

Wiring and shaping foliage pads

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Objective of course:

- Understand the theory to shape of foliage pads
- Understand and practice the foliage clean-up technique required before the wiring
- Understand and practice the detailed wiring technique to create foliage pads
- Create a foliage pad in the workshop

Course index

- 1- Introduction**
- 2- The different purposes of wiring**
- 3- Design wiring versus show wiring**
- 4- When to wire**
- 5- The cleanup technique**
- 6- The wiring technique**
- 7- Shaping foliage pads**
- 8- Wire removal**
- 9- Workshop**

1- Introduction

Why detailed wiring instead of just wiring primary branches?

- Get tree shaped much faster
- To have full control over the shape of foliage pads
- Basic wiring : only the primary branches
- Detailed wiring : secondary and tertiary branches and foliage

Before styling



After styling



2- The different purpose of wiring

- Give an initial shape to our trees
- Refine the shape of our foliage pads as the tree progress

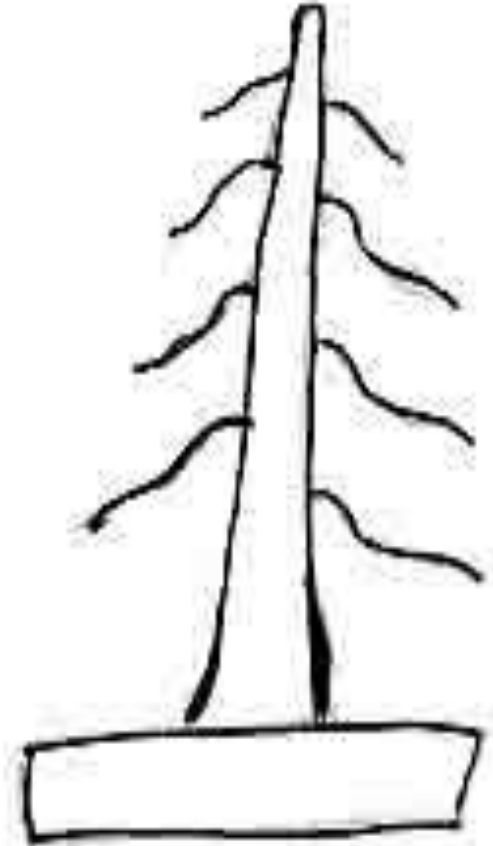
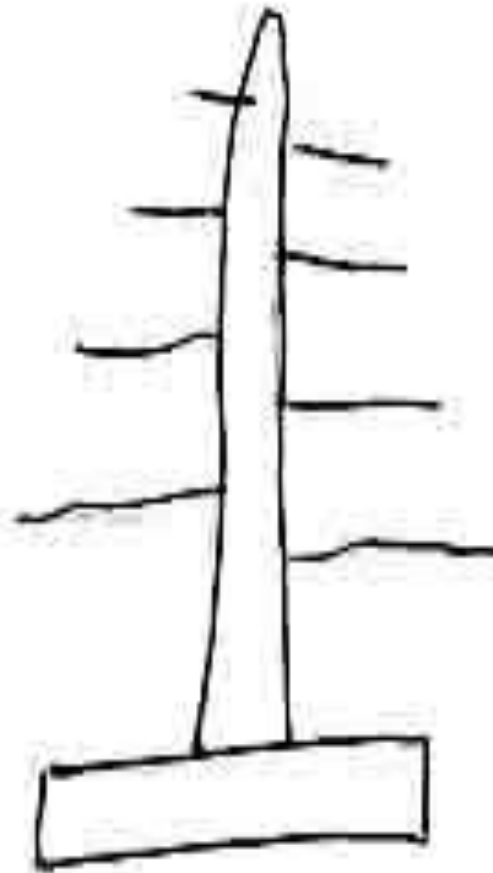
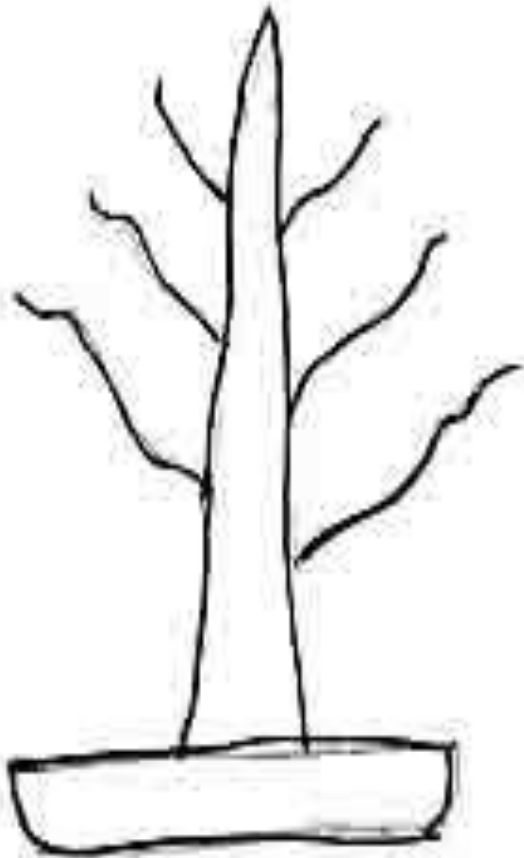


Tree are from Italian artist Michel Andolfo (<http://www.andolfo.it/bonsai-1.html>)

- Give movement to branches or trunk
- Rotate a branch or a portion of a branch
- Create nice branch structure with ramification



- Control the illusion of age via the lines

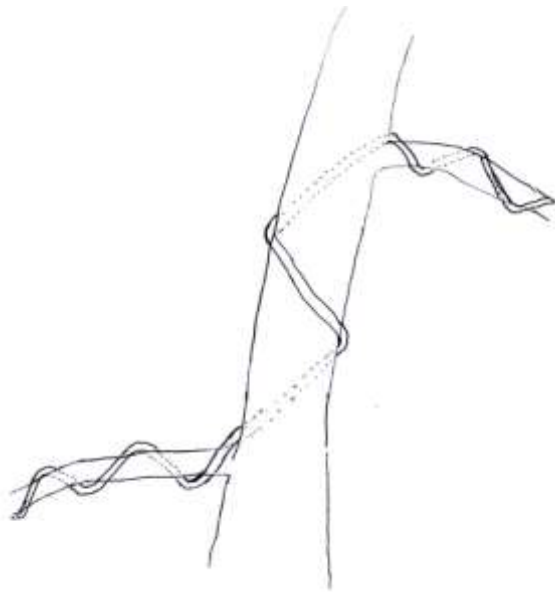


3- Design wiring versus show wiring

To implement initial design

- Main purpose is to establish the structure (i.e. position of main branches)
- We also wire secondary and tertiary branches along with the tip of the foliage
- More use of bigger wires showing up on the trunk
- Do not expose the tree at this stage
- Use either copper or aluminium (Aluminium is cheaper but not as strong as copper)
- Use raffia and strong steel guy wire

Structural wiring refers to the wiring of the primary branches



Refinement wiring for a show

- Limited to some secondary branches, tertiary branches and foliage
- Use the smallest most discrete wire possible
- We do not want the viewer to notice the wires
- Use copper wiring on coniferous (**avoid copper wires on leafy trees**)
- Use discrete guy wire only (copper wire)

Examples of discrete wiring



4- When to wire

Factors to consider for spring, summer, fall or winter?

- All serious bending should be done in early spring
- Minor bending can be done at any time
- Need to understand what is minor bending for each species
- Spring is a good time for deciduous trees before any foliage comes out
- Coniferous foliage cleanup cannot be done in late summer for trees wintered outside
- Can perform wiring in summer with defoliation
- Light wiring can be done on larches in the fall after foliage has dropped

5- The cleanup technique

The foliage clean-up technique before the wiring

- Perform detailed wiring on larches when there is no needles
- Perform detailed wiring on leafy tree either after defoliation or before the leaves come out on deciduous
- It would be impossible to do detailed wiring with all the foliage in place on evergreen coniferous and it would also be useless to wire weak foliage



- **On coniferous like Juniper, Pines, Yew: only keep section of foliage that are showing sign of growth**
- **The foliage cleanup will impact how easy the detail wiring is**
- **Quantity of foliage cleanup will impact the look of the first design**
 - **Remove too much and the foliage pad will take longer to develop**
 - **Remove less and your foliage pad will look more mature right away**

Example of clean-up on Cedar foliage

- 1st remove the weak foliage along the small branches which create a path for the wire to reach the tip of the branches.
- Remove foliage too close to an intersection even if strong foliage
- Remove foliage that is too close together to decrease density
- Use scissor for this part.



Example of clean-up on two needles pine foliage

- 1st remove the needles along the branches
- Just keep the tip of every section where there is a bud along with new growth (10-16 needles)
- Be careful not to damage new buds along the way
- Use scissor not to damage the delicate bark.



Example of clean-up on a Yew

- 1st remove the needles along branches
- Keep around 10-16 needles at the tip of every sections
- Use pinching technique to remove needles
- Be careful not to damage the buds along the way



Example of clean-up on juniper

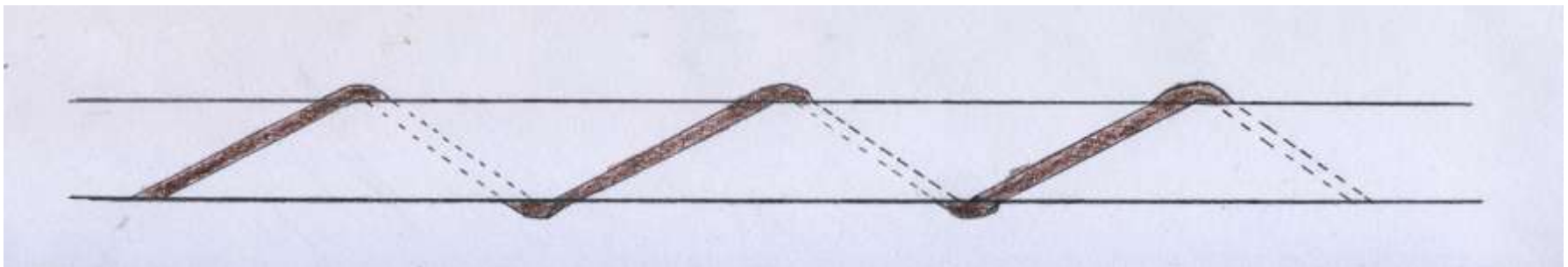
- 1st remove all weak foliage in all area of the branch
- Remove strong foliage located to close to an intersection
- Remove foliage that is too close together to decrease density
- Clean foliage, at the base of each piece of foliage left
- Use scissor for this work



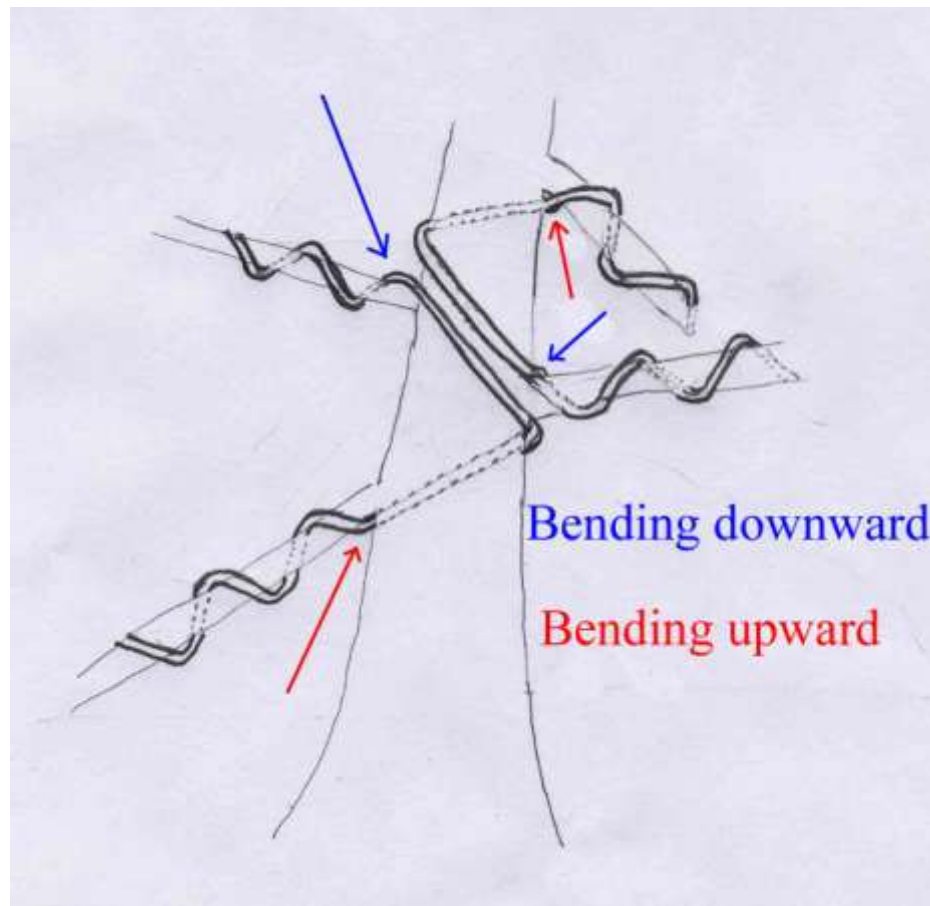
6- The wiring technique

Basic guidelines

- Wiring angle should be consistent
- Choose between 55-60 degree angle or 45 degree angle
- No gap between wire and branch
- Avoid crossing wires
- With aluminium wire use wire size between $\frac{1}{3}$ and $\frac{1}{2}$ size of branch
- With copper use wire size $\frac{1}{4}$ to $\frac{1}{3}$ size of branches (**no copper on leafy tree**)
- Ensure to have enough anchoring of wire
 - Between 1 and 2 turn around a solid area



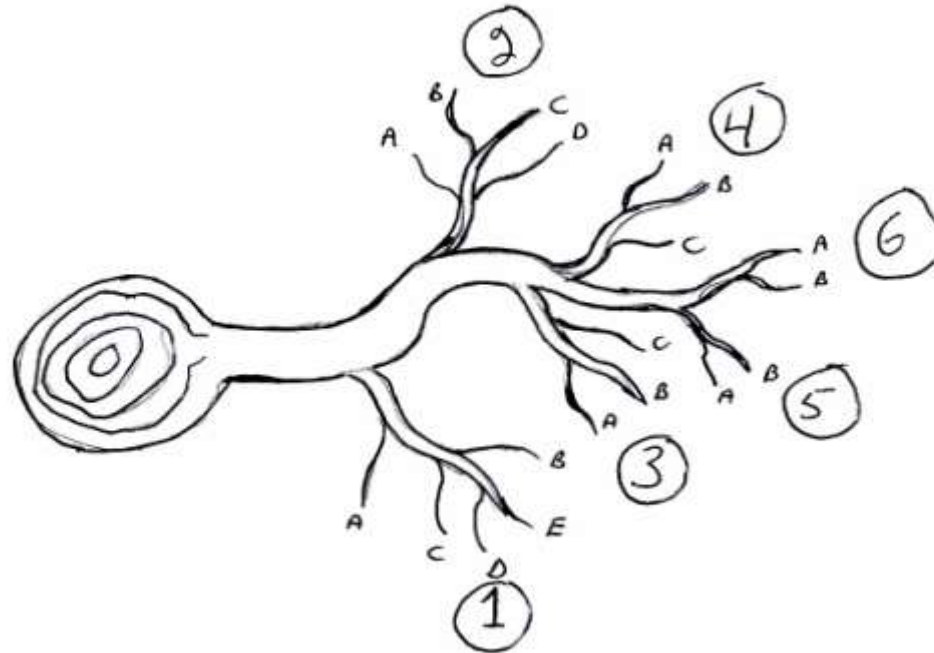
- Always aim to wire two branches of similar size together with a single wire
- Wire bottom branches first and then move up the tree
- Always wire primary branches before secondary ones
- Notice that anchoring is only one turn
- For primary branches and large secondary branches :
 - To bend downward: enter on top of branch shoulder
 - To bend upward: enter on bottom of branch shoulder



Wiring secondary and tertiary branches

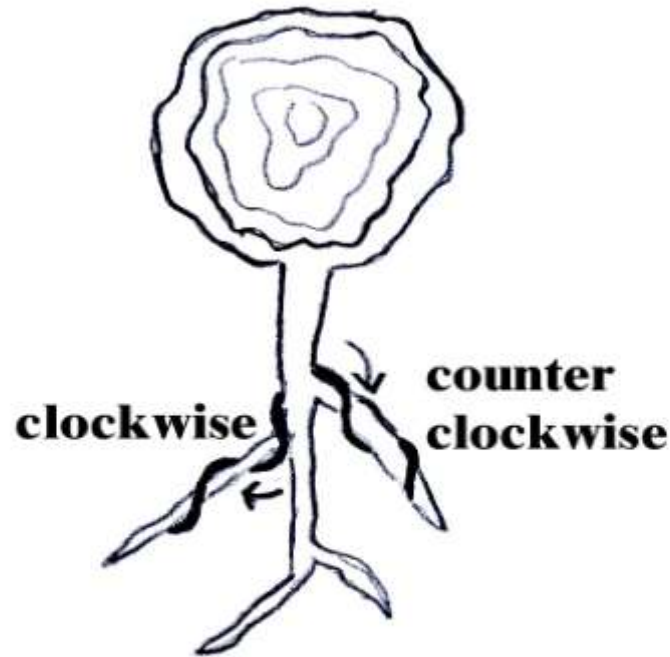
- Figure out the combination of secondary branches to wire together
- Apply secondary wires before moving on to tertiary branches
- Figure out the combination of tertiary branches to wire together
- Branch should be roughly of similar size
- Not always possible to have 2 branches with same wire

Possible combination	1 and 2,	3 and 5,	4 and 6
Branch 1	1a and 1b	1c and 1e	wire 1d on its own
Branch 5 + 6	6a and 5a	6b and 5b	



- **Wiring or secondary branches must follow same rotational direction as wire of primary branch (i.e. clockwise or counter clockwise).**
- **Wiring of tertiary branches must follow same rotational direction as wire of secondary branches**
- **Never more than 3 wires in a single area**
- **The process is long and one should use ergonomic position**
 - **Arms are at 90 degree angle from the body**
- **Use left hand to control the pressure applied to branch**

- **Branches wired together will have wire rotating in opposite direction to create stronger hold**
- **Always enter the secondary branches in the same way in relation to the trunk**



Basic technique to avoid crossing

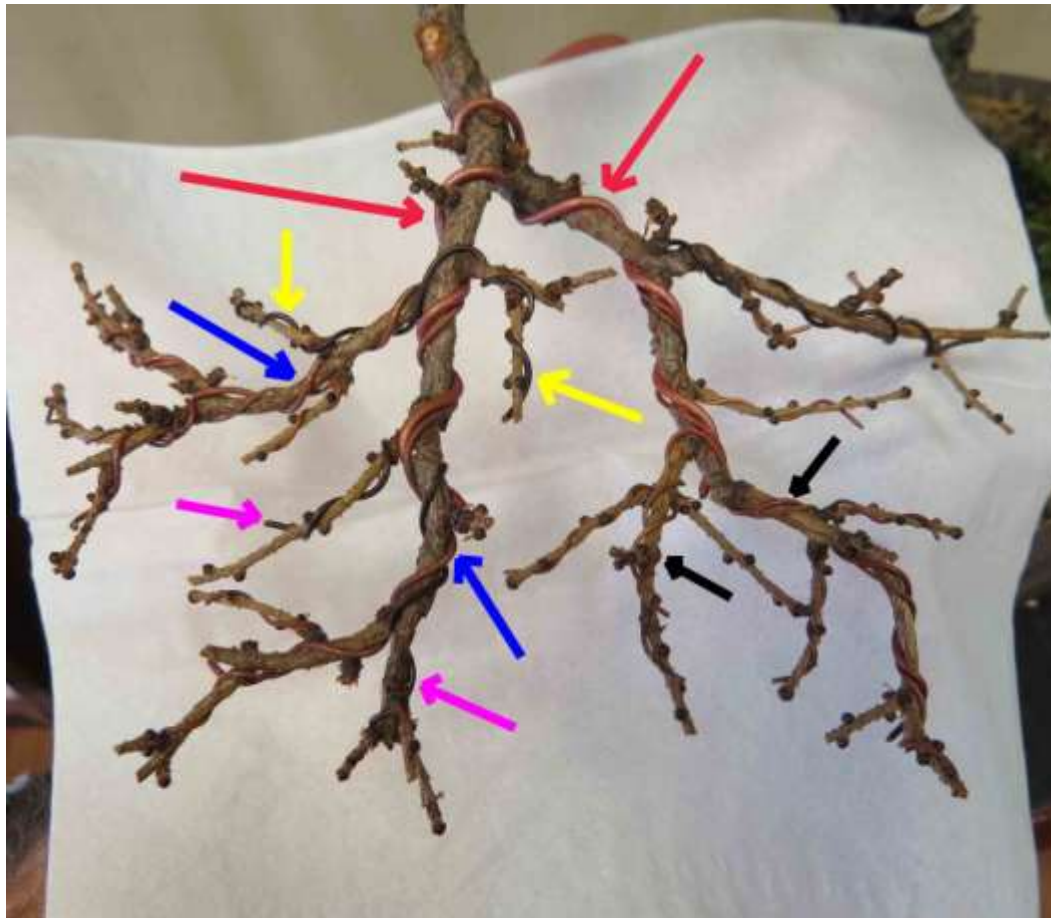
- Simply place wire parallel to an existing one



NOTE: this picture was taken when we were teaching to wire at 45 degree instead of 60 degree angle!

Having enough anchoring for wires

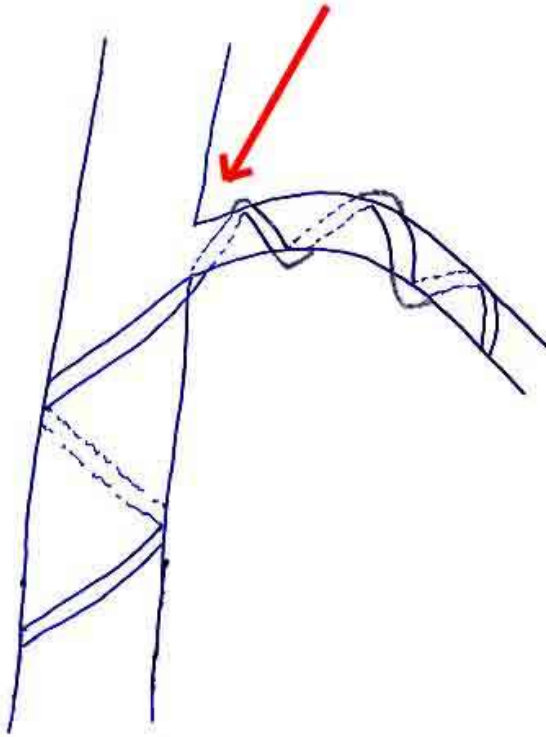
- Ideally, have one or two turns around a section of a branch
- Too much anchoring will lead to more than 3 wires in a single area
- **Never more than 3 wires in a single area**
- Half a turn will often be enough anchoring for very small branches
- Tiny branches closed together can be wired without anchor
- Where is the anchor for bending secondary branch 1 and 2 in this case?



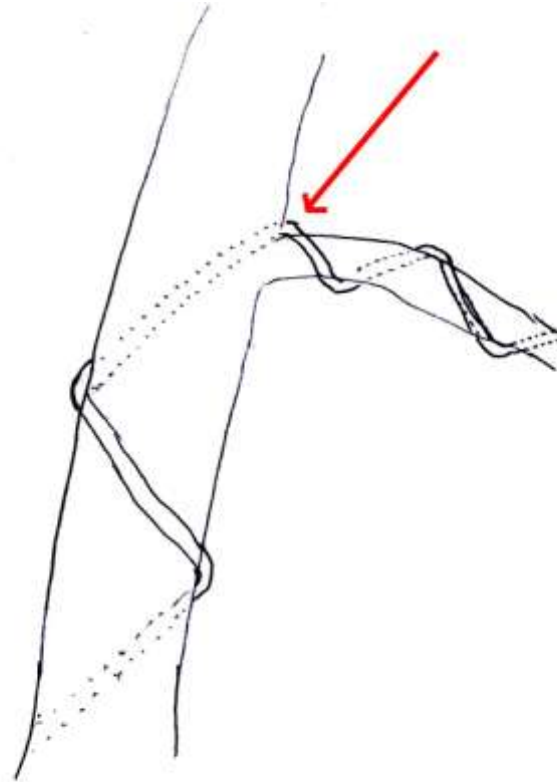
Proper support for the shoulders

- The wire should be installed as close as possible to the shoulder junction
- Being far from the shoulder means that the bending will start further away

Poor support



Ideal support



Example of wiring small green twigs together without anchor



Wiring delicate sections

- Left hand is key in controlling pressure on delicate sections

Use left hand index to hold the pressure of the wire going downward



Use left hand thumb to hold pressure of wire going upward



Suggested reading: Bonsai Focus 129 (September/October 2010) for alternate technique and more details

Wiring Example #1

- Step 1: wire primary branch
- Notice that wire end at the base of a small branch



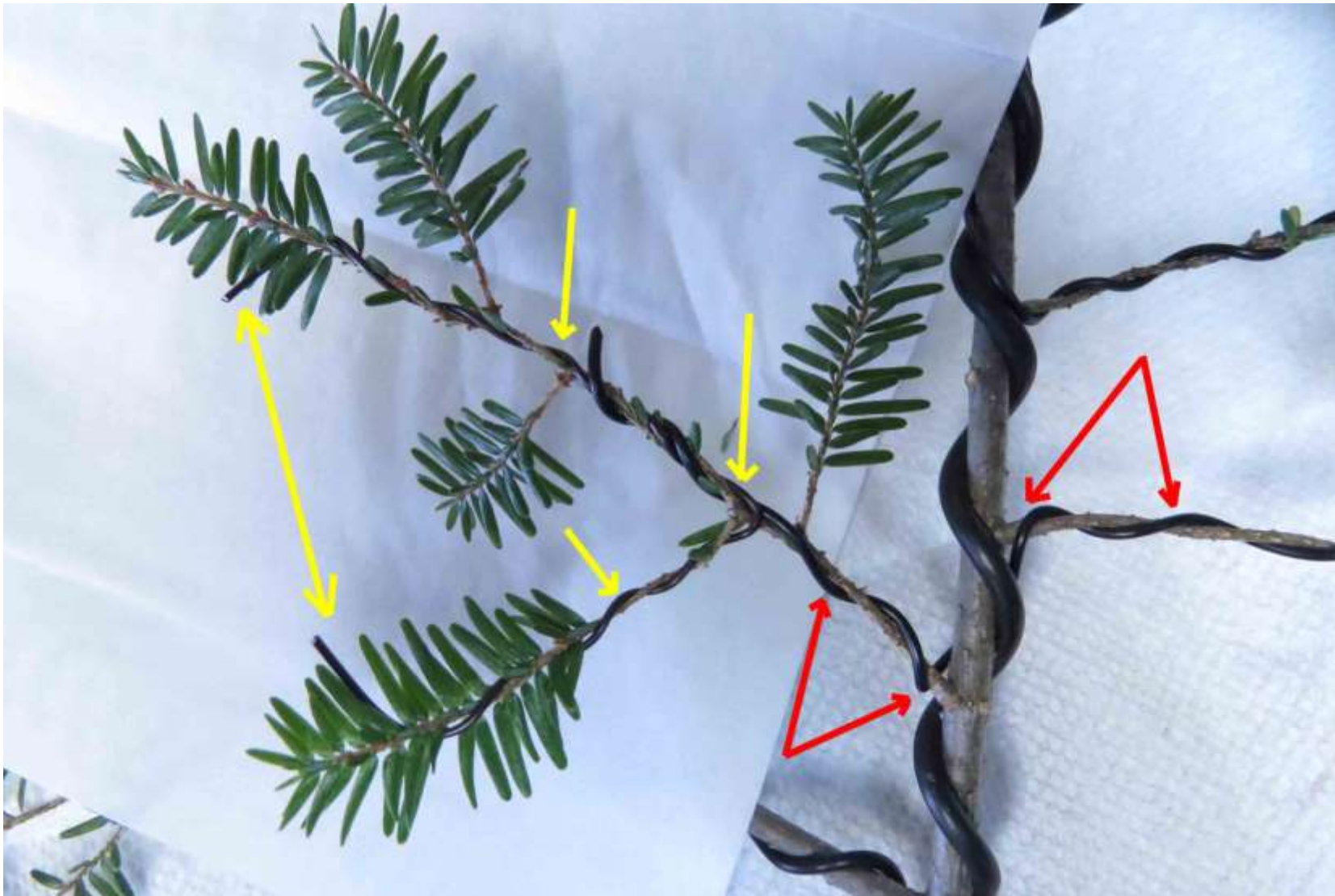
- **Step 2 wire first secondary branch on its own**
- **Wire two other secondary branches together**



- Detailed view of small secondary branches wired together



- **Wire small secondary branches together**
 - Notice the small anchor
- **Wire mini tertiary branches together**
- **Notice the flaw in the shoulder support on the red portion**

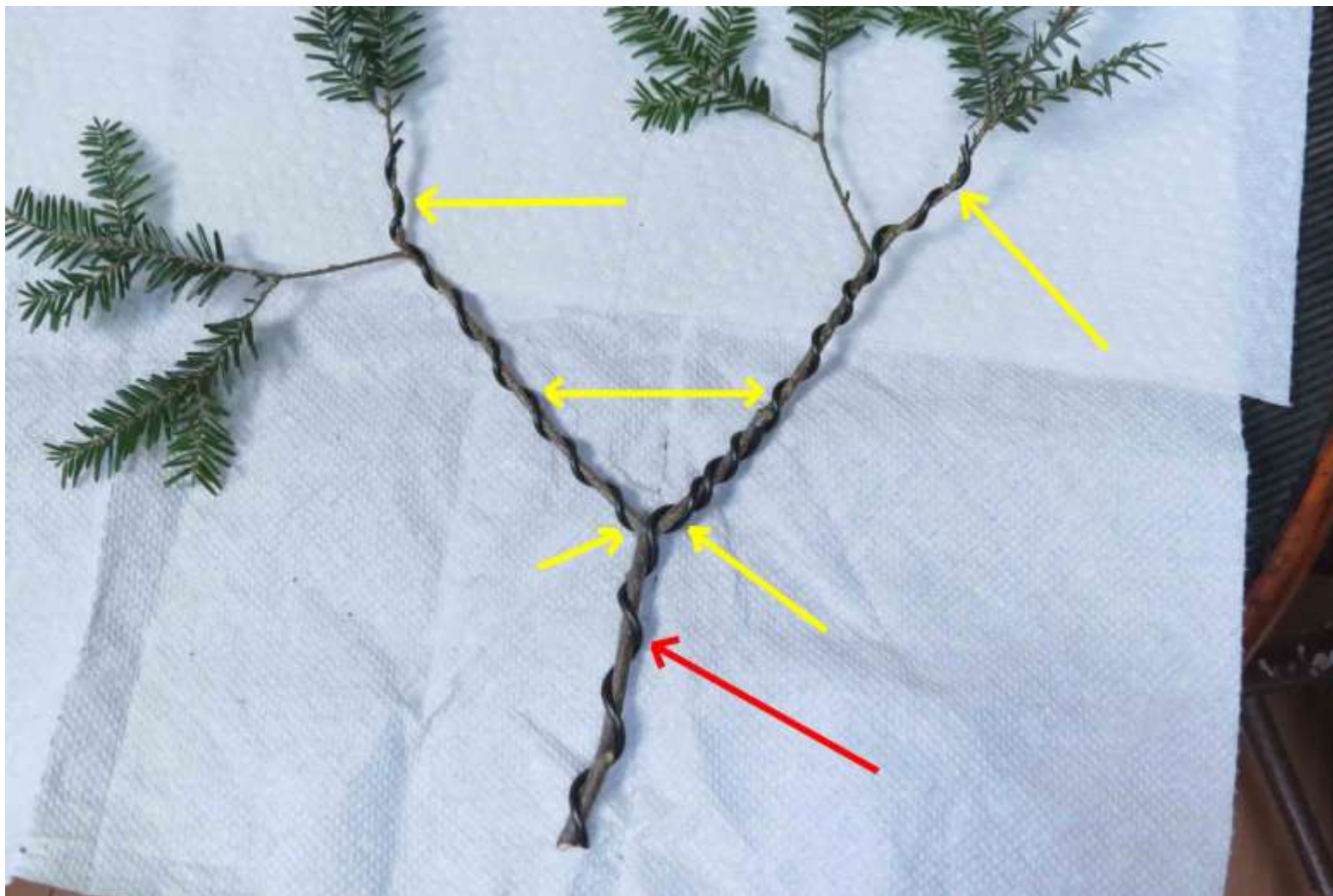


Wiring Example #2: dealing with Y shape

- Apply structural wire and terminate with 1 ½ or 2 turns around smaller secondary branch
- The small section of wire on secondary branch act as an anchor



- **Wire secondary branches together**
- **Terminate the wire with 1 ½ to 2 turns around tertiary branches**
- **Then wire the tertiary branches together**



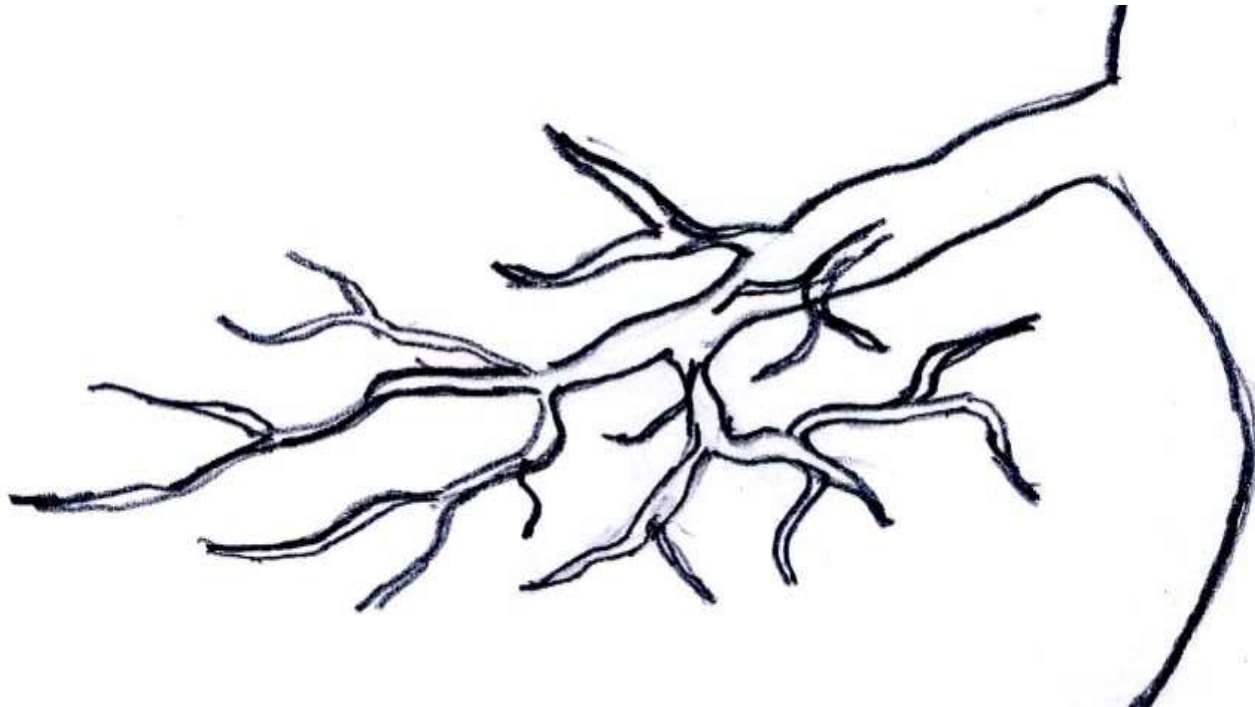
7- Shaping foliage pads

Create volume with a natural cloud type shape

- Avoid flat foliage pads

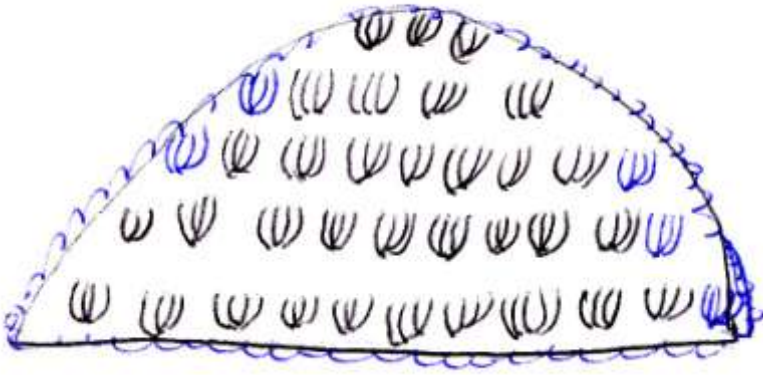


- **Need to be able to control the position of each and every section of a branch (primary, secondary, tertiary branches, etc.)**
- **Downward angle of all section will facilitate the creation of foliage pad volume**

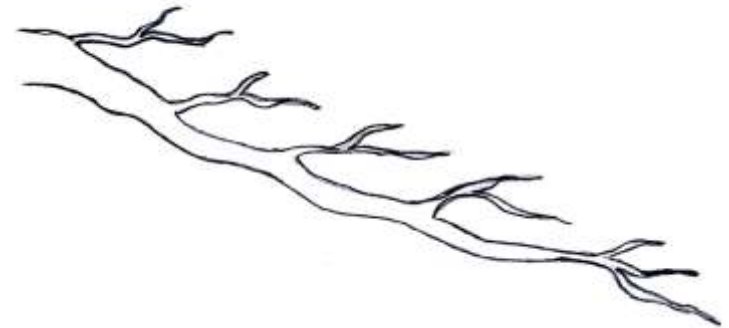


- A foliage pad conceptually consist of multiple rows of single piece of foliage grouped together
- Need to be able to control the position of each and every piece of growth

Large foliage pads

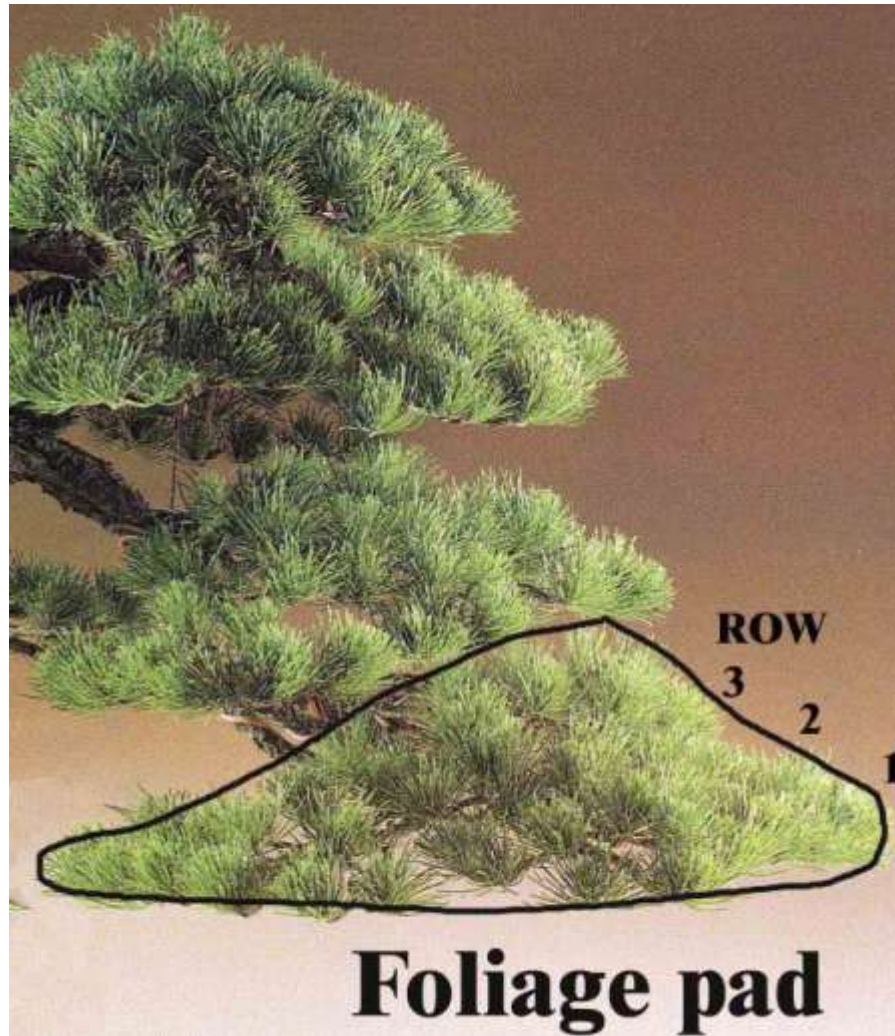


Front view

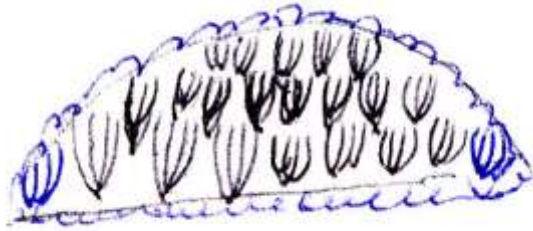


**Side view
of the structure**

Example of rows of foliage to form a foliage pad



Smaller foliage pads



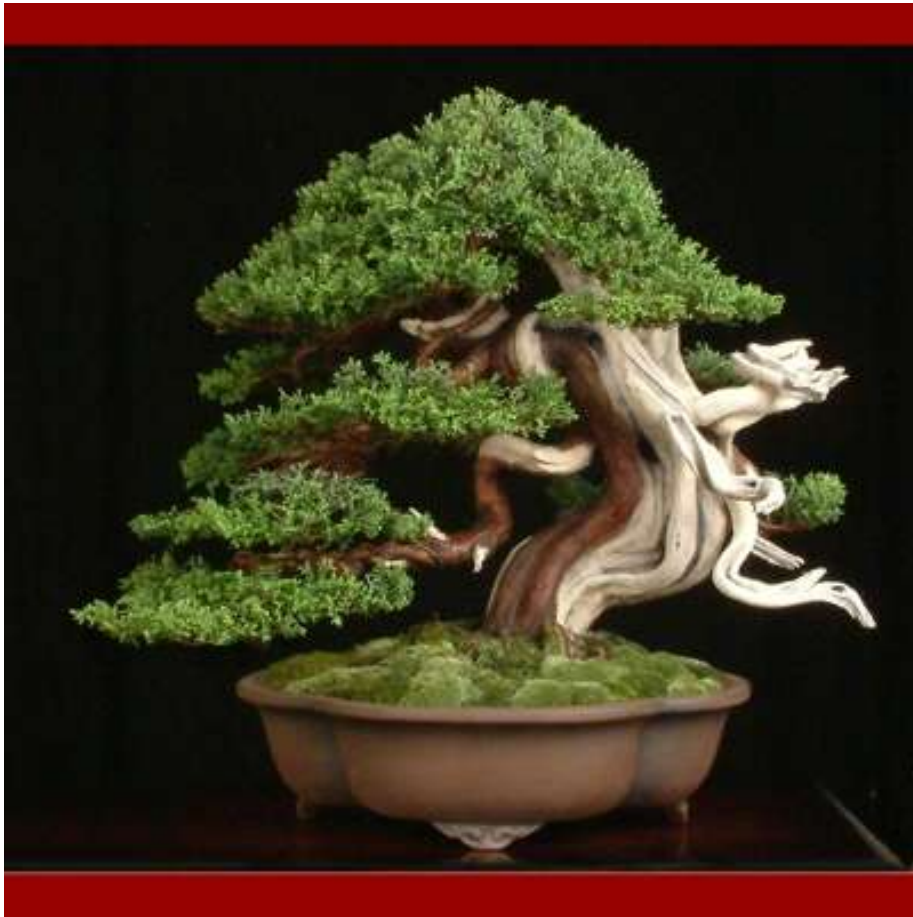
Front view



**Side view
of the structure**

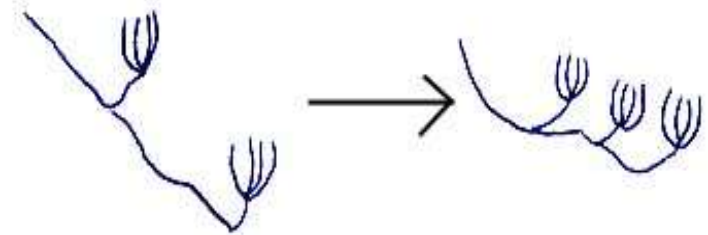
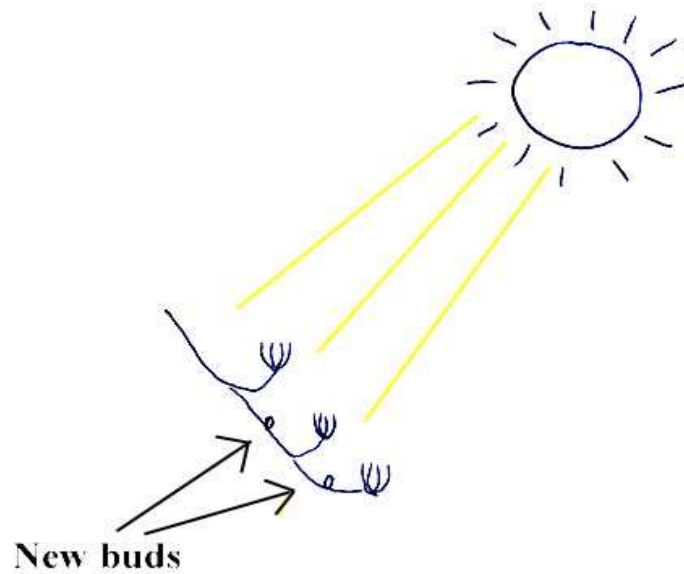
- The size of the foliage pads should be chosen to match the personality of the tree (i.e. slim trunk versus powerful trunk)

Examples of small and large foliage pads



Both trees are from Italian artist Michel Andolfo (<http://www.andolfo.it/bonsai-1.html>)

- Horticultural advantages of the branch inclination : sun reaches all foliage even inside the foliage
- The development of the ramification will lead to fuller foliage pads
- It becomes important to understand the technique to create ramification on every species
- The detail wiring is an exercise to repeat as ramification develops. This will result in fuller and more refine foliage pads



Creating the foliage pad: harmonizing all wired section in a fan shape

- The branch and all section of foliage are wired
- It does happen that some delicate foliage gets broken in the process.
- Small branches are curved to decrease their length and fit in the foliage pad profile
- Foliage section closest to the trunk will form the highest row
- Foliage section furthest to the trunk will form the lower row

Before shaping

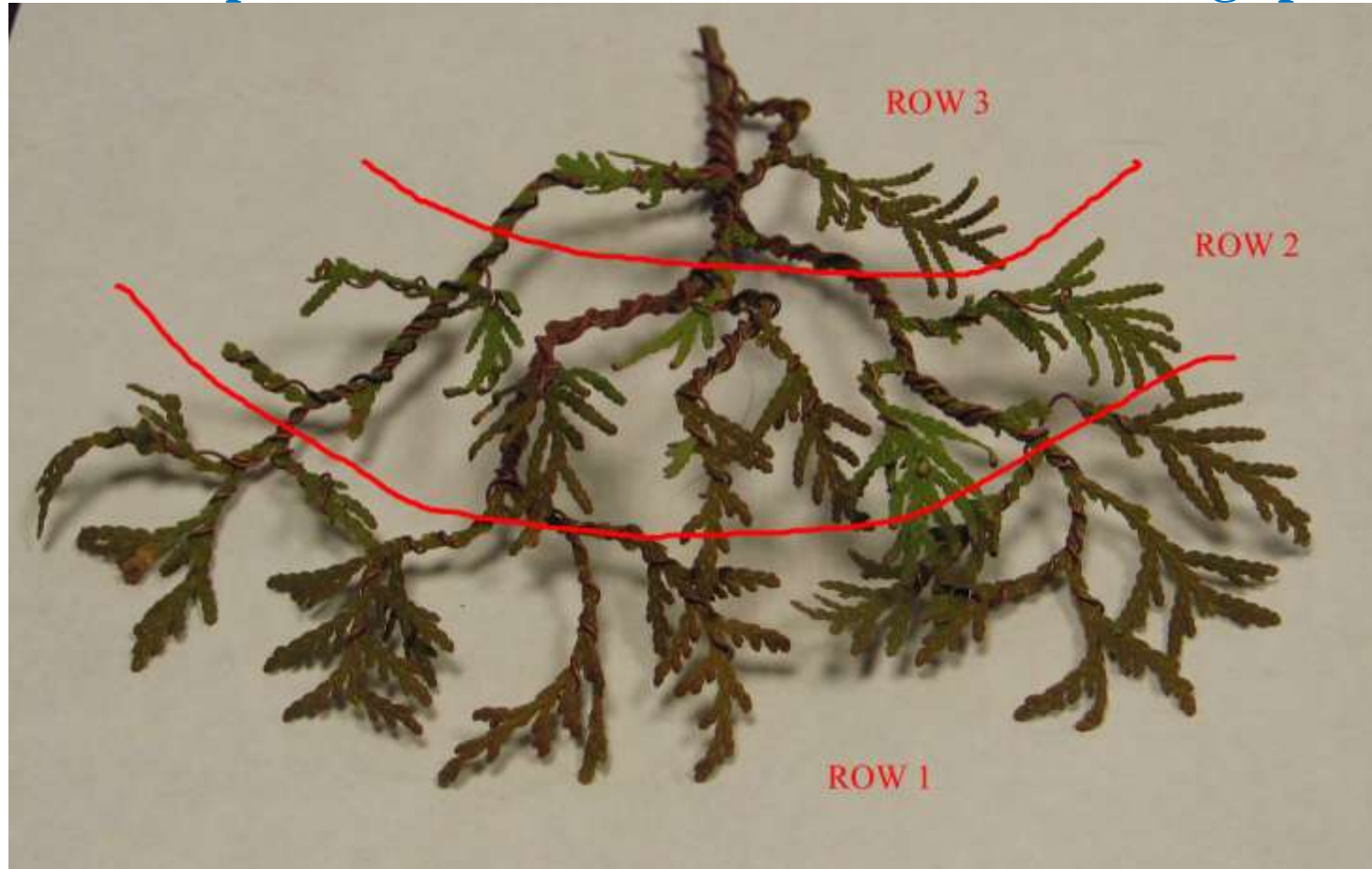


After the shaping



- A lot more foliage than required was removed to show the concept which result in less density in the foliage pad

Conceptual rows used in the creation of the foliage pads



Example of creating the foliage pad on a juniper

- **The empty space on the completed foliage pad will fill up with time when more ramification is developed**

Branch wired before shaping



...after shaping the foliage pad



Example of possible approach for leafy tree



WARNING: never use copper wire on leafy tree

The detail wiring need to be repeated as more ramification and new foliage becomes available! In the case below we will not be able to see trough the crown at the next wiring.



8- Wire removal

Tools to remove wires

- Removing wires from a detail wiring exercise is a long process
- It helps to have smaller and lighter tools
- Tools should respond very well to finger movement

Scissor cutter

Small wire
Cutter

Large scissor
cutter

Regular wire
cutter



When to remove wires

- On coniferous where the branches are sometimes bent severely, the wires will be left on for a year or two which will lead to wire mark
- Branches will take position quite fast on harder wood (e.g. maples 1-2 months)
- We need to avoid creating wire marks on leafy tree since we often expose them without leaves
- The removal of wires that have bitten in the bark will be to unwind the wire delicately



9- Workshop

- **Aim to create one complete foliage pad**
- **Do not expect to have clean wiring work right away!**
- **Practice, practice, practice...**