

CLARIFYING CERTAIN PRUNING TERMINOLOGY: Thinning, Heading, Pollarding

by Richard W. Harris

Abstract. Confusion and disagreement exist as to the definition of several commonly used pruning terms. One of the problems has been that the different purposes and types of pruning have not been clearly distinguished. Pruning terms should convey the purpose of a practice and should indicate that a given practice will usually result in a specific plant response or predictable tree form.

In recent years, even within North America, different meanings for the same tree maintenance terms have become apparent. This is particularly true for pruning terms. The term *pollarding*, for example, has often been used synonymously with *topping* and other similar terms. *Heading* and *topping* are frequently used interchangeably. Most arborists consider *drop-crotching* to be a *thinning* cut while others do not. Other terms, such as: *Class I - Fine Pruning*, *Class II - Standard Pruning*, *Maintenance Pruning*, and *Aesthetic Pruning*, give little indication how or for what purpose the pruning is to be done.

Terminology has become a problem in present efforts to develop standards for arboricultural practices and in the creation of the ISA's Arborists' Certification Study Guide (5). This paper attempts to clarify or justify the definitions of certain pruning terms. This will be done by dividing pruning terms into three proposed categories and on the basis that a particular practice usually results in a specific plant response or predictable tree form.

Basic Reasons for Pruning

Some pruning terms are confusing because the same or similar terms have been used for different pruning purposes and/or types of pruning. Reviewing the primary reasons for pruning and understanding how they differ should help to clarify terms. Pruning is basically used to:

- a) Direct growth of limb or tree by the type of pruning cut;
- b) Train a young tree to the desired form (structure); and

- c) Maintain mature tree form, size, health and appearance.

Types of Pruning Cuts

The growth of a limb or tree can be directed by the type and severity of pruning cuts. Two distinctly different types of pruning cuts can be described and the response to each can be predicted with considerable certainty. These two terms and the probable consequences of each are basic for an arborist to understand. These are *thinning* and *heading*.

A **thinning** cut removes a branch at its point of origin or shortens it or the leader (primarily of decurrent [round-headed] trees) to a lateral large enough to assume the terminal role (Fig. 1). The response to thinning is fairly evenly distributed throughout a plant. A thinned plant becomes more open and is more likely to retain its natural form. More light penetrates a plant that has been thinned, and interior branches and foliage will be retained nearer the center of a tree.

Heading, on the other hand, is a) cutting a currently growing or one-year-old shoot back to a bud, or b) cutting a branch or a stem back to a stub or to a lateral branch too small to assume the terminal role (Fig. 2). After a branch of a broad-leaved tree is headed, growth occurs from several buds just below the cut. This growth is vigorous, upright, and dense; unless the pruning is severe, lower buds seldom grow. A plant's natural form is usually lost.

These two terms are valid because each type of cut can be described and the response predicted with reasonable accuracy.

Cutting a leader back to a large branch has been considered by some to be a heading cut. The response, however, is usually the same as if the leader removed were a lateral branch. So, instead, it actually is a thinning cut. On large trees, such a thinning cut is sometimes called *drop crotching* -

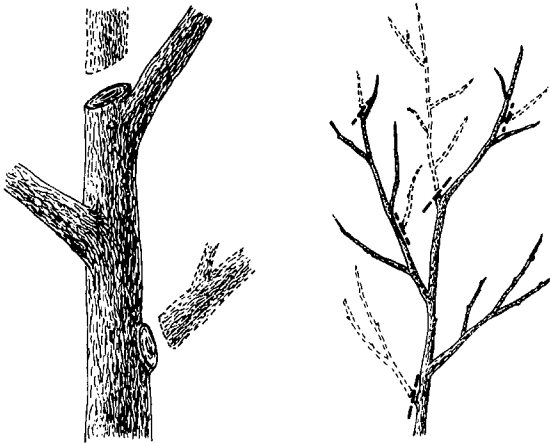


Fig. 1. Thinning is removing a branch at its point of origin or shortening a branch or stem by cutting to a lateral large enough to assume the terminal role.

that is, removing a leader back to the crotch of a branch large enough to assume the terminal role. Thinning a branch or leader to a relatively large lateral is more often used in training young trees than in maintaining mature trees. Thinning a leader to a large branch increases the possibility for decay, particularly in mature trees of low vigor.

Because heading cuts in mature trees often result in what is termed topping (Fig. 4), heading is often considered "not a recommended" pruning practice. Heading cuts, however, can be effectively used to:

- Reduce the growth of an unbranched shoot;
- Force shoots to grow at a specific location and possibly in a given direction on a young stem;
- Maintain clearance of low, temporary branches;
- Maintain pollarded trees;
- Shape terminal flowering plants (crape myrtle);
- Shear hedges; and
- Prune and pick roses.

Heading has a bad reputation because so many mature trees have been severely headed in attempts to control size. This practice has led to the terms: *topping*, *stubbing*, *hat-racking*, *rounding-over*, etc. The term *heading* designates a type of pruning cut which can result in a topped tree. Topping, though the practice is seldom appropriate, should be considered more of a maintenance term (what is to be accomplished) and heading, a pruning-cut term.

Removing live wood by either thinning or

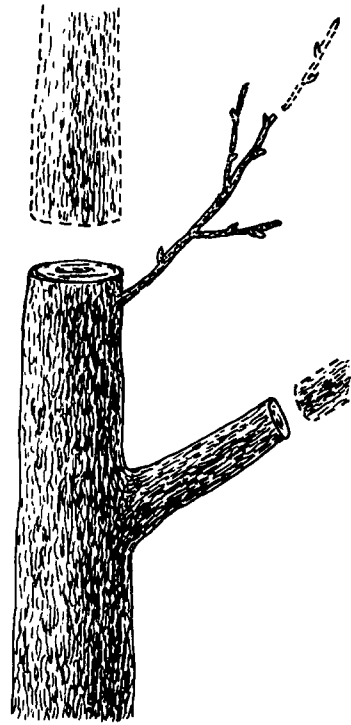


Fig. 2. Heading is pruning to a stub (lower branch), a bud (terminal on a small lateral) or a lateral too small to assume the terminal (trunk) role .

heading invigorates the growth of the remaining branches but reduces the total growth of a branch or tree from which live wood (leaves or potential leaves) has been removed. The more severe the pruning, the more the remaining individual shoots will be invigorated but the less the total growth of the pruned branch or tree will be. The growth of a desired branch that is becoming too large in relation to others can be reduced by thinning laterals from it or, if necessary, heading it.

Types of Training Systems

Young trees can be trained in different ways so that when mature they meet the functional and aesthetic desires of the arborist or tree owner. Some of the better known training systems include: "natural", pollard, espalier, pleach, topiary, and bonsai. Only the first two will be discussed here.

The most common practice — to let a tree grow with little or no pruning — is here called the "natural" system. The natural system takes ad-

vantage of a tree's normal growth habit. If a tree is pruned, it is mainly to shape it for its intended function(s), such as shade, screen, windbreak, specimen, fruit, or aesthetics. The main pruning that may be needed is to thin (remove) unwanted branches, reduce the growth of desired, overly-vigorous branches and direct the growth of desired ones. Unwanted branches are those that may be too low, too close to desired ones, poorly attached, out-growing the leader or other branches, etc. depending on the intended function of the tree. Growth is most effectively directed by thinning an unwanted lateral or the leader to a large lateral.

Thinning cuts are usually preferred unless an unbranched limb needs to be shortened or reduced in growth.

Pollarding is a training system most commonly used on certain vigorous, large growing, deciduous, broad-leaved tree species (Fig. 3). A basic branch structure and shape is developed. Then the previous one- or two-season's growth is headed back to the same desired height at each pruning. After a few prunings, a knob of callus and buds usually develops at the end of each headed branch. A knob is similar to a burl or lignotuber in that it becomes a mass of buds. Cutting back to a well-developed knob annually does not re-open the branch below to the possibility of decay as would occur if the branch were headed below the knob.

Annual removal of the previous year's shoots keeps the roots and tops fairly well in balance so pollarded trees remain healthy and vigorous (7). Once knobs on branch ends are formed, pruning can be done by less-skilled personnel.

Pollarding trees has been done for centuries and for many purposes. In many countries trees are pollarded so the leaves can be used in the winter for animal feed and the wood for heating and cooking. Oak, *Quercus rober*, and beech, *Fagus sylvatica*, trees in the New Forest in southern England were pollarded as early as 1100 AD (1). The practice was stopped in 1689 and many of those trees are still living.

It has been said that because the king of France thought that too many forest trees were being cut for firewood, he decreed that no wood larger than a certain diameter could be cut for fuel. The people began pollarding trees in order to harvest

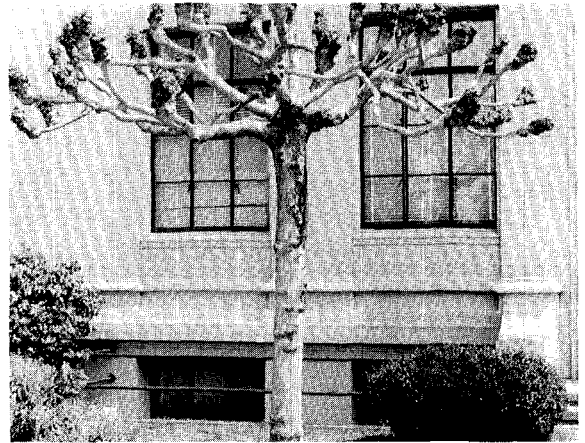


Fig. 3. Pollarding is a training system in which shoots are cut back each year to the same point, where enlarged knobs develop at the branch end. A pollarded London plane, *Platanus x acerifolia*.

pollards smaller than the maximum diameter which the king had decreed.

Trees are routinely pollarded to develop long, straight shoots that can be made into baskets, mats, fences, chair seats and backs, thatched roofs, tool handles, garden stakes, etc. Some tree and shrub species are pollarded to provide juvenile foliage for flower arrangements.

Trees may be pollarded to keep them to a certain size and/or provide a formal landscape effect. Some California homeowners pollard fruitless mulberry trees, *Morus alba*, to provide summer shade and winter sun. Thousands of mulberry street trees in Athens, Greece, are pollarded annually to keep them small and to eliminate fruiting.

Heading large branches in mature trees (a pruning cut) is not pollarding, which is a training system. Of the various terms used to describe heading branches in mature trees, the following have been used: *topping*, *rounding-over*, *hat-racking* or *dehorning* (Fig. 4). These describe a maintenance practice rather than a training system. This practice is primarily employed in attempts to control the size of trees that have grown too large.

Stubbing and *lopping* might be other terms which denote heading type of pruning cuts, not a training system.

Types of Maintenance Pruning

After a tree has been trained to a particular system, further pruning would be considered maintenance. Probably as many as ninety-nine percent of mature landscape and urban forestry trees would be considered to have a natural form. Unfortunately, too many have not been adequately trained to ensure a strong structure and shape to meet their particular functional purpose(s). Further pruning would be to maintain the tree's form, size, health and appearance. Trees trained to specialized systems, such as pollards, would be pruned to maintain the system, as well as their health and desired size.

Although the types of maintenance pruning described below have been done for centuries, the terms for the various practices as published by the British Standards Institution in 1966 (2) seem to most clearly describe the more common practices. Most, if not all, of its terms have been adopted by the International Society of Arboriculture (3), the Western Chapter of the ISA (6), the Arborists' Certification Study Guide (5), Harris (4), and others. These will be listed with a brief description for each.

Crown Cleaning is the removal of dead, dying, diseased, crowded, weakly attached, low-vigor branches, and watersprouts from a tree's crown. *Dead-wooding* is a *crown-cleaning* practice and commonly includes the removal of dead, dying and low-vigor branches.

Crown-thinning includes crown cleaning and the selective thinning of branches to increase light penetration and air movement through the crown.

Crown Raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, vistas, etc.

Crown Reduction (Crown Shaping) reduces the height and/or spread of a tree, because all too often, it was a poor selection for the site or its landscape use has changed.

Crown Restoration is more than a maintenance operation. It is the improvement of the structure, form and appearance of trees whose branches have been severely headed, vandalized, or storm damaged.



Fig. 4. The London plane in the foreground was headed shortly before being photographed; the tree to its left was headed the winter before. Note the vigorous shoots stimulated below the heading cuts.

Utility Pruning involves some or all of the above types of maintenance pruning in order to ensure safe and continuous utility service.

Almost all maintenance pruning of natural formed trees is best done by making thinning type pruning cuts.

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Résumé. Une confusion et un désaccord existent autour de la définition de plusieurs termes d'élagage communément employés. L'un des problèmes a été autour des différents buts et types d'élagage qui n'ont pas été clairement distingués. Les termes d'élagage devraient communiquer le but d'une pratique et une pratique donnée devrait normalement résulter en une réponse spécifique de la plante ou une forme d'arbre prévisible.

Zusammenfassung. Die Definition von verschiedenen gewöhnlich benutzten Baumschnittfachausdrücken stößt auf Verwirrung und Ablehnung. Eins der Probleme ist, daß die verschiedenen Absichten und Arten von Baumschnitt nicht klar voneinander unterschieden sind. Fachausdrücke für Baumschnitt sollten die Zielsetzung einer Schnittpraxis ausdrücken und daß eine vorgegebene Praxis auch in einer speziellen Reaktion der Pflanze oder einer vorherbestimmten Baumform resultiert.