

Masterclass: Random walling (part 2).

More Apparently Random Thoughts...

In case you hadn't noticed, Masterclass when not dealing with incredibly rare requests tends to be about something I have been recently working on. This current 'random' series was sparked off by some such process.

I spent around 6 weeks towards the end of 2008 repairing a ha-ha in Northamptonshire, a random pattern but using fairly regular (i.e. lots of squarish/rectangular) stone. So why not coursed? A question I asked myself on more than one occasion, it would have been so much easier to course it. However, the original wall wasn't coursed, and some of it was to remain and much of it was on a slight slope. Slopes and coursing do not always go together. On slight slopes the coursing can follow the slope, although this is not universally accepted as appropriate (basically the stones necessarily have to break one of the cardinal rules, that stone is set to the true horizontal so that gravity works only downwards- and stones cannot theoretically slide sideways along the line of the wall). If you try to course a wall on a slope what is the top course at one point will necessarily be the footing elsewhere.

This was noted in Stonechat 17, where the idea of jumpers, that is stones which rise up through two (or more) courses was introduced. To this we need to add the idea of the (I think) wonderfully named "snecks", that is "a small stone inserted into a gap between larger stones in a rubble wall" (Shorter OED). Remember that rubble here just means stone which has not been sawn/dressed.

Perhaps unsurprisingly there is a British Standard for Snecked Masonry



Random Snecked wall, Catesby, Northamptonshire © Sean Adcock

This piece of dry face mortar backed retaining wall shows how snecks and jumpers mixed together can create a random wall out of regular stone.

Within random walling in general and especially with (less stylised) more irregular stone then in effect any levelling stone placed to make up height next to a taller stone is a sneck, and any stone taller than one next to it is a jumper.

One final consideration here are "soldiers" that is snecks set on end rather than flat (i.e. standing to attention). Generally within walling these are frowned upon. If they are purely a sneck then they are inherently unstable and likely to move considerably during settlement. That said where they fill an awkward gap between two good largish solid stones and are hammered in there is some merit to their VERY occasional use (e.g. monthly rather than every couple of metres!). In this instance, and also (perhaps more notably) with smaller stones set 'normally' between larger stones they must be 'nipped' by subsequent building stones otherwise they can be relatively easily displaced, compounding the fault of using them in the first place, more of which later.

Jumpers and woolly thinking?

When you look at many walling books and articles (mine most certainly included) the drawings tend to be of stylised, regular stone that here in Wales we can only dream of. This is essentially because this is the easiest way to illustrate a principle. The principle is essentially the same for more random rock shapes, it is then for the reader to see how this principle relates to their own specific rock type.

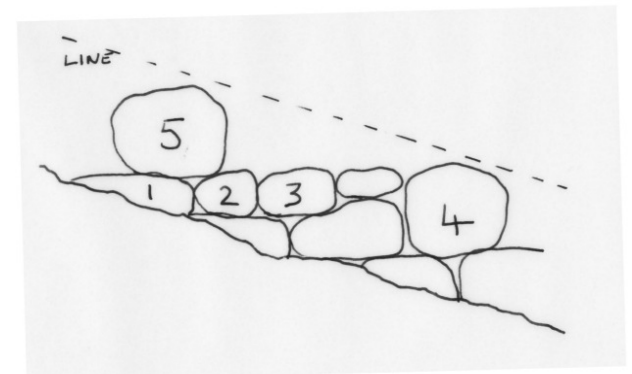
From the photo right, it should be clear that jumpers are liberally spread along the length, and occasionally through the height of the wall, with some level coursing and a smattering of snecks. In the wall below, built of similar stone the jumpers are similarly spread but do not seem to stand out as much at first glance.



Above wall on slope showing jumpers and levelling.
Left similar construction but on the flat.
Both Blaen y Nant, Nant Ffrancon.
Both © Sean Adcock

The fact that the wall is on a slope helps make the creation of layers or platforms and their interaction with jumpers more noticeable. The regular spreading of jumpers is technically important on a slope where

there can be a tendency to group them (1,2,3 right). This gives rise to the problem noted in part 1 where effectively the levelling stones at one point, if coursed, become the footings further along. In essence you end up with too many small stones low down in the wall and a conscious effort has to be made to spread jumpers of a similar size along the wall at similar heights relative to ground level (3 & 5 right).



Here the line becomes as important for determining your stone distribution along the length as it does for actually determining line/batter.

In effect working on a slope forces you to consciously work this way, the steeper the slope the more pronounced this becomes. Shallower slopes will conversely make for more coursing as you have less need for jumpers and snecks. Here their presence is less a structural necessity and more just a determinant of the extent to which the wall looks random.

On the flat technically you probably do not need to create such distinct platforms, normally only levelling between a few stones. Basically you have to place adjacent stones to some sort of level to allow for next stone up. This can be a problem as temptation can be to prolong the course.

As seen here this is particularly likely to be the case with more regular stone



Random wall with regular stone, Little Everden , Northamptonshire. © Sean Adcock

This is akin to using all the big stones in one area noted earlier and care has to be taken to break the coursing to allow for better distribution of stone. It is important to remember that in random work your line is a guide to batter and if you set it as such horizontal. If you work to the line, which there is a tendency to do with regular stone then you are likely to get overly long platforms/coursing. The exact extent will depend on the precise nature of the actual random pattern, deciding exactly when to end a course is often largely just a question of experience and whether it's right or wrong a highly subjective decision. I suspect that generally there can be a tendency to over run the coursing, so when in doubt step. Just remember the more often you step the more random the pattern. Conversely as we shall see next time some random patterns include complete courses.

One final consideration, again particularly with more regular stone is not to put a jumper in and then just continue same lower layer depth that led up to it on the other side of it.

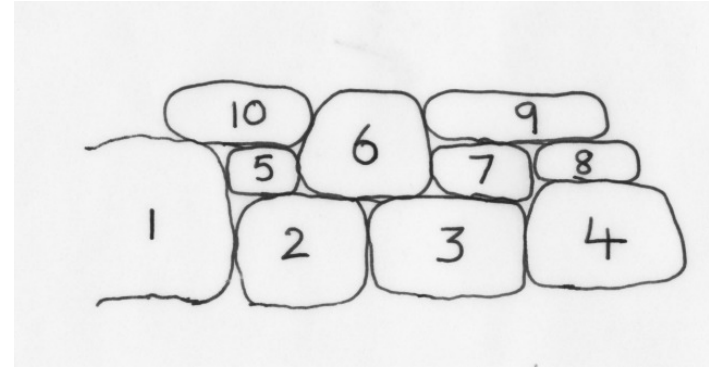
Where does this leave us with a method for random walling?

Broken down to its absolute basics, random walling is just about employing snecks and jumpers with a bit of coursing; although it may well be that the coursing is in effect just levelling two adjacent stones, and no more.

How you put these together creates the pattern – from very random or random rubble through to much more formalised coursed random as we saw in “*Stonechat 17*”. Stone shape/type obviously plays a part but in this respect it is primarily because this determines how you implement the putting together bit.

When building you should as far as is practicable work sequentially in layers, this avoids awkward gaps and tends to build a tighter wall. In the diagram on the next page the stones would theoretically go on more or less in the numbered order .

In masonry you tend to be working with specific sizes of stone, for sake of argument if you have nominal (i.e. allowing for mortar beds) 1, 2, 3 and 4 inch building stones and 5 and 6 inch jumpers then 5 inches can be made of 2&3 or 1&4, 6 inches can be made of two lots of 3, or 2&4, and 1&5. With walling life tends to be a little more complicated. You need to plan in advance, making sure that



you have a reasonable step between two stones. In the diagram above the step between 1&2 needs to be such that you are likely to have a suitable stone to make up the difference. Small steps which require thin stones are not a good idea – but more about that later. With regular stones and stylised diagrams this is all very well in theory; you put 5 in place select 6 and butt it up nicely. With less regular stone 5 is likely to be just too long or too short for number 6 to sit solidly over the joint of 2/3. It is likely to often be the case that in ensuring you use up larger awkward stones in selecting them you have to place them where they want to go, so 6 may well go in before 5 leaving one of those awkward gaps. Whatever the case the principles are essentially the same, the step between 1&2 allows for a good “sneck”(5), the “sneck” works well with 1 to facilitate placement of a subsequent building stone(10). Your jumper is sufficiently large enough to create a step above (5) in order that the building stone (10) is not insubstantial (i.e. allowing you to use bigger stone towards the base). Stones 6&10 work together, providing a suitable base for subsequent building.

One of the keys to using jumpers is to ensure a sensible step sizes and avoiding oversized jumpers higher up requiring thicker stones than otherwise desirable to make up to its height thus exacerbating the problem in terms of stone distribution and general diminution of stone thickness with height.

Dodgy joints.

The step between 3&4 is not sufficient for a suitable levelling stone or sneck. Thus the use of stones 7&8, whilst providing a good base for and sufficient step to allow for the placement of 9, creates a “plumb joint”. With irregular stone you should actually be able to avoid this but with more regular stone, especially where you have many very similar sized stones, it can be unavoidable if you are trying to avoid strict coursing or the use of lots of thin levellers. This is in fact the preferred method in much of Scotland, however it does have its setbacks. As joints are acceptable there seems to be less concern to cross them on each layer and as such they seem more likely to develop into running joints. You can also end up with plumb joints either side of a stone (“stacking”) which is a serious weakness.

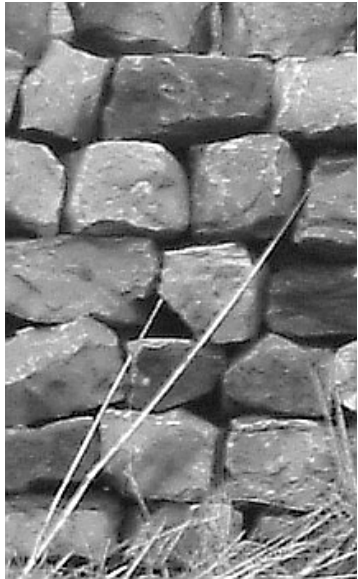
If you're not careful you can end up with a piece of wall like the one above, which of course is on the A55 across Anglesey and not in Scotland. It is interesting in as much as I have found it impossible to decide whether or not it is a random wall gone pear shaped or a coursed wall gone awry.

Basically if you are employing this method you must ensure that the joints do not extend beyond 2 layers, and you need to take care not to create any stacks, even of 2 stones.

The photo right shows a wall riddled with running joints, plumb joints and stacking, it also partially shows the problem of stepped joints. Given that wallers should keep to the tenet of 2 on 1 and 1 on 2, in the ideal world its 1/2 on 1 throughout. In reality the exact extent of the overlap is of little concern however you should always bear in mind that a slight overlap can be effectively little different to no overlap. Consequently if you place a lot of stones in subsequent layers with minimal overlap even though every joint is crossed it might as well be a running joint (hence the series of joints 2 stones in from the left in the photo right is a joint from virtually the bottom to the very top.) This principle also means that you can get diagonal running joints, as seen left, also on the A55.



Joints and stacking, Anglesey. © Sean Adcock



Some random patterns do employ thin levelling stones regularly within the face (as we shall see next time). Here the levelling stone is in effect a sneak. This is generally a practice which is frowned upon although often for the wrong reason. As long as the leveller runs well into the wall and is firmly held then it need not be a problem. Even though it is thin for virtually all rock types the potential for it being crushed is limited so it need not be a problem in the long term. The problem is that pressure points can be created. If a perfectly flat thin stone is sandwiched between two perfectly flat stones there is nothing the matter. However this is rarely the case and you will not have uniform contact. Rather there will be a number of points of contact which are likely to create pressure points. Depending on their distribution, the force in terms of weight placed upon them, and the nature and thickness of the stone itself, there will be an increased likelihood that the stone will crack and potential movement /settlement increased. This is a major reason for avoiding using thinner flat stones (especially slate) lower down in a wall built of much less regular stone. They do not mix.

Shape shifting.

Diagonal joints, Anglesey
© Sean Adcock

Stone shape will of course affect how this all works in practice. For example angular stone can be used to change levels.

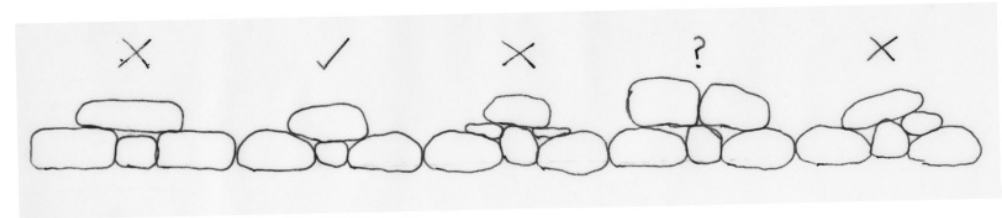
More irregular shaped stone provides more potential for solving the basic problems which occur. Of course it can also create other problems (but that's a story for another day, probably in the dim distant future when I manage to get my brain around exactly what they are!)

With less regular stone you can use complimentary shapes to provide and use suitable bases which are not perfectly flat, as seen below, to a certain extent removing sneaks.



However here you can't just shuffle stones along as you often can with more regular stone, each stone has to sit where it wants to and/or it works shape wise, hence you can tend to get little gaps and hence to a certain degree you still effectively have sneaks.

At this point I'd like to return to the problem mentioned earlier, of 'nipping' smaller stones. This problem applies equally to medium sized stones not laid sequentially, that is when filling between two previously placed stones. If the stone is small enough that you are going to be able to bridge across it, (rather than set two stones partly on it), then care has to be taken to ensure it is 'nipped' or held.



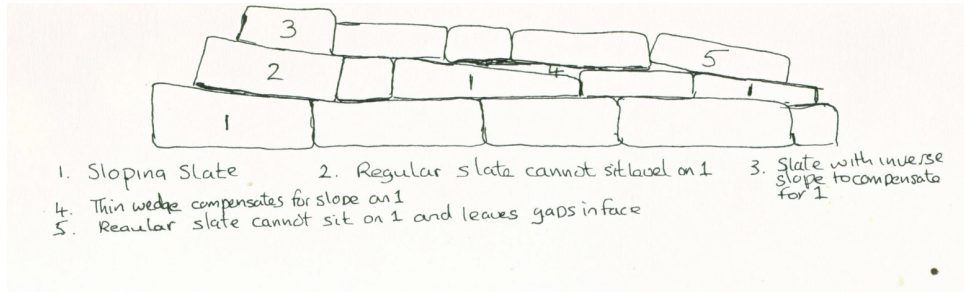
with regular stone you need to ensure everything is very level otherwise the stone will remain loose or just act as a pivot. With less regular stone if you cannot get it flat then it is probably best to allow a slight dip then you can find a suitable shape to nip it. If it is proud the chances are (unless you are very lucky with stone shape) you cannot bridge it and nip it. Unless you use absolute slivers compounding the problem, you have to have two stones sat on it. This will mean a very limited (if any) overlap, and often the start of a stepped joint.

Wibbly wobbly.

"Wibbly wobbly" – getting a bit technical now. You have to be aware that even relatively regular stone does not have a uniform thickness along its length. Where this is only a few millimetres it is of little practical concern. However in general you need to be careful not to create "skis-slopes" a problem which can similarly occur where you are working with less regular stone and making use of the slopes to change layer depth

This was noted in a previous Stonechat article in June 1995 (Stonechat 9) which I shall unashamedly repeat verbatim.

"Working with cut (sawn) slate is not as easy as it looks. The stones are not always as regular as they appear, often tapering slightly from one end to the other so that when you place a stone on top



of them it slopes horribly. The ideal solution is to find another stone with an inverse slope to place on top thus cancelling out the difference. Fine in theory but in practice reliant more on luck than judgement. The alternative is to find a sliver which is tapered and can be used to level off the slope, if this sliver is not tapered an undesirable gap will be left below the next building stone. Failing in either method you are stuck with a sloping stone, the next stone on top of this will follow this slope and hence the problem will persist.

Unfortunately there is no miracle cure to this problem, in fact with coursed cut slate walls the coursing is often wavy as dictated by the nature of the stone and not necessarily sloppy workmanship."

As a final addendum from an aesthetic viewpoint the occasional slight ski-slope platform is not a complete disaster (the technical ramifications of sloping, especially excessive sloping are beyond our scope here). This is especially true with more random stone stones set slightly off of true. Coursing/levels tend to show more from side angle than straight on (remember the 'coursed rubble' example from "Stonechat 17" unless it is particularly sloping or an extensive length. Use this to your advantage by keeping this 'error' to a minimum, bearing in mind that an individual stone sticks out like a sore thumb, several in a row can blend in unless you start to create waves and get really "wibbly wobbly".

Now 2 paracetamol and wait for the next exciting instalment of "as clear as mud" when we'll have a look at a few more random patterns which will hopefully draw a few of these strands together. We live in hope.

Sean Adcock