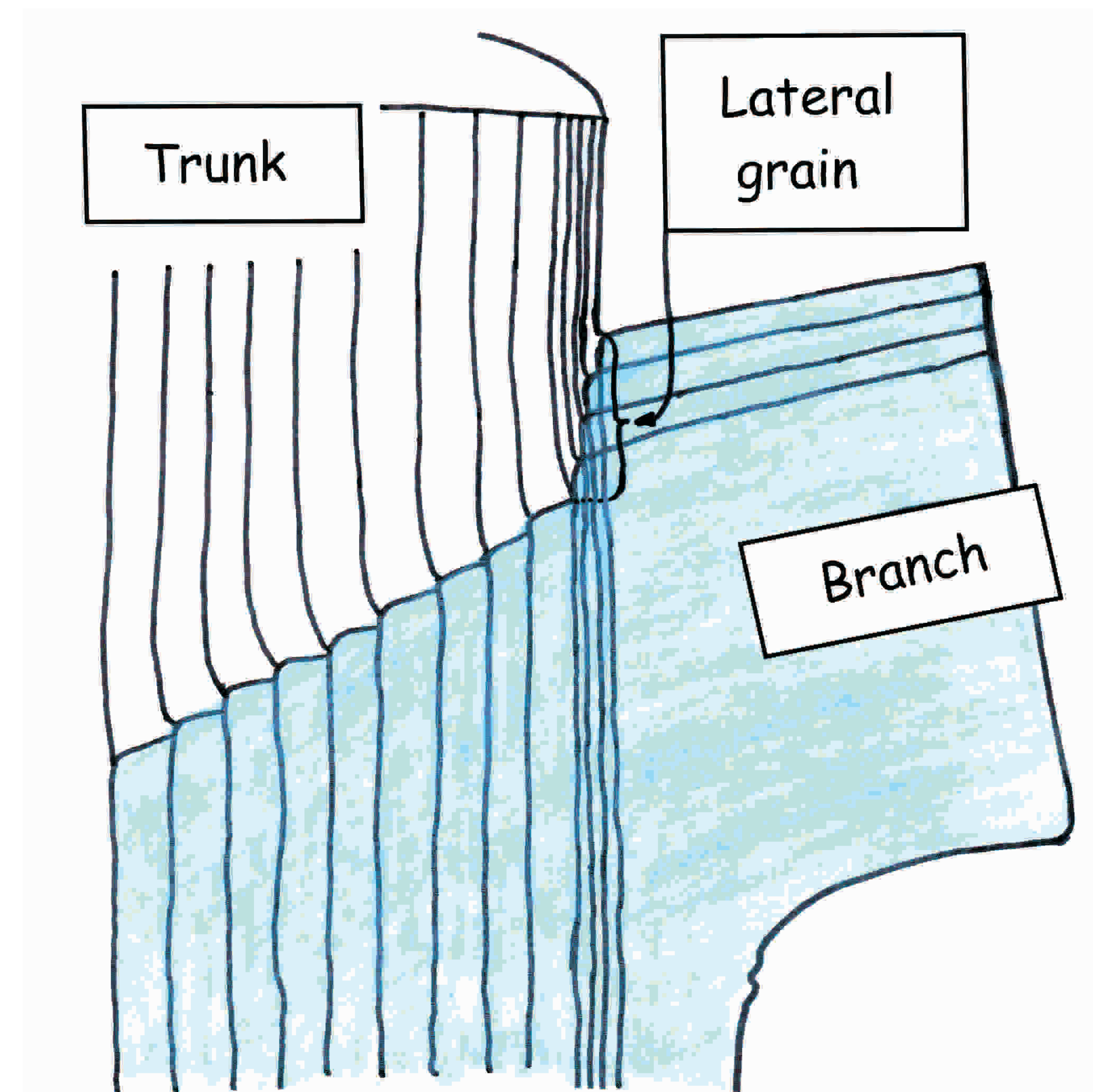
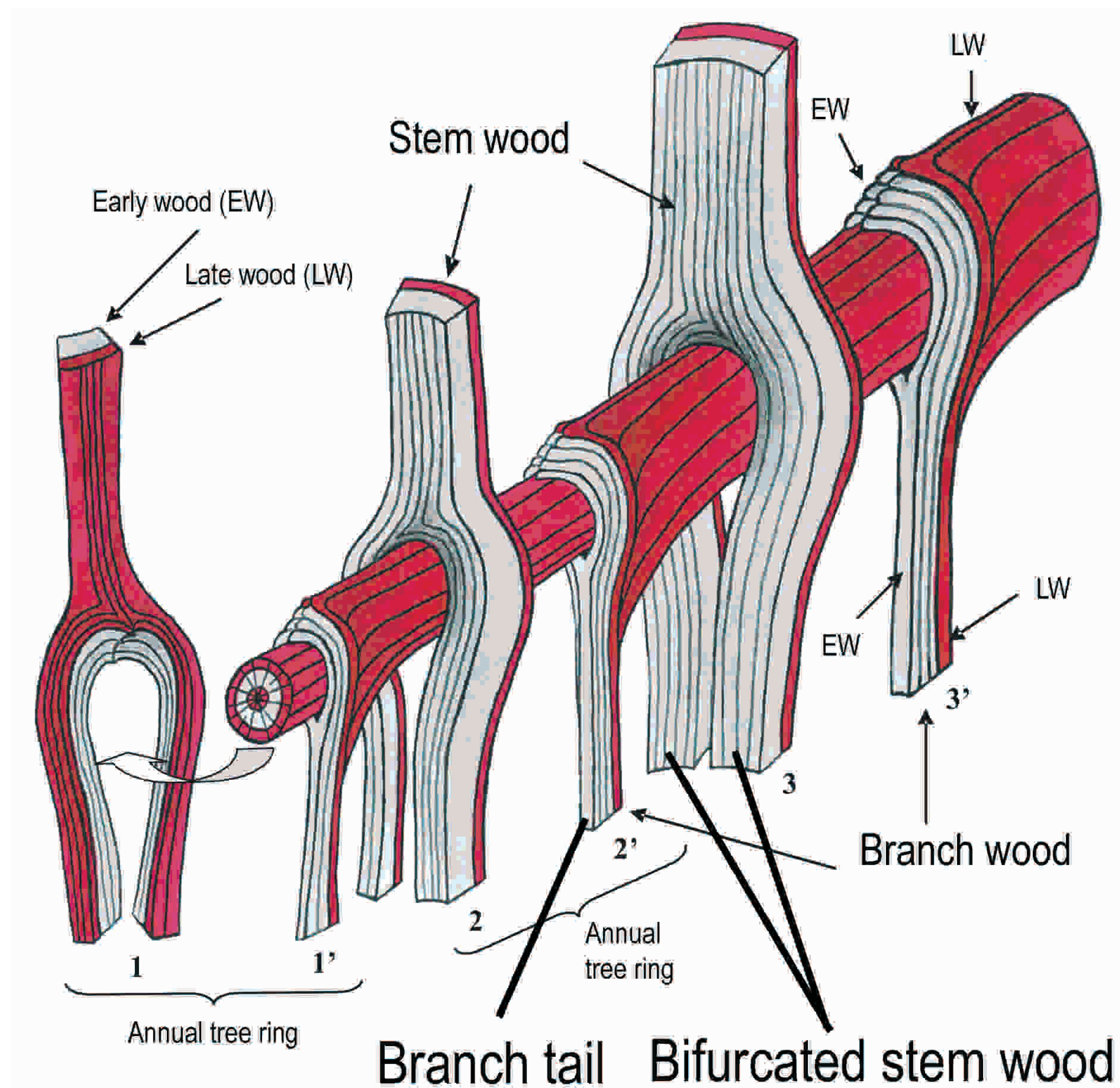


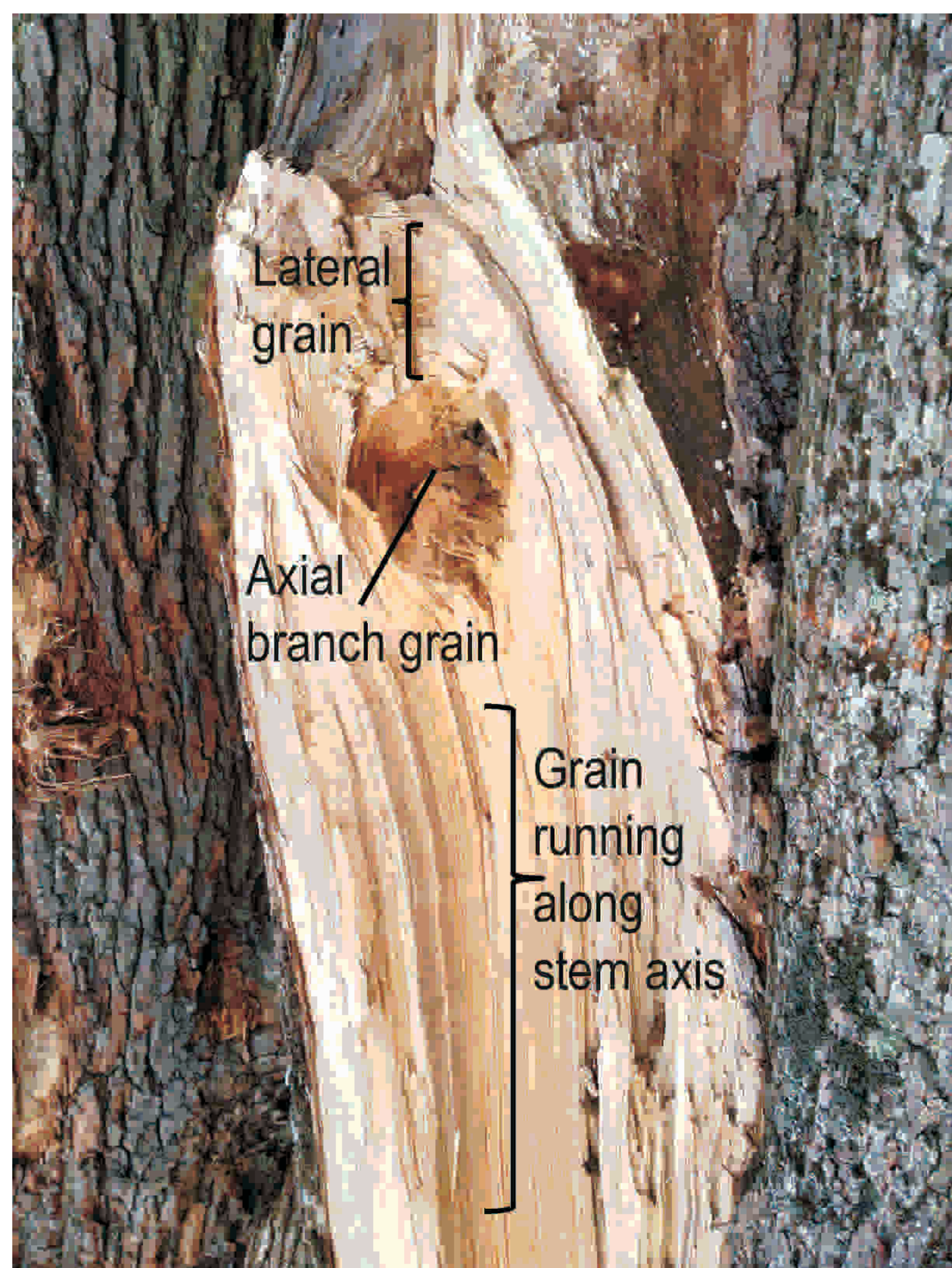
Failure of Branches due to Lateral Grain

K. Weber, C. Mattheck, K. Bethge, S. Haller



Model of branch attachment based on Shigo's model, modified by the authors according to their own findings. Only the trunk can integrate the branch. Branch fibres can only be glued to the trunk surface.

If the trunk collar fails to integrate the branch, lateral grain at the branch attachment may lead to failure.



Branch failure on *Quercus sp.* due to lateral grain. Stem sided fracture area showing lateral grain on top regarding the branch axis and axial grain further below.



Branch failure as a result of lateral grain (*Pinus sp.*). Fracture faces showing the switch from axial grain to disproportionate lateral grain.

Result: Branches growing quicker than the trunk may get a weak attachment due to lateral grain.