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Introduction

The following article is intended to be an almost exhaustive manual on probably the most singularly important technique in modern bonsai cultivation.

Many of us are often inspired by the efforts of experts such as Masahiko Kimura, especially in regards to the effect on the material tree in a matter of hours. Without a doubt this is mainly due to the outstanding material used, but it is also extremely important to be able to have full control over the tree. Imagine a painter or sculptor who cannot control their brushes or chisels, how could they create their art?

The techniques of wiring enable the bonsai artist to control the bonsai's shape, form movement, rhythm, power etc. The intention of this article is to show you how to gain the best control over the potential bonsai so that it can in turn be shaped in accordance to the image in your mind. It is important, however to mention one could have all the technique in the world but without a certain amount of artistic talent, will be unable to create anything other than the standard image of a bonsai.

This article includes information that should prove useful to the beginner who may possibly be apprehensive towards applying wire to their trees, and hopefully also include techniques for the more advanced bonsai grower to help them find solutions for a design, which has previously eluded them. Remember, design is about problem solving. Wiring on the whole is a skill that is self-taught. Apart from a few thumbnail sketches in books there has yet to be a comprehensive text produced. This is probably due to the subject on the whole being tedious and the task of wiring avoided by many. We often see good trees in need of "a good wiring".

The history of wiring

Wiring in bonsai is a relatively new concept. Prior to wiring, bonsai were largely shaped through pruning or the tying of branches to the trunk or bamboo poles as in trees grown for Japanese gardens. The technique of attaching weights suspended from branches was also used, but, as with all these techniques they were not versatile enough. In 1910 a book was published that showed wiring for the first time, it soon became a fundamental technique of bonsai cultivation.

Where pruning is used to control the growth of a tree, wiring is used to correct visual defects of the trunk and branches and allow the artist to bend these into predetermined designs as desired.

It is probably due to the technique of wiring that the art of bonsai has gained so much popularity in recent years. Bonsai that took years to develop by clip and grow method are now being created in hours. This appeals to our "drive-through", one-hour quick fix culture and although it is good that it has created more interest in bonsai. Trees can live for many years so it is really necessary to rush things, putting the health of the tree at risk?

How does wiring work?

Wiring works by holding a branch or trunk in a position until enough annual growth rings have occurred to make the change in direction permanent.

Types of wire: Copper and aluminium wire are the types most widely used.

	Comparison of wire types
Copper	<p>Availability: Copper wire is available widely in the form of electric cables. It is also available from good bonsai retailers.</p> <p>Advantages: Once it has been annealed, copper wire is work hardening so it will hold the position far better than aluminium wire. Copper wire is also visually in-obtrusive not only because of it's colour, which darkens with time (the application of lime sulphur also has this effect), but also because of it's holding capacity when compared to aluminium wire. This also makes copper wire more suitable for bonsai that are intended for display with the wire in place.</p> <p>Disadvantages: The actual stripping and annealing process needed to be carried out before the copper wire can be used is tedious. Copper wire purchased from bonsai dealers is usually ready for use but is very expensive. The fact that copper wire is harder to be seen means that it can often be overlooked when removing wire. Copper wire is very difficult to re-use and you will probably damage the tree if you try to un-wind it, best cut it off. If you do not get the bend right first time it is difficult to correct that bend. Be wary of copper wire that is unevenly annealed which will be very difficult to use.</p>
Aluminium	<p>Availability: Aluminium wire is widely available through bonsai dealers. It can usually be purchased in natural (silver) or anodised (copper coloured) forms.</p> <p>Advantages: Easy to apply and re-apply, can be re-used (although not recommended if un-winding is likely to damage the tree). As it is more noticeable than copper wire it is less likely to be overlooked (especially as the copper colouring fades over time).</p> <p>Disadvantages: A much larger gauge of aluminium wire is needed in comparison to copper. It is therefore much more obtrusive and anything other than the finest wires will stand out so it is less suitable for use on display trees. Anodised aluminium wire reacts oppositely to copper over time in that it lightens in colour making it visually distracting. It will however remind you that it's there so that there is less chance of leaving too long.</p>

Other types of wire: Garden wire such as galvanised steel is best avoided, the only possible uses could be to anchor drainage mesh (although I tend to use salvaged off-cuts of wire for this), to wire the tree into the pot and for tourniquets where high tensile strength is needed.

Other notes on wire: Traditionally, copper wire is used exclusively on coniferous species. Do not use copper wire on Prunus species as it can poison them. The extra pressure exerted on the bark whilst applying copper wire could permanently damage the fragile bark on deciduous and as the wire is likely to remain in place for a much shorter period than on evergreens, the disadvantages of aluminium wire are less apparent. You may however consider wrapping the wire with masking tape to protect the bark of certain deciduous species such as Japanese maple, Beech and Zelkova. Never twist two or more wires together in order to achieve one thick one.

Tools needed for wiring

Unlike many areas of bonsai cultivation, wiring requires a minimum of specialist equipment. The following is a list of suitable tools, their availability and their uses.

Turntable: An indispensable item for all bonsai growers, the kind for use under TV sets are fine (and cheap).

Large wire cutters: This is probably the only tool where non-bonsai equivalents aren't available. Indispensable when it comes to removing wire due to the sharp blades and leverage. Electrical side cutters aren't up to the job except maybe for smaller wires. A must to buy.

Small wire shears: A bit of a luxury as this tool is not cheap, great for fine wiring especially if you can master the technique of wiring whilst keeping this tool in the palm of your hand. There is a medium sized version of this tool, which is great for de-wiring as it can cope with quite beefy wire. This tool can also be used to reduce or remove branches after the have been wired.

Pliers: This is a tool that can be bought from your local DIY store. Buy both needle nose and the flat type, this saves damaging jin pliers on unsuitable jobs. The needle nose a great for finishing off wiring, whilst the flat type are used for adjusting the wire turns and for twisting tourniquets.

Small wire pliers: This tool resembles the medical haemostat, again the purpose made version is quite expensive. It is useful for wiring delicate branches or where clumsy fingers would get in the way. Again a good technique is to be able to keep this tool in the hand permanently. It is worth looking around for a similar tool such as the fine needle nosed pliers with the angled end. The regular bonsai tweezers are good for applying the smaller wires when space is tight. Use it also to undo the first twist when removing the wire.

This list is a minimum amount of tools for wiring, as you wire you will probably find a range of tools to suit you and the size of trees you normally work upon.

Addition tools could include clamps of various sizes, branch levers (Quick tip, use the handles of branch cutters to bend larger branches, this tends to create a precise bend and saves the joints of your thumbs), more details given later. Keep stocks of raffia

for wrapping bigger branches prior to bending and cut paste, kiyonal or lac balsam as accidents will happen.

The bypass type of cutter is best avoided, as it tends to twist whilst it is cutting, placing additional strain on the branch and bark.

It is worth collecting some lengths of metal rod for used as supports and levers and always keep good quantities of padding such as foam rubber and split garden hose.



De-wiring

The Japanese method of teaching how to wire is by teaching how to remove wire first. This may seem to be a little bit cock-eyed but an effective way of learning how to wire is by studying and de-wiring a properly wired tree. If you have purchased a tree with wire still on it look at the gauge of wire used in relation to the thickness of the branches, look at the angle of each of the bends of wire and the apparent tightness of the wire, and has the wire performed it's job?

When to remove the wire?

This depend on the specie of tree and its growth rate, this in turn is controlled by the growing conditions it has been subjected to. As a rule of thumb, leave the wire on as long as you can. It is a common beginners mistake to remove the wire far too early resulting in the loss of shape of the tree. Deciduous trees will set much quicker than evergreens and, at the same time are more likely to permanently scar if the wire is left on too long. The wire wrapping technique mentioned earlier will give you a little leeway if you overlook the wire. Pines on the other hand will take longer to set and will need subsequent re-wirings until the branches firm up and hold their new shape.

Deciduous trees wired in spring before leaves are present will soon hide the wire with foliage making it difficult to remove. Leaving it for the full season will result in dreadful scars. Try removing the wire in June when you leaf prune or leaf prune and then wire, removing the wire after the leaves have dropped.

Do not think of the removal of the wire as an end to that stage of training, you may in many instances be required to immediately re-wire the tree, after all it may now have many more branches than it had when you first wired it.

How to remove wire

Probably the easiest method to remove wire is to cut it off. To do this you need a good pair of sharp wire cutters. Purpose made wire cutters are best, make sure that you have the right sized tool for the job and avoid cheap electrical type side cutters as these tend to be blunt.

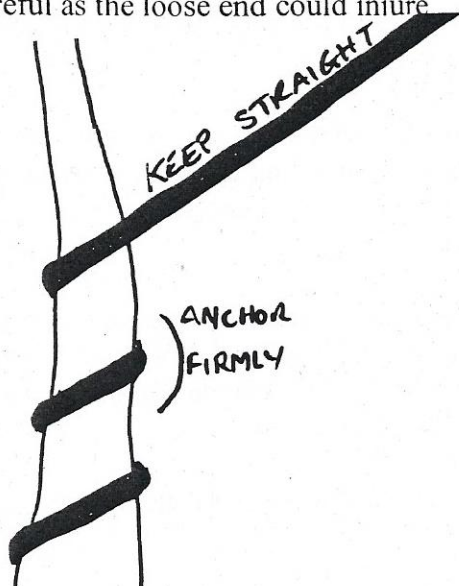
Simply cut the wire in small stages (just less than one complete turn) being careful not to damage the bark. It is a good idea to cover the surface of the pot with a piece of plastic or similar so that the little twists of wire do not spoil the surface of the soil. When snipping the wire away, pull the cutters away as you cut, this will reduce the risk of marking the bark.

Remember to dispose of waste wire in a considerate manner.

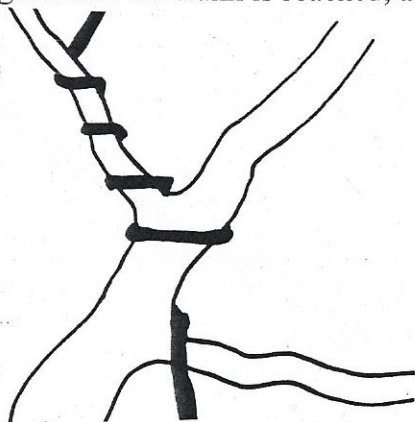
Although cutting the wire of is both the simplest method and less damaging to the tree, you can also de-wire by means of unwinding the wire. This takes quite a bit of care and if you feel it could result in damaging the tree shouldn't be attempted. In fact you should only remove aluminium wire in this way, copper is much to hard and would be difficult to re-use anyway. You will find however that you will use a combination of these techniques most of the time.

When removing wire by unwinding on the main trunk, it is important to follow the same path as the wire was applied. Start by removing the last twist of wire with pliers,

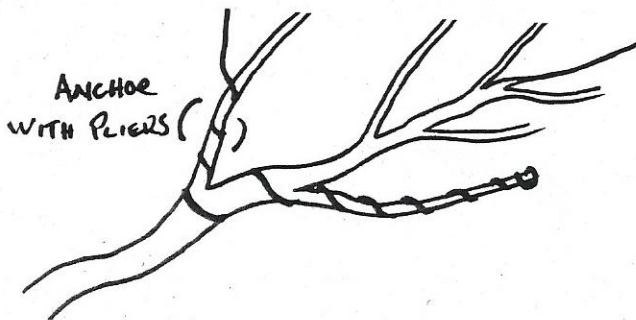
making sure to anchor the next twist firmly with the other hand and then moving half a twist at a time remove the wire. Always anchor the next twist securely otherwise the wire will scratch the bark. If this is done correctly the wire should come away perfectly straight. Be careful as the loose end could injure



To remove wire on the main branches, start by removing the first twist with pliers and again anchoring the next twist firmly unwind until the trunk is reached. Then repeat on the linked branch again until the trunk is reached, a final twist will free the wire.



On the fine twigs the same principles apply although you may find it easier to remove the wire using pliers for the whole job. It cannot be over emphasised how important it is to anchor the wire at the trunk at each turn.



If the wire has been applied neatly and correctly then removing it should be a simple task.

Removing bitten in wire

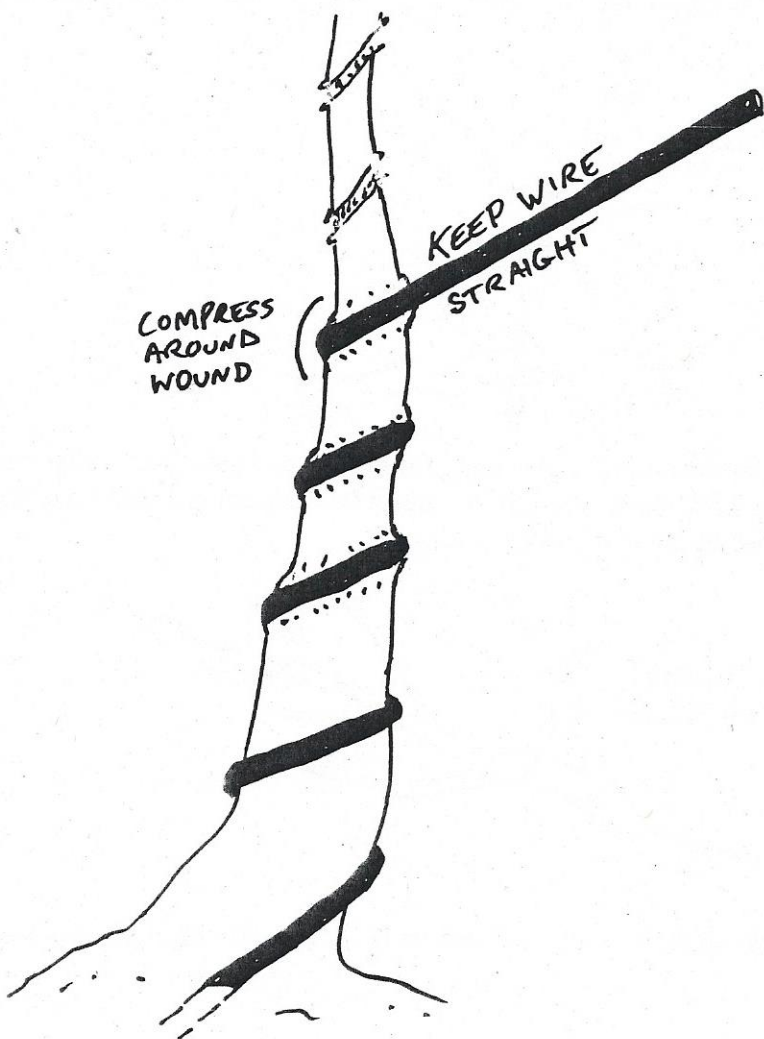
Removing bitten in wire requires a different technique. Because the wire is embedded in the trunk it will be impossible to cut the wire away without damaging the trunk further.

If the marking is very severe, the tree may have redirected its sap flow into a spiral. Although this can be great if you are intending to create a twisted trunk image on the whole it can be dangerous for the tree as large sections of bark and cambium can come away, ring barking the tree.

The best way to remove the wire is to unwind it. It is essential that the wire comes out channel in a straight line so as not to take any bark with it. Wire cutters can be used to nip the wire and pull it free. Support the bark either side of the wire to reduce the tendency for the bark to remain stuck to the wire.

Seal any wounds caused by the wire and if there are any loose areas of bark secure them with raffia and seal them well.

Do not attempt to re-wire the tree for at least a season and re-wrap the wire the opposite way or consider an alternative technique.



Preparing the tree for wire

Depending on the specie different trees require different pre-wiring preparation, the following is a list of points to consider when wiring.

Make sure that the majority of carving is completed, as it will be difficult to carve around the wires at a later date.

Always use the correct size of wire, it is common for people to use a gauge that is too small, then after a day or two the branch has reverted to its original form, so they bend it back, it reverts, they bend it back and so on until the branch dies, "Oh this tree does not like wire". It is not the wire the tree does not like, its you!

Use wire that is on the heavier side or double up.

If you do not have an image in mind for the tree or know what you want to achieve by wiring at this point, return it to the growing bench and live with it for a while longer until the design presents itself.

The wiring differences between species.

Chinese, Needle, Common, Meyers Juniper, Cryptomeria.

Remove all dead needles, any foliage growing from "arm pits" and any downward pointing foliage. On the smaller branches and twigs, remove foliage leaving fan shaped clusters, when applying wire on these small twigs, the final twist of wire should be so positioned that the tip can be given a slight lift and shaped into the structure of the foliage clouds associated with junipers. Stop the wire just as the green tip of the shoot starts.

Remove flaking bark, any algae that may have built up and give deadwood a clean. The branches on some junipers such as J. Communis Hornibrookii have a tendency to split along their length, wrap the branches with raffia to prevent this on major bends. Do not wire rigida or collected common junipers until growth is well underway.

Pines.

Pines are susceptible to a build up of algae, remove this with a pressure washer or toothbrush and water as the algae can smother new buds. The best time to wire pines is after the new growth has hardened. Remove all but present years needles with tweezers being sure not to damage any new developing buds. On rough bark species it is wise to wrap the wire with tape or paper to prevent damage to the attractive bark.

Maples.

Maples are best wire after their winter pruning or when they are leaf pruned in late spring. Again it is best to protect the bark by wrapping the wire. Keep a close eye on the wire as it will soon bite in. Use two wraps of wire rather than just one thick one as this will reduce the tendency for the branch to snap. Try to spread the pressure over a large area of the branch and grip tightly along the length of the branch when bending.

Zelkova, Beech, Hornbeam, Hackberry, Stewartia.

On these species, wire is used to correct growth, major changes are usually performed by pruning. Be especially careful with wiring marks as these can quite literally ruin a good bonsai. If a major change is needed such as to correct a faulty apex the consider using other methods such as a metal prop and pull the branch/apex to it over a period of time.

Elms.

Most elms are quite forgiving, wire the new growth as it extends, as with all deciduous trees you can do little with the trunk shape and any changes in direction must be achieved through pruning. Be especially careful with *U. Elegantissima* Jacqueline Hillier, apart from being a mouthful it is very brittle and when it snaps it tends to break completely. Again be wary of damaging the bark.

Azalea.

Wire train new shoots as they grow as anything older will be too brittle.

Prunus species

Avoid using copper wire, this tends to poison this family of plants. Wire new growth as it extends.

Pseudocydonia/chaenomeles.

Quite brittle so wire only young shoots. Be careful as they tend to snap from where the new growth starts. The buds are very tender also and it is very easy to knock the buds off the tree if one is not careful.

Spruce.

Spruce have very springy branches and may need several attempts at wiring before the branches set in position. The branches can thicken quickly however so watch out for the wire starting to bite in.

Yew, Hemlock

Both these species have very flexible, forgiving branches that need no special treatment. Again, just clean them of old needles, flaking bark etc before commencing with wire.

Withholding water for a few days before wiring reduces the turgidity and makes the tree more pliable.

As a rule if you are concerned that the branch may break, wrap it in raffia.

Starting to wire

As a basic rule the wire should measure the length of the trunk or branch that you are to work upon plus one third. With thinner branches it is possible to keep the wire on the reel whilst wiring thus saving you wasted wire and reducing the need to unwind the wire in order to recycle it.

Before attempting to wire any tree it is essential that it is firmly rooted in its container.

If the tree is at all unstable or lacking in health in any way, then wiring will make matters worse, at least it will take many months to recover or at worst it could even die. Do not wire sick or unhealthy trees or those that have recently been collected or repotted.



Wiring the trunk

To start by wiring the trunk, first make a hole in the soil next to the trunk and at an angle of 45 degrees. Make the hole as close to the trunk as you can. Use a chop stick or tweezers and make the hole as deep as you can.

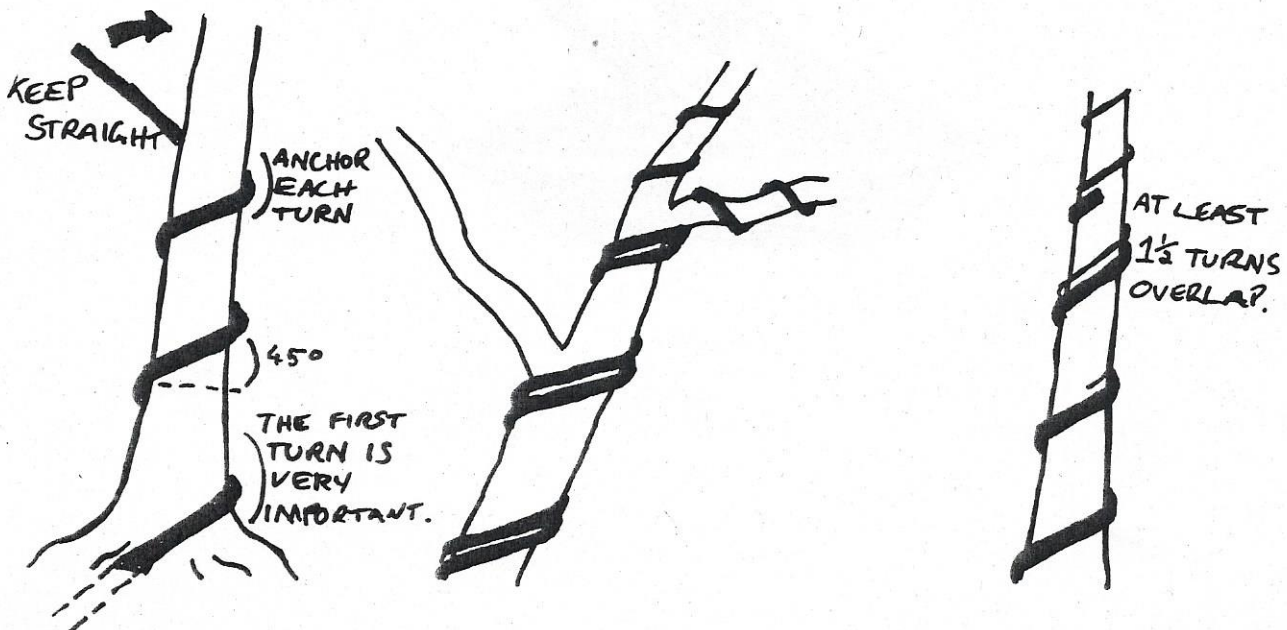
Next, using the correct gauge, push the wire to the bottom of the hole. Whilst anchoring very firmly with one hand complete the first turn of wire. It is important that this first turn is correct as this will dictate how the rest of the trunk is wired. If the wire is not in contact with the bark from the start then it will shift and damage the bark. It is worth spending time and getting this part right. Continue twisting the wire anchoring with one hand as you go. On thick wire hold on to it at a distance from the trunk allowing you to use leverage, your opposite hand anchors and guides the wire into place.

Keep in mind where you wish to make the bends as the wire should wrap over the outside of the intended bend to reduce breakage.

Although at the base of the trunk the angle was 45 degrees as you get higher the turns should be closer this is because you will want to make a greater number of bends and make them more accurate. Use pliers to complete the last twist. The cut end of wire should, where possible remain out of view.

If two wires are needed make sure they run in contact with each other and never cross. As the wires ascend they can split off on to continue up the trunk, one to wire a major branch.

Avoid the temptation of leaving a tail of wire for the plant to "grow into", apart from the danger to eyes it is also visually distracting and will cause problems when it comes to shaping your tree.



Wiring the main branches

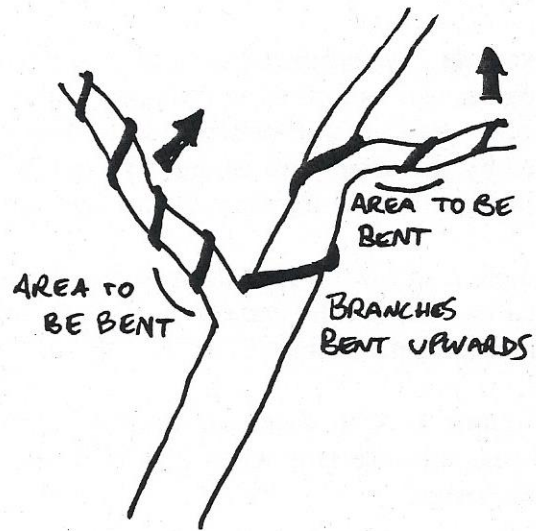
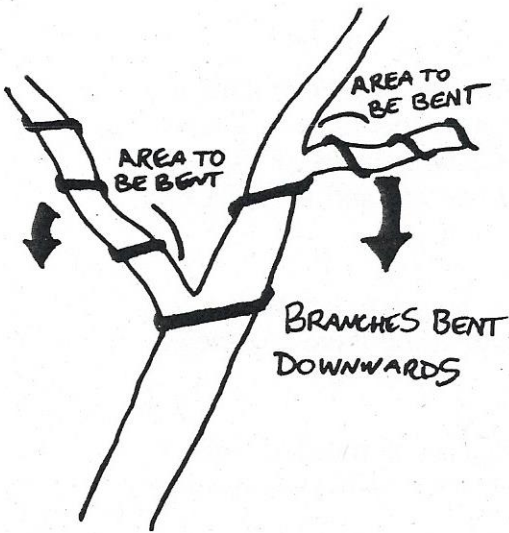
To wire the main branches start by holding the appropriate sized wire against the trunk. The end of the wire should measure about one third beyond the end of the branch to be wired. You should link two branches together with the same wire but for the moment do not cut the wire. Pass the free end behind the trunk following the same path as the trunk wire. It should make at least one complete circle of the trunk before reaching onto the branches to be secure.

Before continuing the wire onto the branch you should keep in mind where on the branch you want the bends to occur, the wire must always wrap on the outside of these bends. As you begin to wrap the wire onto the branch be careful that there is no space between the wire, trunk and branch otherwise, when you bend the branch it will lever itself away from the trunk.

Use one hand to guide the wire into place grasping firmly each bend with the opposite hand on the end of the wire levering it into place, when the wire gets shorter use pliers to get extra leverage. Continue to the end and finish with a twist. Do the same with the opposite end of the wire, which should be still attached to the reel, finish to the end and then cut the wire, this way you save the amount of wire used.

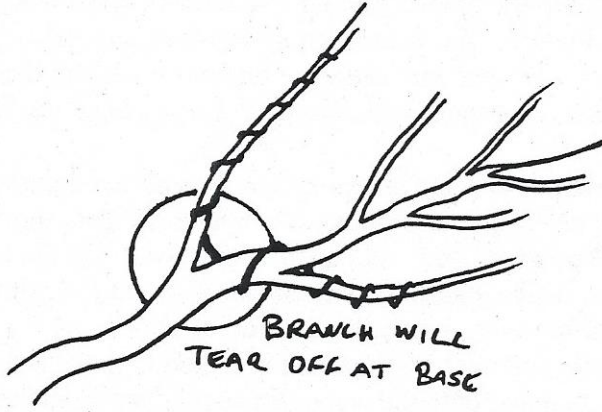
Anchor wire around the trunk first next wire branch one then branch two.

If two wires are used, split them off onto the strongest secondary branches.



Wiring tertiary branches

How you apply the first tertiary wire will dictate how you wire the rest of the twigs on the branch. Begin by paring up the branches with others of similar thickness, always use the same piece of wire for two branches making sure it passes around the main stem at least one and a half times to avoid a see-saw effect. It is more crucial here that the wiring starts at exactly the same point as the twig, any gap and the twig will be wrenched away from the branch. At this point of wiring a tree you will see how crucial it was to adequately thin the branches and foliage out. This way you can plan your wiring better and have full control of all the elements of the tree.



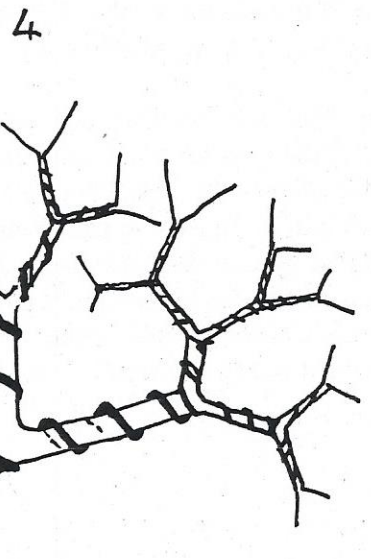
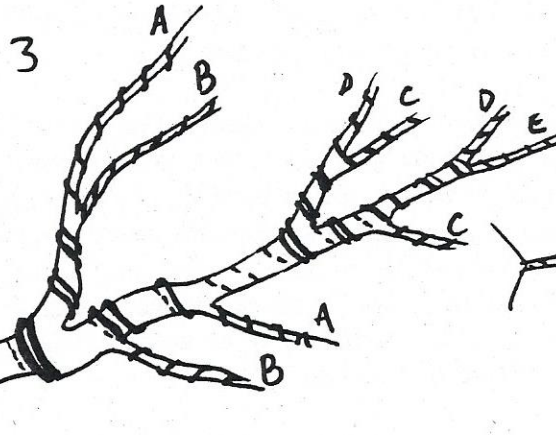
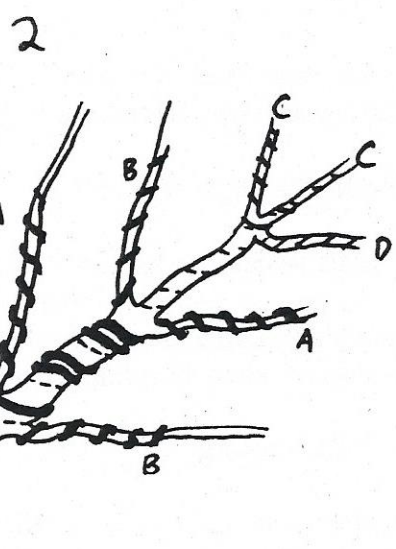
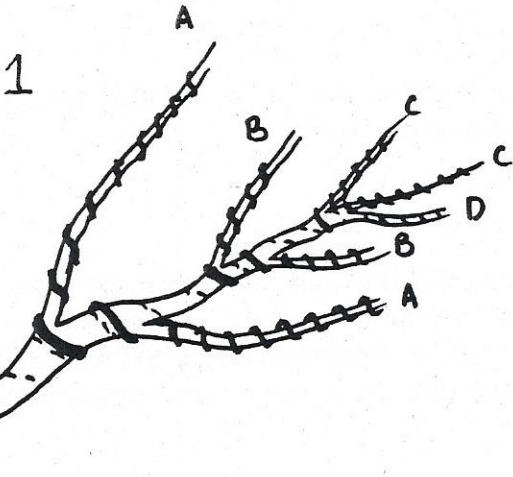
Examples

In example 1 we are faced with an alternatively branched tree. The important thing to remember here is to link all branches with a single wire ensuring that there is at least one and a half turns in between each twig. As you can see the twigs marked "A" are linked by the same wire as are "B" and "C". D is the odd one out and is wired by anchoring to the main branch by a couple of turns.

Example 2 shows a tree with oppositely spaced twigs. When these are wired they are linked to those on the same side further along the branch providing there is enough space to anchor. Again "A" to "A", "B" to "B" and so on.

In example 3 we are face with twigs of varying thickness. Again link those of similar thickness and use two wires on the thicker twigs, which can be split to wire two smaller twigs.

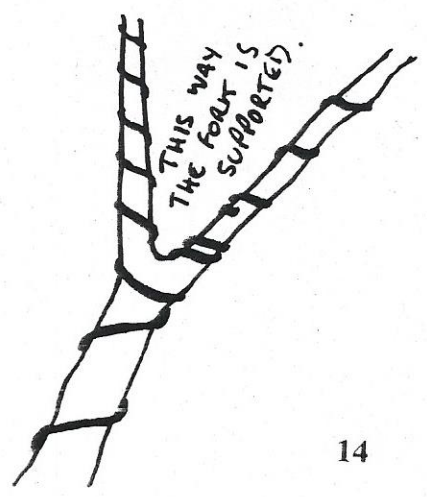
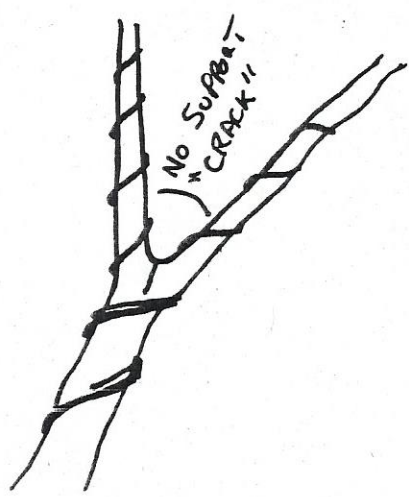
Example 4 has branches similar to a maple. It consists mainly of repeating forks and should be wired as such.



----- MAIN BRANCH WIRE

Wiring Forks

The technique for wiring a forked branch consists of wiring the two branches of the fork with the same piece of wire. Do not wire them to the main trunk as this will give insufficient support to the joint which splits very easily.



If you now find the wire is not going to hold, it should be possible to apply additional wires anywhere in the tree without crossing.

Shaping thick branches

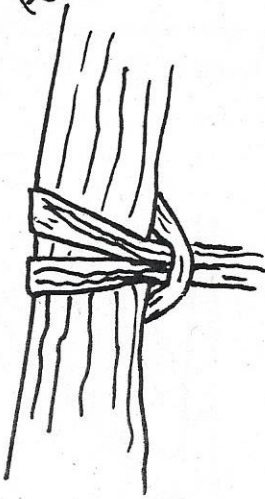
In cases where the standard wiring techniques will not work due to the thickness of the branch in question there are a number of more "drastic" techniques to be considered. Other than the raffia wrapping method, these techniques should only be considered when all other approaches have been eliminated and on coniferous species.

Raffia wrapping

This is a good technique to master regardless of the size of tree you usually work on. Apart from reducing the risk of damaging the bark (useful when wiring maples, beech stewartia etc) it reduces the risk of the branch snapping quite considerably.

Using four or five strands tied at one end, soak the raffia in warm water for a 20 minutes. Begin wrapping from the start of the trunk or branch to a good distance before the area to be bent. Try to keep the turns close without leaving any gaps and wrapping it as tight as you can. Finish by halving the strands and passing them around each side of the trunk and tying. Always keep the raffia as neat as you can. Use one hand to keep the raffia as tight as possible and the other passes the raffia around the branch/trunk. Two people make this job a whole lot easier. Wire as normal making sure the wire wraps around the outside of the portion to be bent.

ANCHORING THE RAFFIA.



HOLD TIGHT WITH ONE HAND



PASS AROUND TRUNK / BRANCH WITH OTHER ONE. PULL TIGHT

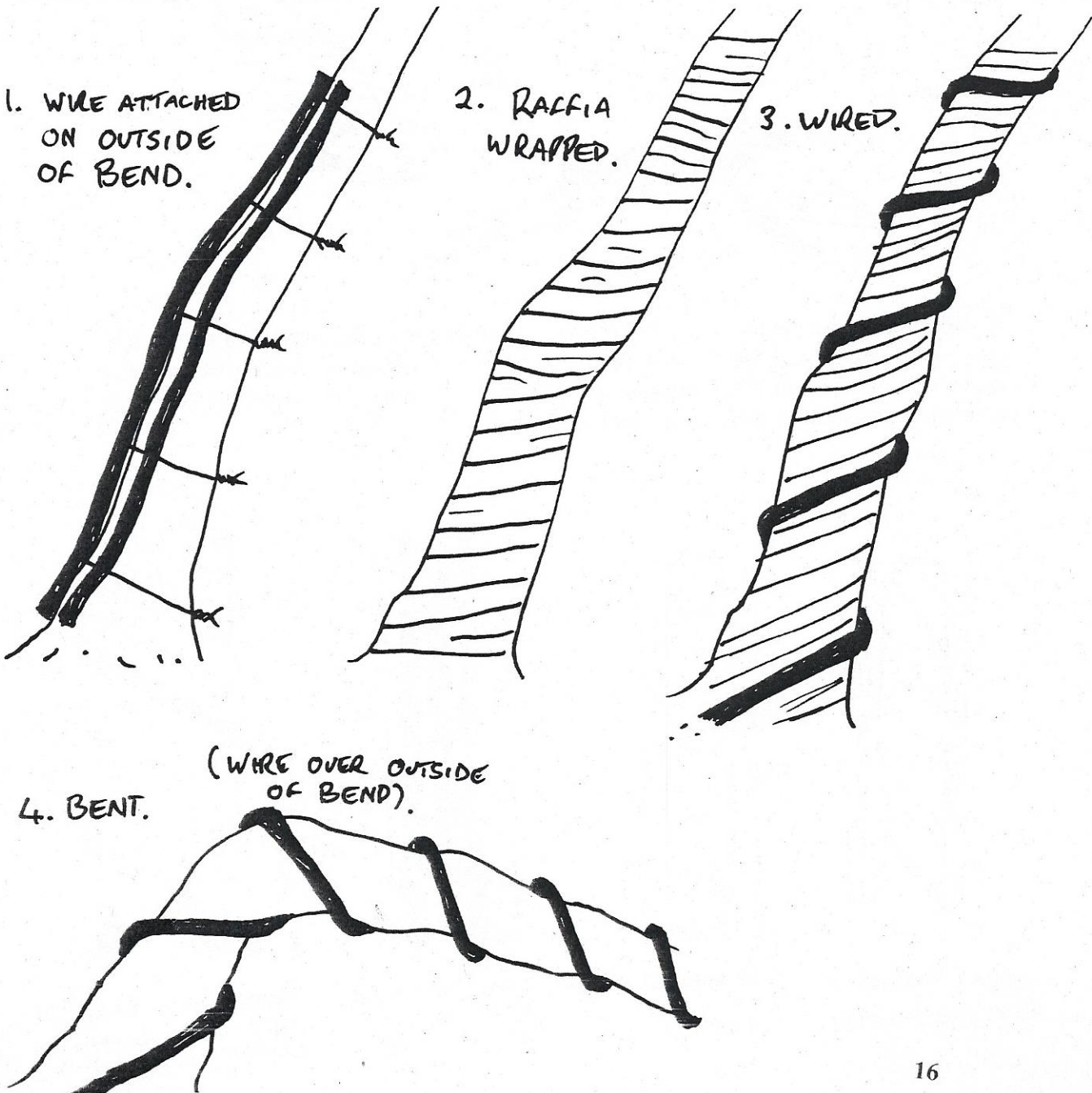
MAKE SURE THAT THERE ARE NO GAPS.

A variation on this is to incorporate thick wire on the outside of the bend, held in place longitudinally by the raffia. Wire over the top of this bundle.

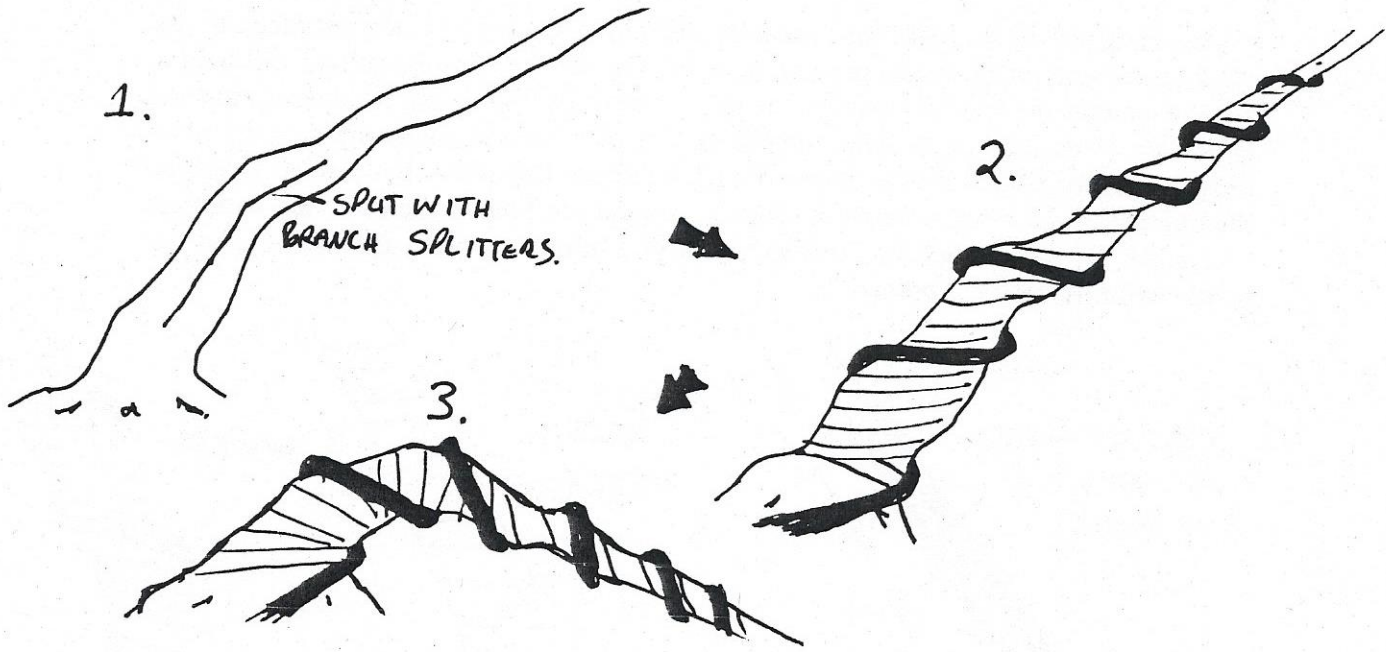
It is possible to make quite severe bends in branches that would soon crack with conventional wiring.

If in doubt, wrap the branch and then if still in doubt, consider bending over a period of time.

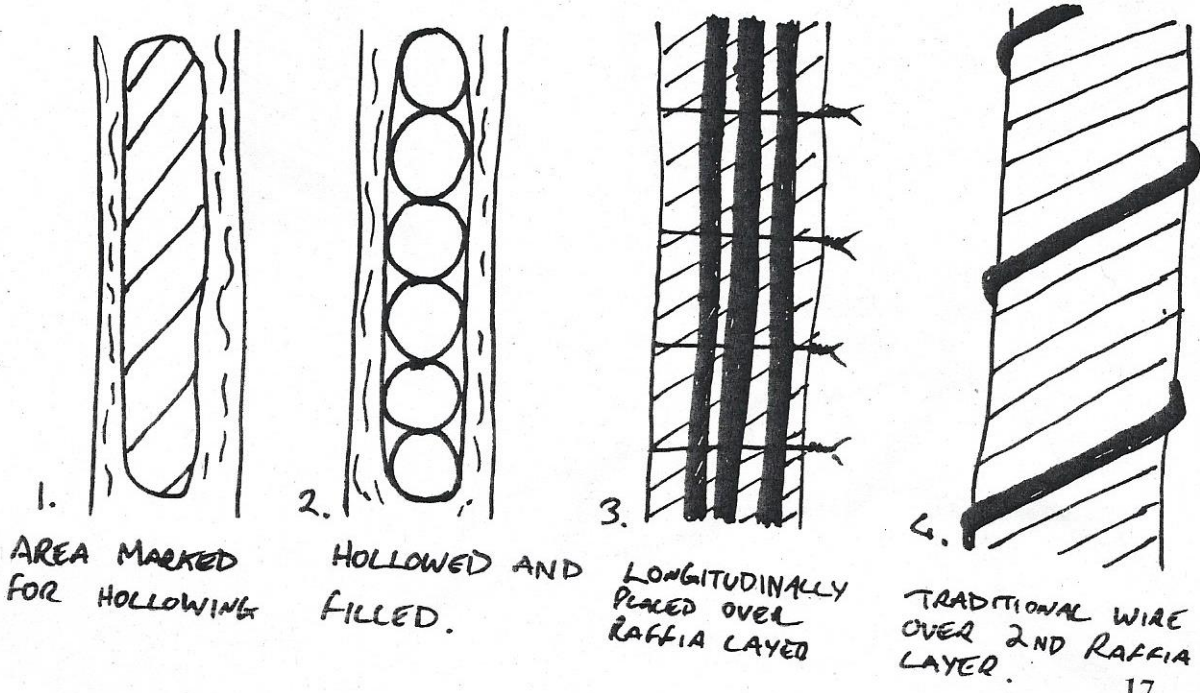
If you do hear a crack, leave the branch alone. The wire should hold the branch in this position and the raffia should protect the split. The newly forming callous will help to set the branch in its new position. In fact it may be worth purposely scarring the underside of the branch to speed up the setting process and encourage it to be more permanent. Shaving one side of the branch achieves this result but always shave on the outside of the bend, otherwise when you bend the branch the bark and cambium will crack on the outside of the bend, this in conjunction with the shaving on the inside will ring bark the branch.



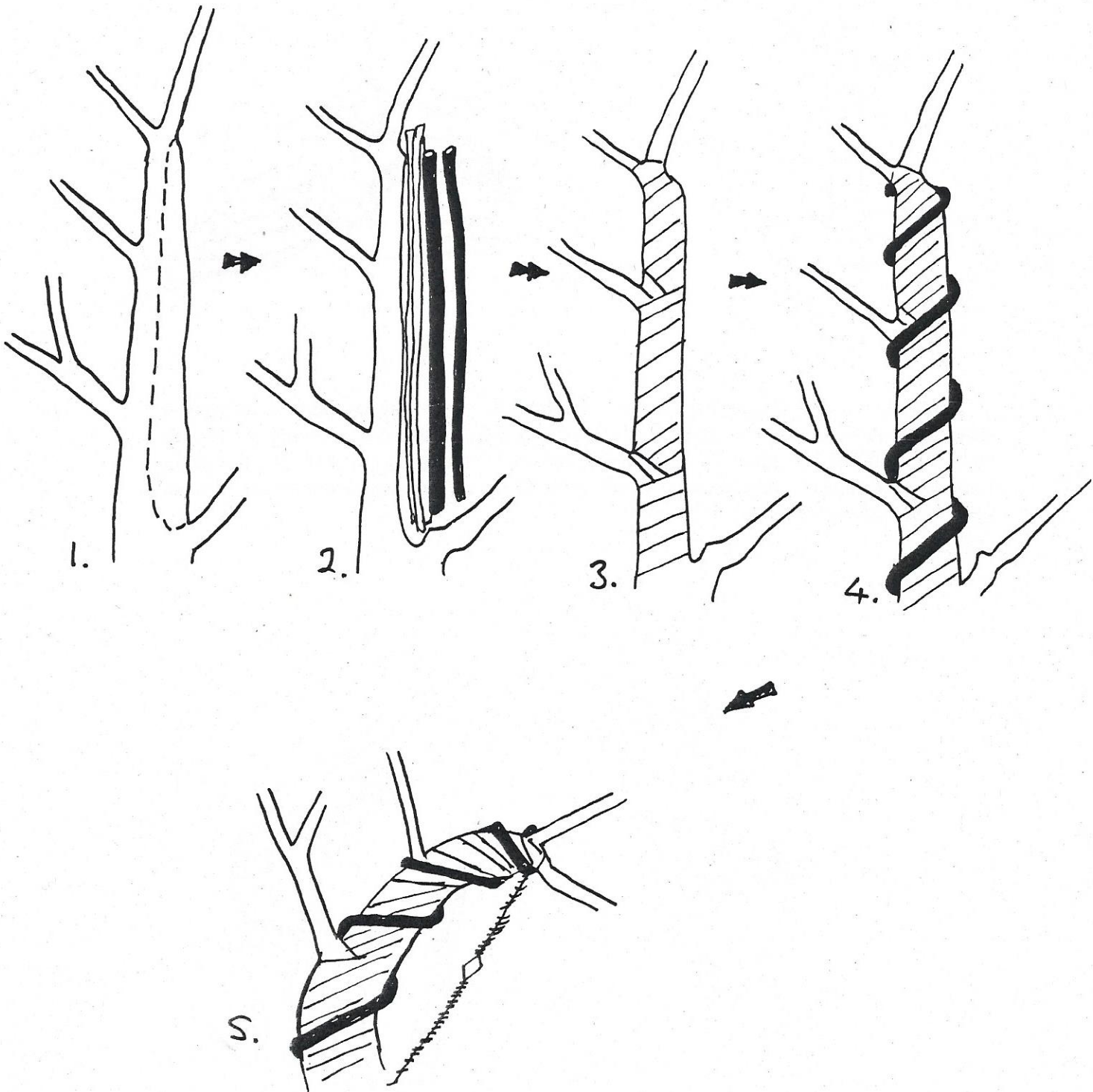
On even thicker branches use a branch splitting tool to change the branch from one thickness to two much thinner layers similar to laminates. Split the branch at right angles to the direction you wish to bend in. Seal the wound and wrap with either of the techniques listed above. Due to the scarring nature of this technique it is best performed on trees with rough bark. As the split heals it has the advantage of holding the branch much quicker.



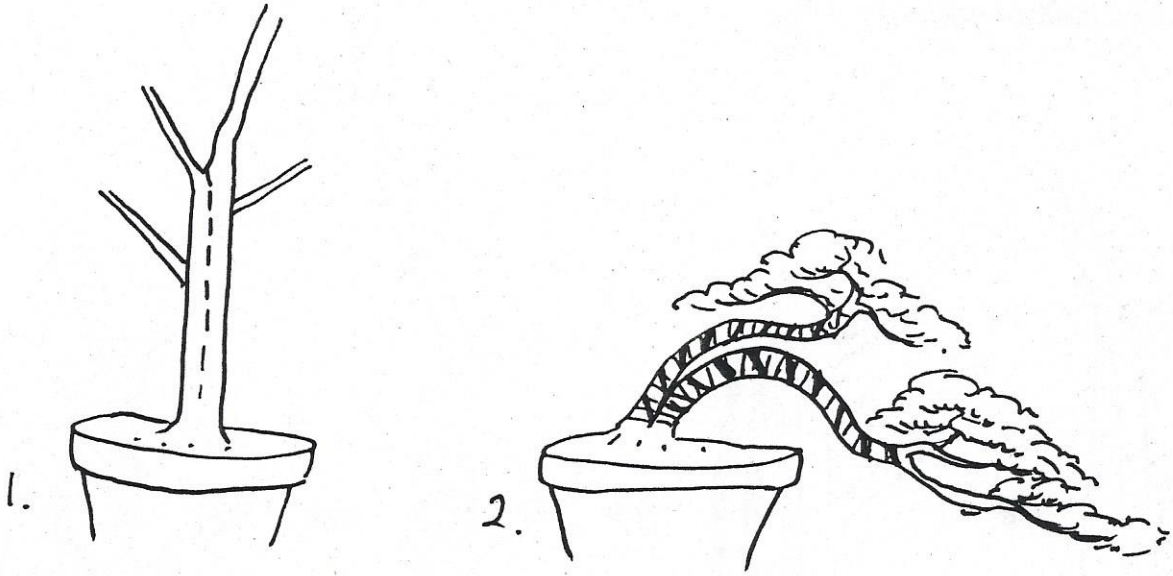
A variation on this technique is to hollow out the inside of the branch in the section you wish to bend and fill it with an inert flexible substance. Marbles have been used to good effect in this technique as has lengths of wire. This stops the now tube structure of the branch collapsing. Seal, wrap and wire.



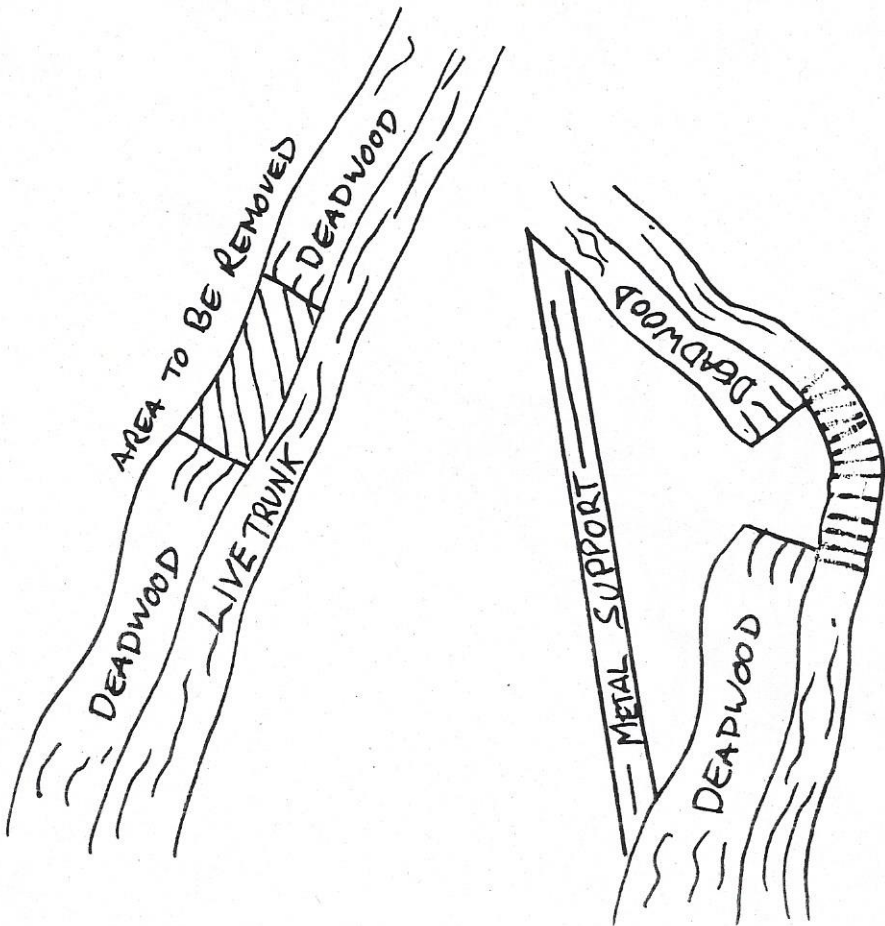
Yet another technique is to cut a section of the branch away. In the example the apex of this tree is very one-sided. The trunk is split with either a splitting tool or a saw and a section removed. The wounded side is protected with raffia and several strands of thick wire are held in place with a second layer of raffia layer. The trunk is wired in the traditional manner and can be further reinforced when in its new position with a guy wire.



Another version of this technique is to completely split an otherwise uninteresting trunk and create two trunks which can be styled in a variety of styles. In the example it has become a semi cascade style.



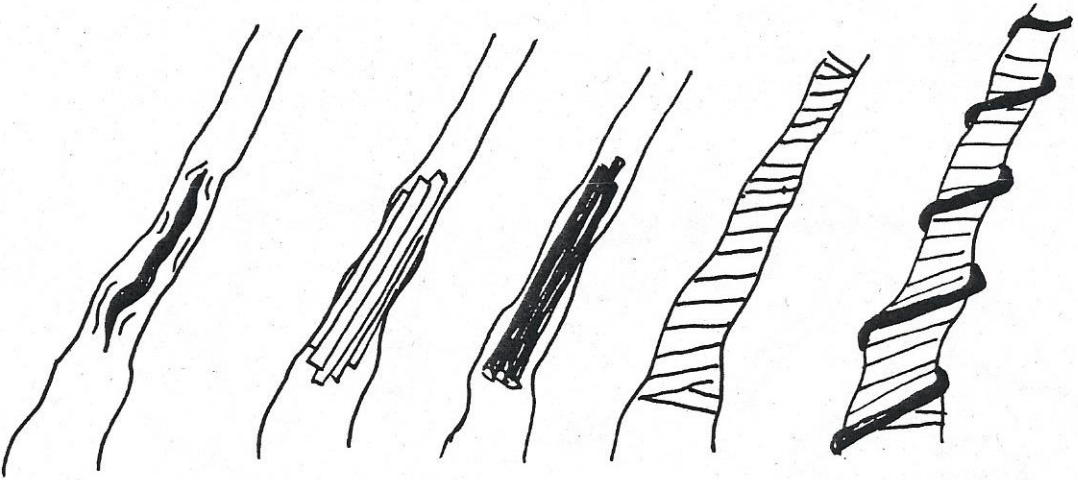
A good use for this technique is when the branch you wish to shape incorporates deadwood. A section of the deadwood can be carefully carved out allowing the branch to be bent after it has been protected and wired. After the branch has set and the raffia removed the missing deadwood can be replaced by a fibreglass filler which in turn can be carved and bleached to blend in.



Bending a wounded branch

If the branch to be shaped contains a wound, perhaps from a previous styling, then special precautions should be taken to prevent the branch from cracking.

1. The branch to be wired has an old wound along its length.
2. The wound is protected by having lengths of raffia placed over the surface.
3. Lengths of wire are then placed over the raffia.
4. The wound and surrounding area are the wrapped with another layer of raffia.
5. The branch is then wired in the conventional manner.



Direction of the wire

One point that is often overlooked is the direction in which the wire is wrapped. If we were creating a two dimensional tree then it would not matter in which direction we wound the wire. In Bonsai however we want our tree to have depth and therefore our branches and trunks bend forward, backwards as well as to the sides.

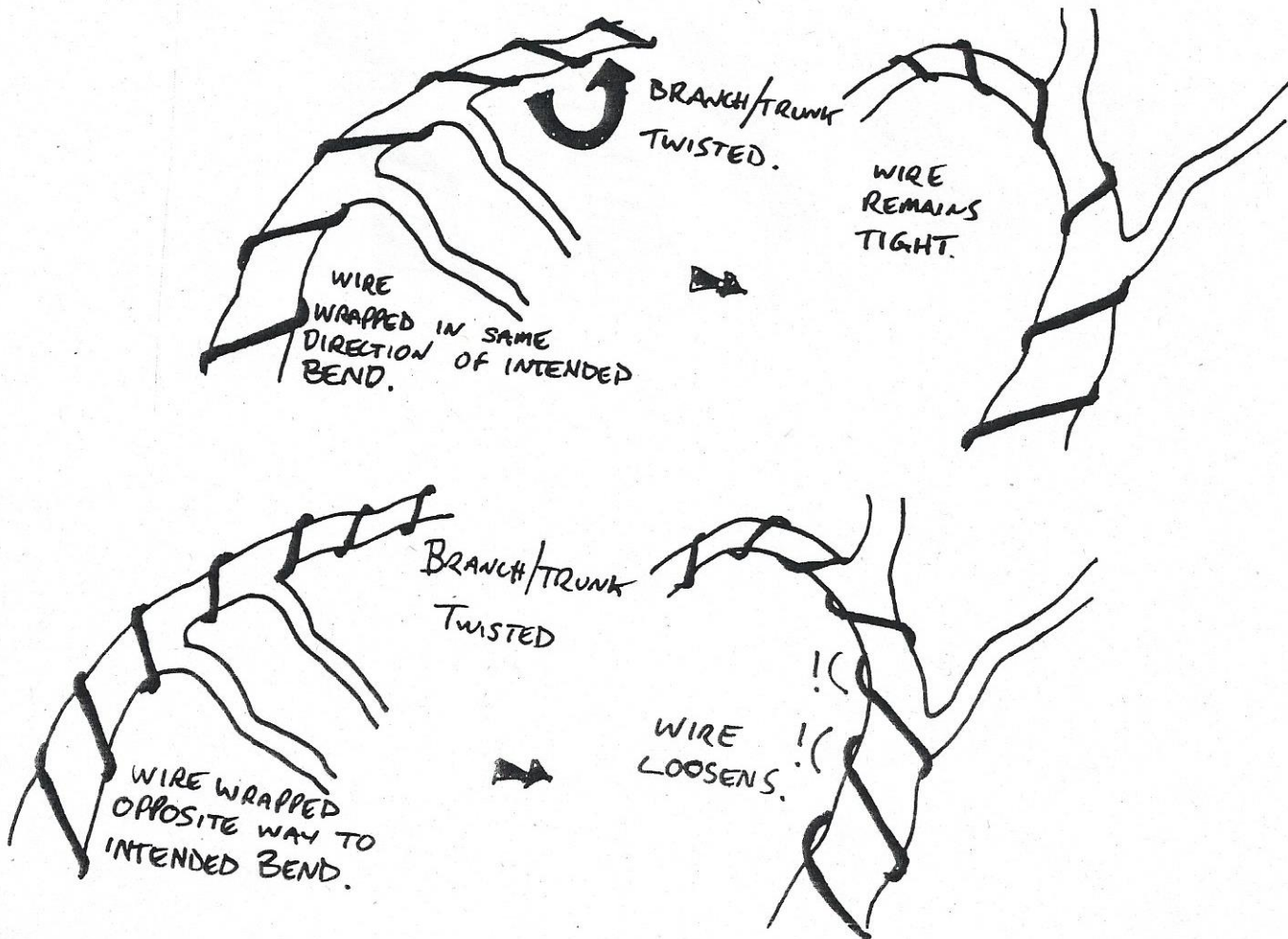
On smaller branches we will often be confronted by branches that have foliage in the wrong places to where we would like it. This is especially common in Junipers where the foliage may be solely on the underside of the branch.

This requires us to give the branch a twist as we bend.

Thought must now be given to which direction we are actually going to twist as the wire, which we are going to apply has to go in the correct direction for this to be effective and to hold.

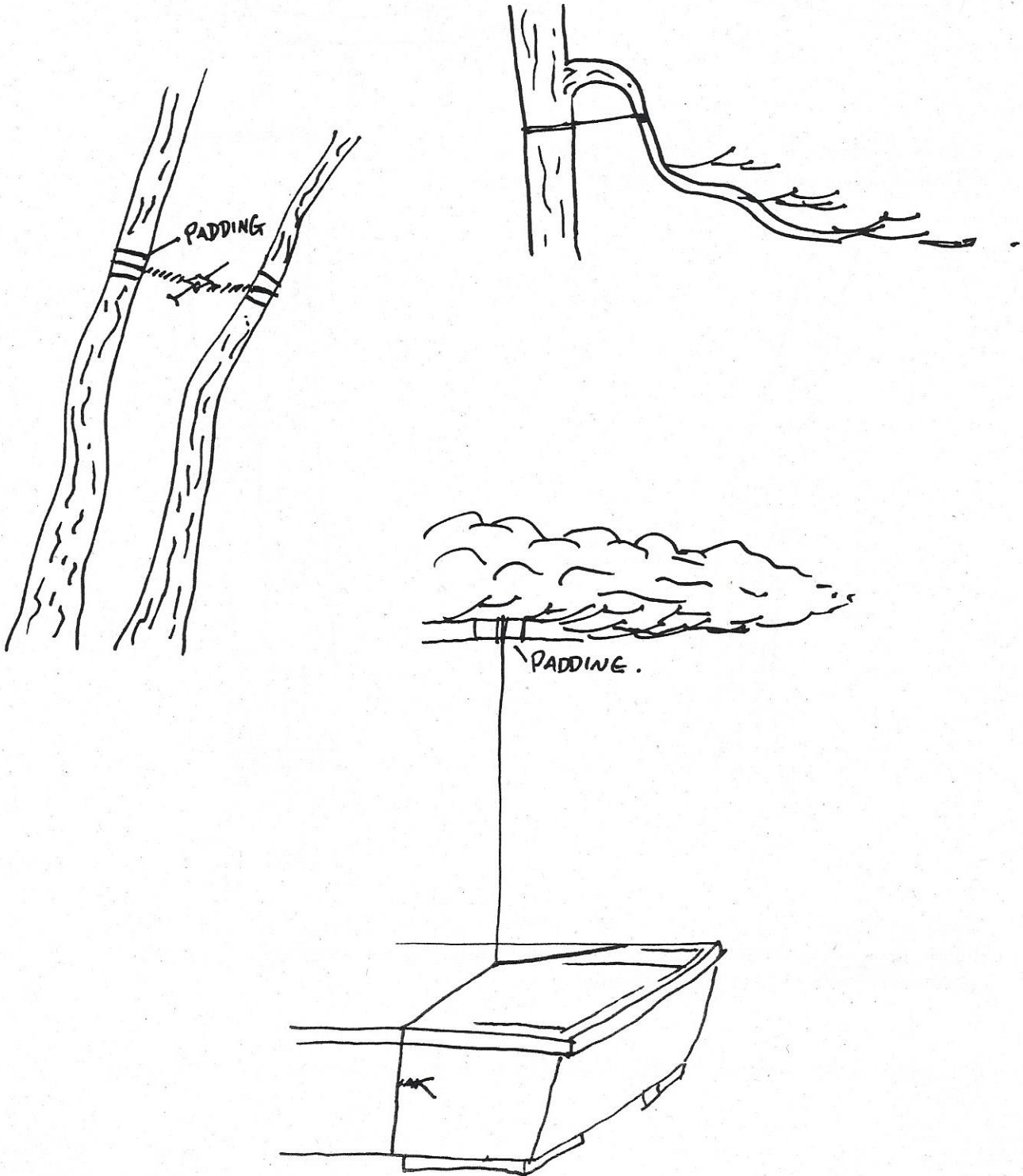
The technique to do this is simple. Simply apply the wire in the same direction as the intended twist. This way the wire remains tight and holds securely.

When you try this technique you will notice that the wire tightens. On minor adjustments this is not a problem but if the twist is major you risk constricting the branch. To prevent this, adjust the tension in your wire accordingly. It may take a little bit of practise to get this right. Or, alternatively twist the branch as you apply the wire.

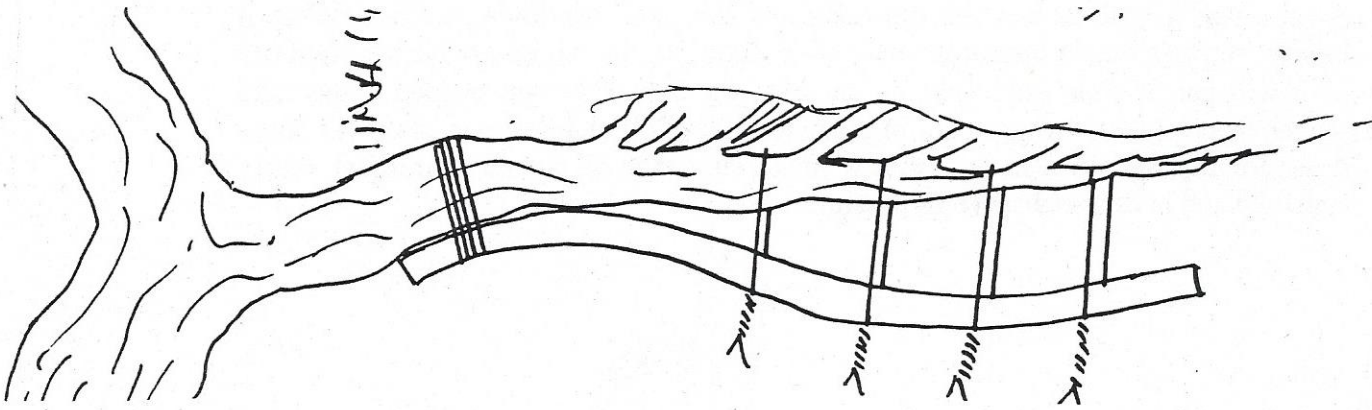


Guys and tourniquets

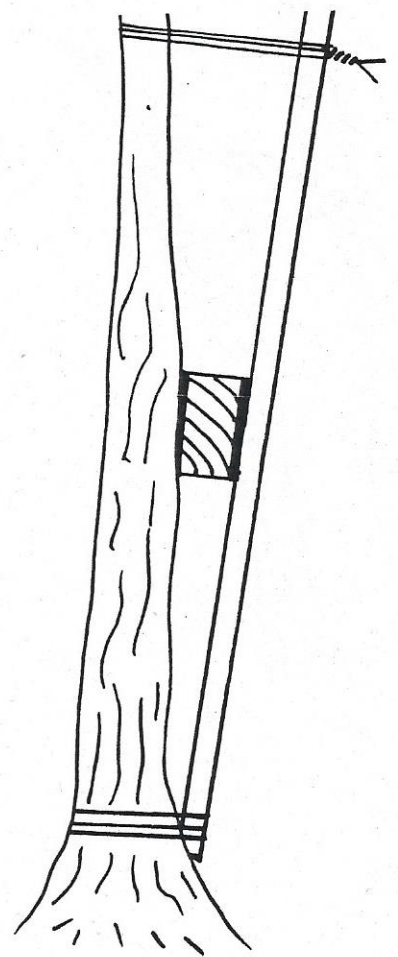
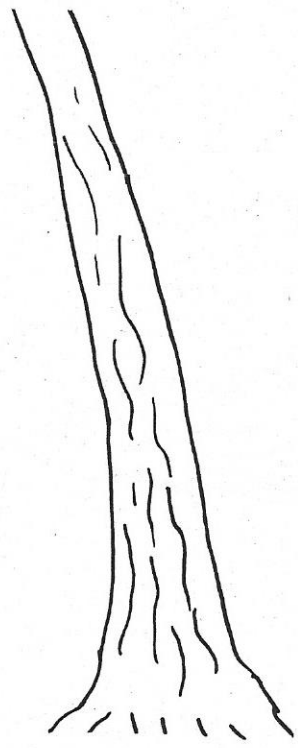
A simple way of adjusting direction of branches or the main trunk is by use of guys and tourniquets. This technique is most often used on trees nearing completion where minor changes in direction or angle of say a major branch is needed. It is best to use copper wire for this as it is less obtrusive and can stand a lot more twisting before it breaks. Apply a guy or tourniquet only after all the regular wiring has been carried out or it will get in your way. Start by ensuring the branch is well padded. Guys take longer than regular wiring to set in position and will therefore be in place for some time, for this reason also one should make sure that the guy or tourniquet is neatly executed and is as in-obtrusive as possible.



A variation on the steel rod method is attach the rod to the tree at one end, protect with padding and using a tourniquet, bring the branch/trunk towards the metal rod. This can be done over a period of time.



This is an especially good technique to take an unwanted bend out of an otherwise straight trunk.



There are branch clamps available from bonsai dealers and these can work well for minor changes in direction but they do look unsightly and will need to be in place for a substantial length of time to be effective.

Whichever method used it is vitally important to protect the branch with padding and raffia.

Aftercare

Dependant on the extent of the wiring you have just carried out, the tree will need to convalesce for a while.

Do not carry out any other major tasks such as re-potting, creating jin or shari, major branch pruning etc. It makes sense to give the tree a bit of freedom to grow unchecked as this help the tree maximise on photosynthesis which in turn will cause the branches to set sooner.

If you have wired the tree in the growing season then place it in a shaded part of the garden. If it is winter then place the tree in an unheated greenhouse/polytunnel. Frost can get into the small cracks in the bark caused by bending and kill the branch.

If any branches were cracked through bending it makes sense to allow that branch to grow freely for at least a season. Do not be too impatient in removing the raffia wrapping off of branches, these larger branches will take longer to set. The raffia will protect the bark from the wire, it will take longer to bite in.

Be careful if you have used copper wire as it conducts temperature far to well. On particularly hot or cold days you can find that the wire actually brands the tree.

Conclusion

When I first started to write this little journal it was because I felt that there was a need for a reasonably concise text on wiring. The skill of wiring on the whole in Britain is self-taught. Most books in the English language contain a few meagre sketches on wiring. One for the trunk, one for the main branches and one for the twigs.

I set out with this booklet to show a wide variety of techniques. Some that I have learnt from other texts and some from the numerous enthusiasts that I have worked with. Each finding their' own answers to problems in order to bring the best out in the material tree.

I found however that the more that I researched, the more that I found there was to research. This I realised was because every tree is different and must be looked at in an individual way.

In the opening paragraph of this booklet I hoped that it would be an "exhaustive" manual. I realise now that it isn't, there is so much more I could write. I hope however that everyone that reads it gets something out of it. The beginner should be encouraged to practise their technique of wiring and the more experienced enthusiast to think around problems and create some individual work.

Finally I would thank you for taking the time to read this and I hope it has inspired you to practise your wiring skills. Please refrain from copying this text. If you want a copy, I will happily send you one for the cost of the postage.

John Armitage

2nd April 2003

Ps. Ok, here's the plug. I can talk about wiring or any other subject (regarding Bonsai) to your club or association. Give me a call.

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