

What root buttresses can tell us about trees and landscapes

Look at trees and what do you see? Well one thing's for sure, we don't look at them in quite the same way since Claus Mattheck opened our collective eyes to the world of tree biomechanics; and the notion that we can interpret much about trees by merely looking at them.

Claus's theories have broadened our understanding of trees' abilities to optimally respond to stresses placed upon them, and the consequential adaptive growth patterns which result; growth patterns which we can interpret and use as predictive indicators of potential failure.

Much of a trees 'body language' as described by Mattheck, and articulated through his method of Visual Tree Assessment (VTA), is understandably driven by the social and economic imperative of failure prediction. It looks towards trees on the brink of mechanical breakdown. It's a language that is large, loud and articulates malfunction.

But is failure prediction only part of the story? What else might the growth patterns of trees have to tell us - growth patterns which are not driven by a survival strategy, but those adaptations which result from topographical circumstances or management practice? I think trees have a great deal to tell us about their histories. It's a quieter and more subtle language than we are used to, but one with the potential of great reward for those who take the trouble to look.

For my own part I started at the bottom – with root buttresses.

I was taught that a 'good' tree was straight, with buttress roots that symmetrically flared as they reached the ground. Any variation to this was understood to be abnormal and consequently a potential cause for concern.



I have followed this principle in countless tree inspections over many years, but then slowly it began to dawn on me that buttresses flares are in fact rarely symmetrical. I began to see that buttress flares were often *asymmetrical* because the tree has fashioned adaptive growth in response to the immediate ground conditions in which it has grown; a phenomenon that has the potential to tell us much about both the tree and its history.



Many of these variations are slight and subtle; the buttress asymmetry of the tree pictured above was formed as a consequence of the gentle slope upon which it stood during the growing phase of its life. The tree provides us with a *permanent* record of that period; the slope may erode or disappear but the asymmetry within the tree remains, leaving us with a visual clue as to what has gone before.



The picture above is from a park in Crawley. Here the asymmetry of the buttresses does not fit with the landscape. The sloping roots to the left conform to the gentle fall of the land in that direction, but the abrupt verticality of the roots to the right suggest a sharp change in level – possibly a ditch – which is at odds with the topography on the ground. Further investigation showed that the rising land to the right is indeed 50's landfill, which has obliterated all that had gone before, except the evidence preserved within the root buttresses of the adjacent trees.

Buttress asymmetry can also be an indicator of much older features. In the picture below the asymmetry is pronounced; to the right the buttress flare is gentle and elongated, reflecting the gentle fall of the land away from the tree. But even though the land to the left is rising, the buttress morphology does not reflect that; the roots here are plunging and vertical which is indicative of a pounced change in level.



The tree straddles the remains of a bank to the right and the edge of a ditch edge to the left, the latter indicated by the vertical buttresses roots and providing a clue to the original steepness of its sides. The tree is screaming out to us what the ground is only whispering, of the existence of a largely eroded woodland boundary bank and ditch, the features of which can be very old but also very difficult to date. Here the buttress morphology tells us that the ditch and bank existed before the tree had reached maturity.

What's more these features are all around us, as delegates found when following my conference paper last year on arboriculture and archaeology. We looked around the unpromising confines of Warwick University campus, and identified woodland banks and ditches, recognised made-up ground and dated modern bunds - all with the help of some asymmetrical buttresses.

Here we've only had room to briefly dwell on buttresses, but I believe that a broader understanding of visual tree history has much to offer. It tells us about a trees' past, and the place in which it has grown. It can help date and order events that have occurred to trees and the ground around them. Perhaps most importantly, it has the potential to give trees a central role in contextual site interpretation; and that is important for both arboriculturists and archaeologists alike.

Much of this language still remains obscure and unrecorded, but I hope that this article may have inspired some of you to go out and decipher more of it for yourselves.

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