

The City called this round over job a crime, but the perpetrator pleaded innocent: "We pruned these Quercus just like we do our Buxus, and they come back just fine. There's nothing wrong with this pruning job."

# MIKE O'RYZIE AND THE CANOPY OVER THE CARS

**This case began with a bad decision on tree care three years ago and evolved with the involvement of lawyers, scientists, consultants and contractors. It won't end anytime soon. It takes place in one city in the south-eastern USA, so the legal context may be unfamiliar to arborists who work in other jurisdictions. The species and climate may also be different. But the biology, politics, and arboriculture relate to urban tree care everywhere, so I hope readers find this case relevant to their work or at least an entertaining diversion from their daily grind.**

## Summer 2005

The trees at the car dealership were becoming big so the owner asked the landscaping crew to cut them back. They rented an aerial lift and went to work. When the leaves were on, no one noticed much difference. After leaf drop however, the stubs stuck out like sore thumbs.

## Winter 2005-6

Driving into town on US Highway #1 one day, the sight on my right hit me right in the gut. The canopy of willow oaks, *Quercus phellos*, over a large car dealership had been hacked, also known as topped, hatracked, dehorned, lopped. Every tree was 'rounded over', leaving mushroom-shaped monstrosities where crowns once gracefully spread. My focus went back to the traffic but that grisly image was burned into my brain. A week later, the pictures were on page one of the local newspaper. The headline screamed, "Car dealer fined \$57,000 for over-pruning 44 trees." I picked up the telephone and dialled the dealer's business office.

The manager's voice was clearly strained as he told me, "no, they had not retained an arborist to help them respond to the fine." I offered to send my CV and a proposal, so he gave me his email address. I replied with a proposal to review the city's report, inspect the trees, and list management options to restore the trees to a healthy condition. The client said the trees looked fine to them and wondered why they needed any work at all. Their contractor had always pruned their shrubs, so they pruned the *Quercus* sp. in the same manner, because they were also woody plants.

The attorney asked me if they were going to die and what all the fuss was about. I agreed to answer their questions in a preliminary report, so I started by consulting the rule books and the trees.

## OBSERVATIONS

The city's landscape ordinance calls for a permit to prune trees that are required by ordinance. This pruning must be done, or at least supervised, by an ISA Certified Arborist and done according to the American National Standards Institute (ANSI) A300 (similar to AS 4373) Pruning Standards. The ordinance also states that plants should be allowed to grow to their 'natural form'.

On site I could see the roots were constrained by the curbing, pavement surrounding the small islands, and lack of mulch. The central stems in the top of the trees, the 'main leaders', had been cut back to a pre-determined crown limit, the height of the light poles. This is by definition 'topping' and not compliant with the ANSI standards or the International Society of Arboriculture (ISA) Best Management Practices (BMP) on tree pruning. The largest wounds are about ten centimetres in diameter. The side branches were also cut back, less severely. Crown loss was estimated to range from 30 to 50 per cent. After reviewing all this information, the client's lawyer asked again; why the rules were that way, what was wrong with the way the trees were pruned, and whether they would die. My response was submitted and negotiations for a settlement with the city's lawyers began.





**“After three years of regrowth, these trees are looking healthy.” the contractor complained. “I still don’t see why they have to be pruned again.”**

## What will the settlement spell out?

Our response: “The trees will die, but I do not know if the pruning was the obvious cause, contributory, or irrelevant. A lot depends on what happens to the trees in the future. Without any care, the prognosis is not good:

1. The sun will scald the newly exposed bark. Spores of decay fungus will colonise the wounds. The horizontal surfaces on the wounds at the top will crack from exposure to sunlight, increasing the spread of decay. The tree will grow scar (callus) tissue over the wounds, as it lays down interior chemical barriers to wall off (compartmentalise) the decay on the inside. These processes require a lot of resources, making the tree more susceptible to attack by insects and other pests. The amount of paved surface over the roots limits their function so the trees will have difficulty making the compounds needed for defence.
2. Many sprouts will arise from the pruning wounds. They will grow vigorously to replace the branches that were removed. Because they are so crowded, these sprouts will tend to form narrow angles of attachment with included bark, making them prone to splitting apart later on. They will cast dense shade on the interior of the plant, causing inner branches to die. They will reduce the flow of air and light, which creates a better habitat for decay and pests.
3. Restoration pruning, following the standards and BMP’s, can allow all the trees to regain their health and form over time. We have managed hundreds of mature trees of the same species, especially after a storm in 2002 which broke a lot of branches off. Without care the new growth will be destabilised by decay, defective attachments and prone to further breakage later on. I recommend reducing the stubs back to good laterals properly spaced, with the cuts sloping away from the sun where possible, along with soil improvement.

### 2006-2008

The lawyers negotiated the case for more than two years as the trees decayed and sprouted. I was advised of hearings before the Board of Adjustment now and then, but never called to testify. Finally a settlement was signed which mandated restoration pruning. As the arborist contractors, we established the criteria for selecting locations for restoration cuts:

#### 1. Foundation

Sound wood is preferred, some decay tolerable if it is being walled off on the inside by black lines of wood preservative and on the outside by scar (callus) tissue.

#### 2. Vitality

Colour, brightness, quality of buds, and growth rate show vitality.





ISA Certified Arborist Brock Holtzclaw performs restoration pruning. He removes badly decayed and defective branches, and reduces (subordinates) poorly attached and crowded branches, to restore structural integrity in a more natural form.

### 3. Size of wound

The smaller it is, the sooner it will close and the less it will decay.

### 4. Thickness of 'collar' at branch defence zone

The more incipient callus tissue there is, the sooner it will close.

### 5. Angle of attachment

A large lateral growing at a 90 degree angle may develop a 'hollow elbow' and not be very stable.

**6. Angle of cut** - sloping cuts capture less spores and shaded cuts are less likely to crack and decay.

### 7. Space

To grow into and mature.

### 8. Size

One-third the diameter of the parent branch is a common guideline, sometimes exaggerated into 'The One-Third Rule', but size does not always matter more than the other criteria.

Common guidelines are to remove no more than 20 or 30 per cent of the foliage at a time from a mature tree. Removing all codominant and crowded sprouts would be excessive,

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creating more sunscald and instability. So many sprouts were instead reduced or 'subordinated' into side branches by cutting them back to small laterals that had room to grow. The root zone was mulched with shredded hardwood that insulated the roots while staying in place. The city inspector was satisfied with the work and the dealer was spared the heavy financial penalty originally proposed.

**2009 and beyond**

The pattern of dieback from the internodal cuts made in 2006 was extremely instructive. A few sprouts came off the stubs at odd locations, apparently growing from adventitious buds that were newly formed in response to the round-over pruning, but these did not thrive. The stable re-growth occurred further back in clusters from dormant buds that lay waiting. These were originally accessory buds, formed when the terminal bud was set at the same location on the branch when it was just a one-year old twig. These dormant buds are carried out in the cambium as the branch expands, still connected to the core by pith trails. These dormant buds are held fast in the core of the tree as they are nourished by the vascular stream.

Decay spread downward through these stubs until it met the branch protection zone at the nodes. There, the trees were able to draw the chemical lines with phenols and other natural wood



The stubs on the right and on the left have died back because the cuts were internodal. The stub in the centre has re-sprouted and compartmentalized better because the cut was made at a node, where a terminal bud was set at the end of a growing season. But there was too much decay, so it had to be reduced down to the next good lateral branch.

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**Dark lines are the trees' natural wood preservative, compartmentalizing decay. This response occurs primarily at nodes, where a "branch protection zone" was formed as the terminal bud was set. Accessory buds lay dormant in the cambium, ready to release when needed.**

preservatives and the decay was compartmentalised. There at the nodes, meristematic tissue went to work, cells divided and elongated. Buttresses were formed at the base of the new growth, strengthening it against the possibility of future breakage. Had the original cuts been made to these nodes, decay would be better compartmentalised. That may be why ANSI's definition of 'topping' was changed in 2008 to include making 'internodal' cuts. This prohibition applies to most shrubs, as well as trees. As Dr. Alex Shigo said, "Proper reduction cuts are made at nodes, or crotches." But as is often the case, arborists come in to clean up someone else's mess, following Best Management Practices by the Best Means Possible.

Built-in boundaries at the nodes will work to protect the tree and the canopy over the cars will spread again, reasonably safe and healthy. We proposed follow-up pruning in three years but there is no guarantee that enough cars will be sold in that time to make this happen. Perhaps the trees will be left to make it on their own from here on, which may not be all bad. After all, they have been growing for far longer than humans have. **AA**

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