we can confidently run till we are above the break of slope lower down before we start looking for it.

Not all ground shapes are big enough to merit a 5m contour (much less the 10m contours seen on some older maps) so they are mapped using a form line (a dashed contour). A small break of slope can thus be shown like this



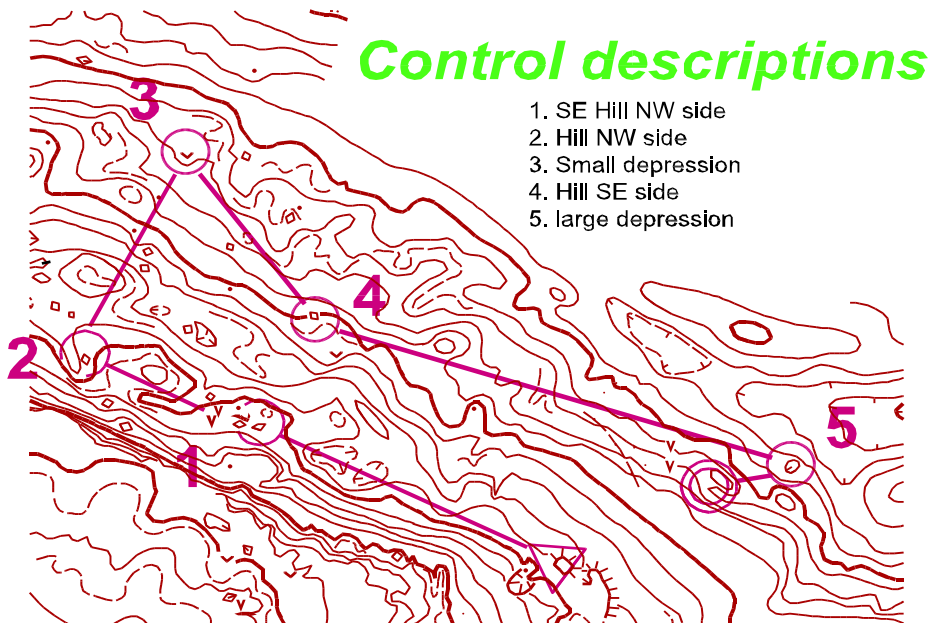
There is a short (less than 5m climb) steep bank half way up the hill on the southern slope. Form lines can also be used to show shapes which are not 5m high or deep. Like the small spur and re-entrant shown here (with a tag to show which way is down)



Also used are form-line hills and depressions if they are too big for the point features.



If we look at a map which has only contour features ( a “brown only” map) it initially looks hopeless!



However with a bit of application of things we already know we can make it do - able! re-entrants, spurs and breaks of slope are, in effect, line features so we can use them as handrails and catching features just like any other line feature. Using the things we already know like handrailing, aiming off, pace counting and so on navigate your way from start to finish on the map above. Anyone recognise the map?

## Coaching Corner – the answers

Start to No1 . There is an excellent break of slope *handrail* to your left so run along it till you see the narrow re-entrant running just S of W (you now have an *attack point*) From there *pace count* along the break of slope for about 30 metres. You can now see the group of small hills out to your right. You want the nearest one and the marker is round the back.

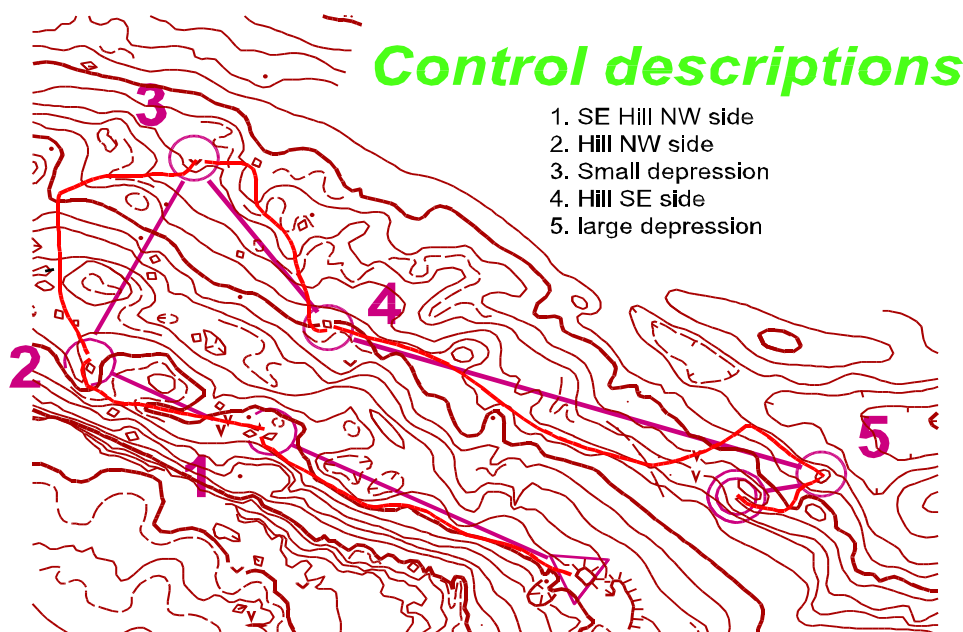
No1 to No2. Run NW to the index contour re-entrant and run up it. It is a *handrail*. At the top keep going in the same direction over the spur and go down the re-entrant on the other side till it starts to narrow where you should carry on above it on the E side until you hit your hill. There is effectively a *handrail* all the way to the marker which again is behind the hill.

No2 to No3. Head north pace counting (roughly as a check) around 200m till you hit the re-entrant running W to E. You are *aiming off* so as to be above the control when you hit the re-entrant. This is an excellent *handrail* into no2.

No3 to No4. Go due E into a wide re-entrant and *handrail* it into a second re-entrant heading SE-ish. When you reach the head of the re-entrant keep going in the same direction till you hit a steeper slope. Go up this due S and your hill should be on your left – going S means you have *aimed off* to be sure of which direction to turn at the top of the slope.

No4 to No5. Run like mad over the big spur with the hill on it then contour to hit the earthbank ( a bit like a *catching feature*) or the gully will do. Head downhill till you hit almost the valley bottom then contour along above the valley till you hit the big depression. Again the valley acts as a *handrail*.

No5 to Finish. Climb up the re-entrant to the W of the spur then at the top turn right and keep climbing the tiny re-entrant should be visible.



If you have struggled to follow all that here is the route in red!

Nowhere have we done anything new! Just interpreted the brown lines!