

Important Bonsai Terms

Ramification; the subdivision of branches into many smaller and smaller branchlets. **Apical Dominance**; the tendency for new growth to grow straight-up. **Back-Budding**; growing new buds from old, interior (closer to the trunk) wood. **Primary Bud**: strong growing tips; first to inflate in spring. **Secondary Bud**; second flush of growth, normally in summer; become primary if primary buds are damaged. **Dormant Bud**; only emerge if needed. **Roots**: **Anchor roots are large**, hold the tree in place, and store food and water. **Feeder roots are tiny, hair-like**, and do all the absorption of water and nutrients. Root-pruning removes large roots and leaves feeder roots. **Movement, Nebari, Golden Triangle** will be dealt with below.

Murder: That's what you're going to do to many trees- that is, if you are going to learn the art. Your trees will be entirely dependent upon you for food, shelter and health care. Learning how to care for your trees takes time and mistakes, just like styling, and just like everything else in life. Bonsai is an art that you practice for the rest of your life. You will learn more from your mistakes than you will from doing things right.

Bonsai Workshop : SUMMARY/GOALS:

Find the Front: remove enough soil to establish whether or not the nebari will influence your choice to look less like a utility pole and more like a living, aged tree, -rotate the tree and position it at whatever angle, vertically and horizontally, it is best viewed. Put a stick in the soil at the front so that you will remember exactly where the front is as you work on other parts of the tree. Everything you do is intended to enhance the front view. **Wire branches**, beginning at the bottom, arrange them to have movement, left, right, left, right, and radiate out at the best angle, and to have space for other branches, above. Foliage on one major branch should radiate horizontally in a flat, zig-zag fan, and not (interfere) touch foliage on another major branch. **Position branches**: after the first few branches are wired, move them into the APPROXIMATE finished position. The EXACT position, and the EXACT movement cannot be established until all or most are selected and then wired: all branches need to look like they were shaped by the same forces of nature- Eg: all branches windblown in the same direction. **Repot the tree**: remove 1/3 to 2/3 of the root mass: big, anchor roots are removed in favor of tiny feeder roots. I favor slicing off the bottom third or two-thirds with a saw, rattling the outside of the root-ball lightly so circling roots are freed, and dusting the remaining roots with growth hormone. Leave enough feeder roots, or else! Others prefer combing the roots out and removing some amount, mostly large anchor roots. Orient the tree in the pot at the best angle and wire the roots in-place, and fill with bonsai mix. Re-pot every few years before becoming pot-bound, which is terminal for bonsai. **Care of tree**: newly repotted trees, and/or trees that have had major clipping should NOT be placed in full sun. Repotted trees should be placed in bright shade until new buds appear and begin swelling. If this is the entire balance of the growing season, so be it. Do not let it suffer drought, or it will die. **Winter Protection**: (For hardy (non-tropical)) Place the pot on the ground in approximately the same sun exposure normal for that species; cover the pot with leaves up to the nebari, covering the pot itself as deeply as possible (in leaves). Avoid drying winds. Watering is not necessary as long as the pot is in contact with the ground and covered with leaves. Add leaves as they settle. Remove to a bench when weather is settled in Spring.

The Rules of Bonsai

The following "Rules of Bonsai" are not *rules*, they are *guidelines*. They are the conventional wisdom that is passed-on from the experienced to the inexperienced to give them a push in the right direction when they get stuck and don't know what to do next. Exactly why they are called "Rules" is lost to history. When followed, a **Golden Triangle** bonsai tree will evolve from the starter stock. As people become more experienced, they "see" options which deviate from the "rules" and they are then free to take that different path. Beginners usually can't "see" anything, and are frozen in-place. Too hesitant about ruining the tree, they do nothing.

Anytime you don't know what to do, follow the rules.

1. Every tree has a **Front**, which is its **best side**. Rotate the tree for as long as it takes to see all views and decide which is best for whatever style you have in mind, or, pick a style based-upon the stock you have. You can't make a formal upright out of sprawling, rambling stock. You can't make a cascade with tall stock that's too thick to bend down. For beginners, it's better to **"accentuate" the existing form**, and choose stock that is amenable to the style you'd like to have, next time. Ideally, the front view shows taper from thick at the soil level to a thin top.

Look for **Movement in the trunk**; that means **interesting, eye-catching changes in direction**. Most often, even a substantial bend, arc, crookedness, or dogleg can be very interesting to look at, and easy to see from one angle, but almost invisible from another angle. Sometimes it's ugly and you want to hide it, sometimes it's the best feature of the tree. You either hide it, or make it a prominent feature when selecting a best front. You also want to create **Movement in the branches**. Very few trees with cookie-cutter branches look good with the occasional exception of very tall pines with perfectly flat branches. Usually, you'll want to avoid, hide, or bend the long, straight, **internodes** (the space between succeeding buds or branches).

Like the trunk, branches look better and **more natural with a dogleg** or two. Branches that radiate from an **outside bend on the trunk** are best because the eye sees two things (branch and trunk) going in different, counter-balancing directions. Not coincidentally, branches lean towards the source of light, so a branch reaching into an open space not directly in the original path is normal, but would take many years, IF it grows into the right position. Using wire allows you to twist a branch into a pleasing position **right now** that might take years by cut-and-grow.

Nebari; the visible base of the tree where it transitions from vertical "trunk" to the visible tops of the spreading, horizontal "roots". Ideally, the roots radiate from the base of the tree in the same fashion that the branches do. Usually, young trees have few surface roots. Old trees have lots of surface roots with old bark. Bark only forms after the root is exposed to air and the elements. Before you choose your final front you will need to **remove enough soil to expose the upper roots** which often affects your choice of a "front". Use a tooth-brush, gently.

Branch Placement is always a **relative** element: branches exist in a good design as each individual being in logical reference with the others. **Branches need to be similar in character**. The environment acts on the whole tree about the same way: strong winds from the sea will create short branches to windward and allow longer branches down-wind.

Forests have tall, straight, skinny trees. City trees are naturally balanced and rounded because they're not crowded by neighbors. Mountain trees have a short growing season, poor soil, and are damaged by heavy snow, avalanches, and falling rocks making them shorter, stockier, and more irregular with evident damaged wood that we mimic with **jin, a branch without bark**, and **shari, a strip of the trunk without bark**, both of which are made very white by painting with 15% bleach in water. Find the **First Three Branches**. Ideally, they will radiate from the trunk (in plan-view) at 4 o'clock, 12 o'clock, and 8 o'clock, as seen from the front with 4 or 8 being the lowest, 12 being highest, and the remaining 8 or 4 being higher than the other side, all when the viewer is at 6 o'clock. **Continue this spiral staircase pattern up the trunk to the top.** The bottom branch should be the longest and thickest and each succeeding branch thinner and shorter than the branch below it. Also ideally, each branch should originate from the **outside of a bend** in the trunk, project straight-out or drooping, have only very short foliage sticking straight up, none sticking straight down, and be mostly in a flat-ish fan projecting from the sides of the branch, and, droop more at the tip. New foliage growth will point up. Branches will be longer on one side of the tree than the other side of the tree, which will place the **tip-top slightly off-center**. The (3rd), 12 o'clock branch sticks out the back of tree with its foliage providing visual depth. The branches which form the front of the tree **do not interfere with a view of the trunk**, which leans slightly toward the viewer. These front branches provide a frame with no branches pointing straight-out into the eye of the viewer. This forms a **Golden Triangle ; a three-dimensional triangle with unequal sides**, - unbalanced to left or right and/or top to bottom, which is more aesthetically appealing than a triangle with even sides, is collectively **warm, and welcoming to the viewer**.

Pine trees can have a pointy top, but most other trees need a slightly rounded or substantially round top. Every **tree has a head that is of the same character** as the lower branches. You can't have a pointy top and fat, round clouds on lower branches. You can't have thin flat lower pads and a fat, rounded top. **Pom-Poms are topiary**, not bonsai. The environmental conditions which influenced the top also influenced the lower branches. Lower branches are longer and larger than upper branches and have wider foliage pads. All branches need to hang down (or out) at **about the same angle**, except at a little less angle with each ascending layer. Most trees have branches that start out growing nearly straight up, but as they get heavier and longer they sag lower and lower. Branches towards the top are not as heavy or as long or as old as lower branches so they have less sag. The appearance of sagging branches **implies great age**. Together, all of this will create two triangles with unequal sides forming a pyramid with unequal sides in this case of a three-dimensional object, which is still the **Golden Triangle** of art viewed either from above, or from the front. Looking down through the top you see a **three-sided pyramid with unequal sides**: the longest side is the front; the shortest side is windward; the last side is downwind. The apex is the tip-top, and 12 o'clock is the back of the tree where the windward and down-wind sides meet. If you ever find candidate stock with all these characteristics, call me immediately and I'll come and get the tree. If any of these characteristics are missing from your stock, your job is to wire branches and **bend them to where they need to be**, and cut-off branches that interfere with the design, -your design. Your job is to make open space.

The **Best Front** is usually a compromise view of the three elements, -between the best view of the nebari, the best view of the trunk movement, and the best branch placement.

Bonsai Styling: Making Eye Candy

There are two ways to style bonsai, clip-and-grow (C&G) and wire in-place. Mostly, people dovetail the two methods. Using wire means you need to buy several sizes, and it takes real effort to learn how to twist the wire neatly in place without damaging the tree more than you're helping it. Consequently, many people default to C&G only, for awhile, until they find that trees take forever to grow the way they want them to, and they only evolve very slowly, if at all, any real movement in branches and trunk. Sooner, or later, if you want really spectacular interest, you need to learn to wire. The sooner, the better. If your wiring looks ugly during the initial training, too bad! You still get the shape you're after, and you don't display the tree in shows with wire on them, anyway. Bend the branch slowly, if you hear it crack, ease off to where the crack closes and seal the crack with cut-paste or tape. Most cracks will heal, but you need to mark the branch so that you won't re-break it at some later date, because it will always be short of that exact place you were aiming to put it, and you'll want to move it later when you have forgotten why it isn't in the right place.

Wire is used to: 1.) Create interesting architecture with the trunk and major branches, thence; 2.) Arrange foliage to form clouds or layered pads. Both should be done at the same time. Branches are wired: to radiate out in appealing directions; create horizontal space between branches; and place foliage in good light. Looking down from the top they should radiate out like a spiral staircase. Trimming of branches that are in the way or superfluous to the design only takes place AFTER desirable branches are wired in-place because you can't glue them back on after you have broken the 1st choice branch and that second-rate branch can look a lot better to you than a big empty space that changes your whole design. Similarly, foliage on a branch IS NOT trimmed to shape until after it is bent into place AND surrounding branches are in-place. As you bend a branch you will also twist it into a position and attitude which is different from how it grew, originally. Often what was up is now pointed down. Sometimes you can even orient the foliage to project sideways as it is supposed to, but only if you haven't already cut it off. New foliage will grow up towards the sun from the new position of the branches.

Wire is left in place for as long as it does not cut into the branch. "Wire marks" are unsightly and to be avoided. Look closely at the tree during the growing season, especially in spring. The best time to wire is in autumn because the wire will not mark while the tree is in dormancy which will last for 4 to 6 months. Remove winter-wire as soon as the buds BEGIN to swell in Spring, or suffer wire marks, for years. Don't be surprised or disappointed if you have to rewire immediately.

Shopping for New Stock

There are three sources for bonsai stock: ordinary landscaping nurseries have the cheapest material and usually only carry landscaping woody plants that are hardy in your zone. Safe, cheap, and local. Any woody plant can be styled into bonsai, some better than others.

Bonsai stores are few and far between, but they carry more traditional bonsai stock. **Online vendors** abound and you'll develop favorites. The best bonsai stock is often grown in specialized nurseries **to be bonsai** instead of landscaping material. It is more expensive because the stock spends more years being groomed to be compact above and below the ground in the nursery by plantsmen. Landscape materials are grown to be as big and tall as possible in the shortest amount of nursery time possible. When you pay extra for bonsai stock from a bonsai nursery you are paying them to do what you could do in the same number of years, except that you **short-cut the time factor** and jump ahead instead of waiting it out. Older people understand. Everyone should understand that a tree grown from seed, by you, can be trained from day one to be exactly what YOU want. You will be amazed when you see how many really **perfect trees are grown from seed** by the owners. Everyone should have some seedlings in-process, continuously. In every neighborhood there is a fruitful tree of one kind or another that spreads volunteers all over the area. Look down, they're all over the place. Many make very good bonsai and most are very hardy: **Chinese Elm** are not popular as neighbors, but they make great bonsai. **Eastern Redcedar** is a tough evergreen. **Apple/Crabapple** hybridize readily, as do Oaks (and Elms). Hawthorns have great foliage, but are consumed young by disease in Michigan. **Mulberries** grow too fast, but if you pinch them back very regularly the leaf reduces to a deeply cut and twisted form that is very attractive. Whatever you have locally- **if you have one, you have a million**. And, free is pretty attractive, too! Think of how many mistakes you can make, pitch it, and start all over again!!

Yamadori refers to trees collected in the wilds, especially the mountains. Soils there are rocky and poor so growth is very slow. Trees that grow in poor conditions can make wonderful bonsai because they **get old before they get big**. We can still collect trees in southern Michigan even though our mountains are only a few feet taller than our flat farmland. You need a permit to collect on state land, but collecting along the road right-of-way can be done quickly. Trees bordering ditches get wacked every few years, and trees growing where they get mowed-down with a Brush-Hog twice a year develop character over time. Unfortunately, our soils are deep and rich so trees grow straight and tall, -and skinny, and with **long, uneconomical roots**. It's even worse in the forest where there is little light and roots tangled with neighbors. Cities are better collecting grounds, especially at **construction sites**. Roads were formerly designed to be higher than the surrounding land so the water would drain **off the road**. Now, drains are located under the roads and drainage is pitched **to the road**. So, new construction along the newer, lower, roads have new standards for grade level so if a gas station, drug store, or whatever is being replaced by new construction, the whole lot will have to be changed to the new grade. That means everything there gets bulldozed. If you **ask the General Contractor** if anyone would mind if you dug up this or that shrub, almost always he will say it's OK.

Caution: stay away from the equipment, stay in plain-view so people can see that you are not messing with any equipment or materials. The owners and contractors don't want the liability of you getting hurt on their site, so they may say "No" for that reason. Stay away from where work is being preformed. **Act quickly when you see a site** with a tree/shrub you want because it won't be there for long.

STANDARD OPERATING PROCEDURES **NOT** USED IN BEGINNER'S WORKSHOPS:

The normal progression of beginning training of non-bonsai material is subverted by the need to introduce all the individual elements in one-felled-swoop. To that end, an easy tree is usually used, often a good house-plant type like any Fig, or a very hardy outdoor tree like Juniper, Chinese Elm, Willow, or Mulberry. Small is better than large because the goal is to acquaint beginners with tasks rather than spending enough time on each individual task to actually get good at it. Typical beginner workshops are 3 hours long. Longer would be too tiring.

STANDARD OPERATING PROCEDURE FOR TRAINING TREES, **NOT IN A WORKSHOP:**

1. Carefully search through a seller's stock for a candidate woody subject with as many positive characteristics as possible: a desirable cultivar, wide nebari; pleasant movement in trunk; well-placed first four branches with appropriate taper; healthy, the right size, and cost-effective. Usually an impossible task, -you do the best you can.
2. **(First year)** **extensive pruning** and wiring of above-ground wood **to establish architecture.** Check wire often to guard against wire marks. Remove and re-wire as often as necessary.
3. **(Second year, or some subsequent year in May or June, if and only when the tree has recovered and is growing vigorously)** **remove 33% to 75% of root mass.** Mainly, remove large roots which are mainly anchoring roots and keep tiny, hair-like roots which are feeder roots. Re-wire as necessary.

NOTE: If sacrificial branches are necessary, or if extensive growth is desirable or necessary for above-ground parts, **DO NOT** reduce roots until after that kind of growth is accomplished. **Sacrificial branches** are grown in locations on the trunk where an increase in girth is desired. Each branch will increase the girth of the trunk **BELOW** that branch, but not above that branch. A sacrificial branch is one that is not part of the finished design and will be grown only until the trunk reaches the desired girth from that branch to the ground. **Once the roots are extensively reduced, the tree will grow very, very slowly, including sacrificial branches.**

4. **(Subsequent years)** **As buds swell, but before they open:** Remove autumn wire. **Remove terminal buds** to induce back-budding, denser leaf growth and compactness. *This will probably eliminate flower buds, too.* **Late June:** Remove all leaf buds by cutting them off at the base of the leaf, but leaving the leaf stalk (petiole) in-place, which protects the new leaf bud in the axil. Also cut off every terminal bud, or else new growth will be just from the end of the stem (sometimes, desirable (to lengthen)). **Sept. or Oct.:** Prune for shape. Removing terminal buds may, or may not induce back-budding when performed in autumn. Feed for next year's growth from late June when new leaves are mature until September.
5. **When the whole tree is the right size (as in finished growing as big and dense as you want) reduce the roots enough to fit into an appropriate pot with some growing room left over. Expect five or more years to elapse before a candidate tree becomes show-able. You "practice" bonsai for the rest of your life...**
6. **Growing-On:** Growth will occur in the growing season where you are, if and when conditions are suitable: enough sun, warmth, moisture, **NOT** the dormant period, etc. Trying to fool a plant into growing more, or well, in the off-season by fertilizing is a fool's errand. Weak, leggy growth is your reward. And, punishment.