

# Techniques to develop a callus

V 1.0

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## Why the need to develop bigger callus?

- A healthy tree will naturally develop a callus to seal a wound
- Bonsai is about esthetic
- The exposed deadwood will rot very fast on some species
- In some case the pruning scars will never look natural
  - This is especially true for trees with smooth bark
  - Some pruning scars will look like a perfect circle



**Example of callus that has completely covered the wounded area**



## Not suitable or required for all species!

- Some species like maples will easily develop callus over pruning scars
- Not required on pines: the deadwood will often age well and look similar to the rough bark
- Some species like Junipers and cedars will not develop callus over pruning scars
  - In those cases, it is best to keep a dead branch then to prune it



## Example of an invisible pruning scar on a pine



## Method

- Choose proper time of year : when there is the biggest demand of water/sap (i.e. lots of leaves: late spring-early summer)
- Prune with knob cutter to create a small indent
- If applicable, finish cut with “exacto” or small chisel
- Cover the entire pruned area with cut paste within minutes of pruning
- Leave cut paste on for an entire season



- Remove cut paste at the end of the season to check result



## The cut paste

- Keep pruned area humid to allow for the development of the callus
- Pruned area left dry will only form a small callus
- Thick cut paste in round pot is a formulation of Japanese clay
- Cut paste in tube is more like a gel and meant for smaller cut



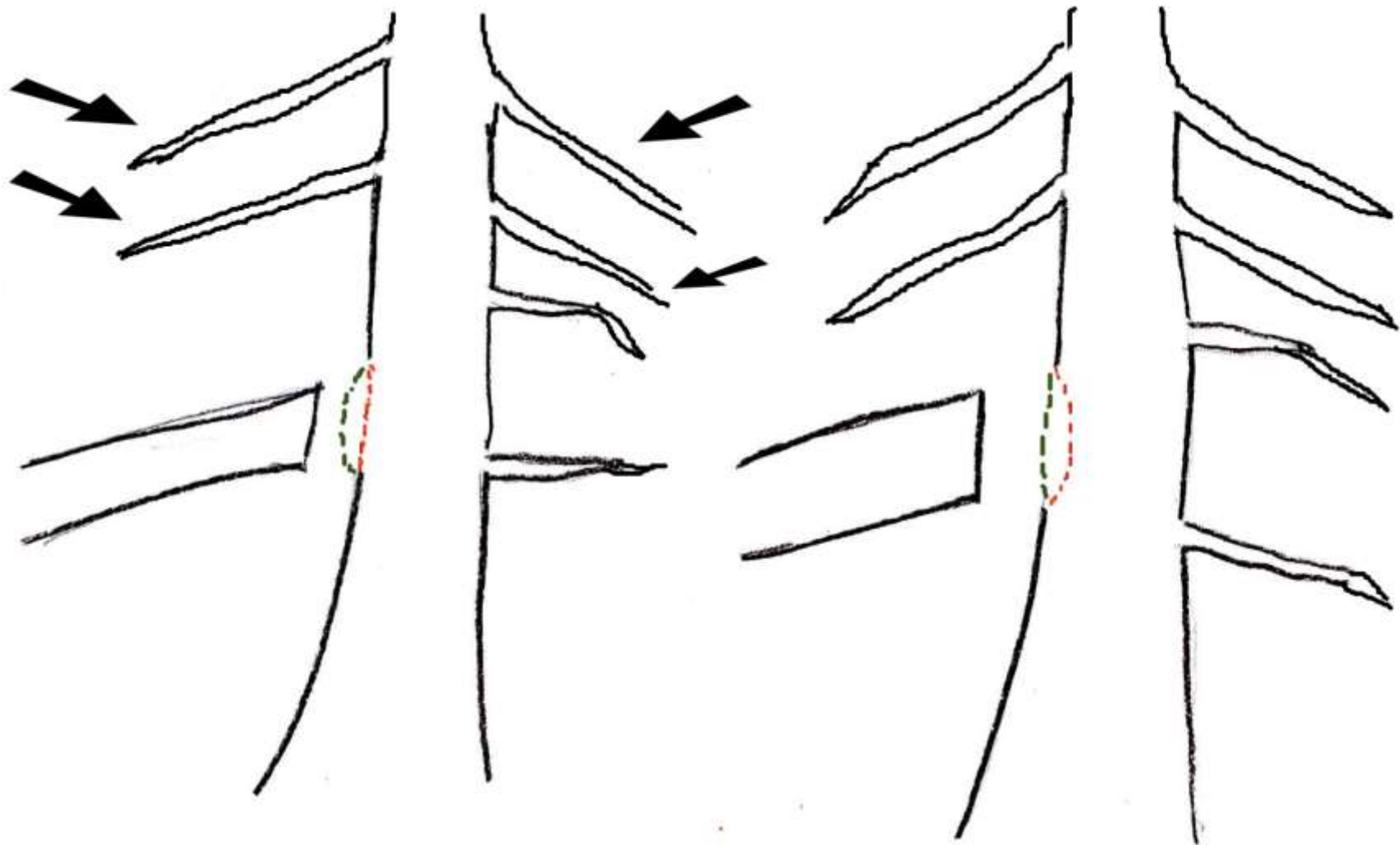
## The tools

- Knob cutter : allow to cut into the wood
- Sharp knife or sharp chisel



## Important considerations

- **Why create an indent (i.e. a depression)**
  - The callus will reach a certain thickness and could cause a visible bump
- **Amount of foliage above the pruned area**
  - The amount of foliage will determine how much water and sap are flowing around pruned area
  - More foliage = larger callus, Less foliage = small callus
  - Allow foliage to grow freely to develop large callus
- **The callus could increase in size in future years depending on the amount of foliage growth above pruned area**
- **Small callus easier to achieve than larger ones**
- **Trunk cuts : keep the scar at the back of the trunk**



**Upper arrow: example of callus which became a bump**

**Lower arrow: large pruned area which could not close due to limited amount of foliage above**



## Combination of art and science!

- It is important to dig into the wood (but how deep!)
- It is also important to reduce all sides of the pruned area (but how much!)
- How much larger will the callus become with years
- Need practicing to get desired result



- Left arrow show successful callus
- Right arrow show a partial callus



**Time factor: years of additional growth will help in expending the callus**



## Covering a hole

- Need to know the callus forming capacity of the species
- Fill up the hole with cement
- A Trident maple can develop callus of around 2 inches in ideal conditions
- Use sharp chisel to open wound
- Can be done in multiple steps (i.e. over multiple years)



Pictures from Peter Tea <https://peterteabonsai.wordpress.com/2013/08/13/the-trident-maple/>

- **Cover wound with plenty of cut paste**
- **Allow tree to grow freely for an entire season**



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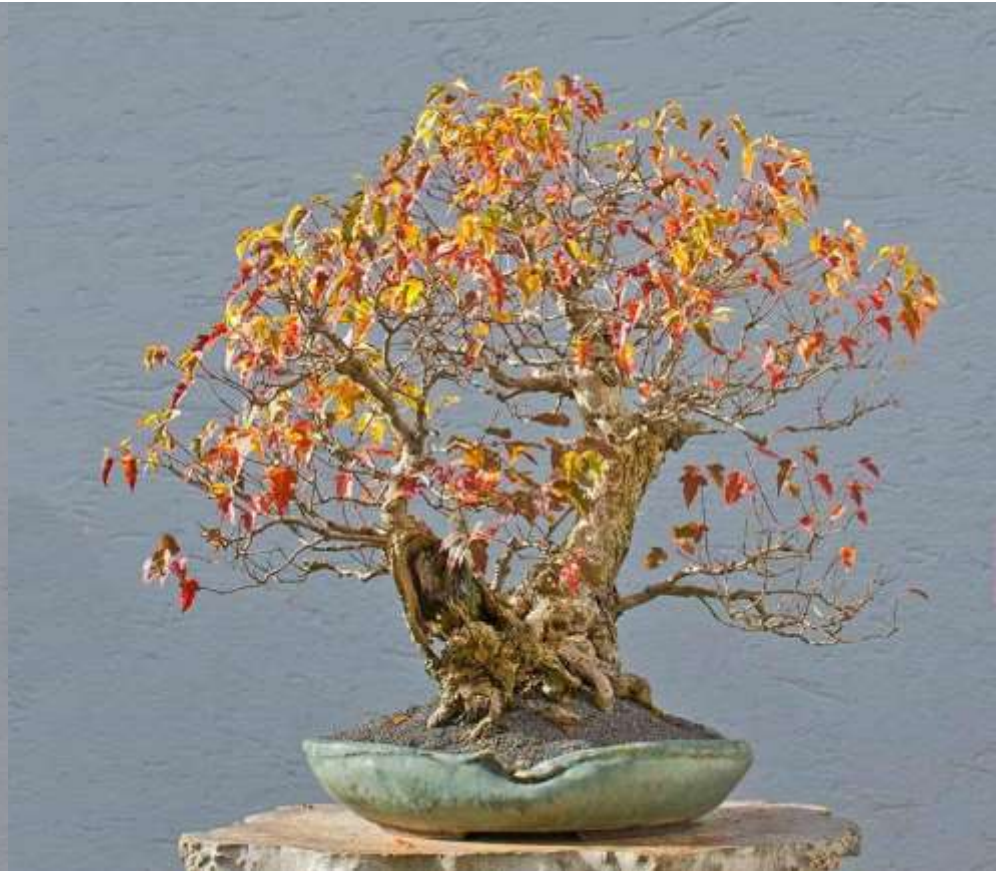
# Exceptions

- There are always cases where it will be impossible to develop a callus

Field maple



Amur maple



Both of these trees are from Walter Pall: <https://www.facebook.com/walterpallfanpage/>