

# Tree Surgery and the Concrete Cure

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It goes without saying that, historically, concrete has long been a building and repair material of choice. But what about for surgery? Well, “tree surgery,” to be specific. Concrete had been somewhat popular in the practice of tree surgery in the earlier part of the 20th century. At the time, a number of arboreal experts made claims that repairing a badly decayed tree with concrete could extend its life significantly. Consider the alternative, as a sensitive, cement industry sage wrote at the beginning of the last century:

“Picture to yourself, a fine old shade tree into which insects have bored causing decay. Larger and larger becomes the hole, and unless prompt measures be taken, the weakened condition of the trunk will permit the first heavy windstorm to strike the tree to earth—a fallen monarch that cannot be replaced in less than a lifetime.”<sup>1</sup>

## BEGINNING THE CURE

Information published in the 1910s pointed out that most candidate trees for surgery already have visible holes. Once a tree was chosen for a cure with concrete, the first step required the removal of every last bit of decay (Fig. 1). Tools suggested for the purpose at the time were a hand axe, mallet, and chisel. The “surgeon” wielding these tools was reminded how important it was to remove all decayed matter, and “...to use the same thoroughness which a dentist uses when cleaning a tooth for filling. If all the decay is not removed, it will continue as if the filling had not been placed.”<sup>2</sup>

Once the decay had been removed, the surgeon disinfected the tree's cavity. For this purpose, cleansing materials recommended at the time were creosote or crude petroleum oil. Over the prepared surfaces, the surgeon then applied a thick coat of heated coal tar or asphalt. This step, would help eliminate the formation of voids between the wood surface and the inserted concrete after completion of the surgery. One reference reassured its readers that procedures similar to the ones noted above had been used for several years by a Mr. G. E. Stone, of the Massachusetts Agricultural College.<sup>3</sup>

## FILLING THE CAVITY

For a small cavity, other reference material states that nails should be driven into the wood surrounding the cavity to “better hold the concrete.”<sup>2</sup> If the cavity was quite large, however, woven wire mesh or small steel rodding could be used.

In early concrete publications, suggested proportions for mixtures of protective concrete filler appeared. At the time, recommended proportions by volume were 1:3 cement to sand; or 1:2:4 cement, sand, screened gravel or stone, with a suggested mixture consistency similar to jelly. This concrete was then packed into the cavity (Fig. 2) and its exposed surface troweled smooth (Fig. 3).

Forms were used only when necessary to hold the inserted concrete in place. If needed, and after thorough greasing, forms fashioned with wood, zinc, or tin, were



(Left) Fig. 1: Tree “surgeon” removes decay from a parasite-gutted tree using hand axe, mallet, and chisel. All decay must be removed (Center) Fig. 2: A tree surgeon fills a cleansed cavity in another tree with concrete (Right) Fig 3: The patient is patched and remedied

tacked to the ailing tree. It was cautioned, however, that a portal hole had to be left in the forms so that concrete could be placed through and into the cavity. It was recommended that the forms be removed as soon as possible.

Post-surgical cosmetics come into play as well, because the concrete surface clashed in color and texture with the bark of the tree. A reference book recommended the concrete be painted the color of the bark.<sup>1</sup> Other experts called for trimming the edges of the bark once or twice a year. In some cases, however, the bark would grow over the exposed concrete without leaving a scar.<sup>2</sup>

There were, at the time, however, naysayers who felt that filling a tree's decayed cavity with concrete was not a good idea.<sup>3</sup> They noted that concrete, upon setting, is too rigid a material, and, as such, would deter normal movement within the living tree. (Today, using concrete in tree surgery is, in fact, no longer considered the best approach. There are now other, more flexible and more suitable materials available for the process.)

Early on there were humorous—and some not so humorous—stories about attempts to cut down concreted trees. Some voices from history comment on giving ailing trees a concrete cure:

“Thanks to concrete it is now possible to save trees that appear to be almost beyond help...”<sup>1</sup> and,

“Nothing adds so much to the home-like appearance of a place as good shade. But trees are like teeth—they need attention...By means of concrete, many famous old trees, seemingly about gone, are now saved.”<sup>5</sup>

## THE LIBERTY TREE

A famous tree once saved with concrete in 1907 was “The Liberty Tree,” in Annapolis, MD. This majestic Tulip Poplar (Fig. 4) eventually lived an estimated 400 years—100 to 150 years beyond the normal life span for the species. Unfortunately, damage from high wind forces exerted during recent Hurricane Floyd harmed the old tree too severely, requiring its removal in 1999. Taking out the concrete-filled arbor proved an arduous task—requiring a laborious day and a half. It was a sad ending to a natural monument that had withstood many assaults during its long life, including lightning strikes, fire set in one its hollows, and even a blast from 2 lb (0.9 kg) of gunpowder placed within a hollow in the old tree.

The Liberty Tree earned its name for events taking place under or near its once capacious, leafy awning



Fig. 4: The Liberty Tree of Annapolis, MD. Tree surgery and concrete filler permitted it to live another 90 years before a hurricane finally did it in

during the American Revolution in the 18th century. At the time, these events included meetings at which orators fomented revolution against the British Crown. One such speechmaker was Maryland's Samuel Chase, a founding father of the United States of America, and a signer of the Declaration of Independence.

Over the many subsequent decades, the tree and its environs hosted picnickers, religious sermonizers, sporting events, and even ceremonies for the graduating students of St. John's College, on the campus of which the Liberty Tree had resided. In the early part of the 20th century, however, the extent of the large cavity (due to parasites that had excavated into the tree) became quite serious. The damage had reached 56 ft (17 m) up the interior of the tree. Remedial surgery took place in 1907, when a landscape architect, forester, and tree surgeon, John T. Withers, cleaned out the tree's enormous void. He followed with antiseptic treatment and then filled the cavity with concrete, using sections of iron and steel for reinforcement. The Liberty Tree required 55 tons (50 tonnes) of concrete—reportedly the largest case of tree surgery ever performed.

Although the famous old tree did succumb finally, it has experienced a sort of metamorphosis. After being torn down, its sturdy wood was sold to a guitar manufacturer, who converted it to 400 "Liberty Guitars."

## ANOTHER FAMOUS OLD TREE

A story is currently being told of another "famous old tree."<sup>6</sup> In 1970, an arboreal rescue team placed concrete within this tree "in the hopes that the additional fortification would preserve the tree." Unfortunately, the patient didn't survive long, and keen deliberations followed its demise on how to remove its firmly implanted timber carcass.

No one considered the use of a chain saw "to remove the towering hunk," since there was lack of confidence

as to just where in the tree the concrete might be. Still, the tree removal team felt it could not leave the dead old tree in place because there was concern that a high wind would eventually blow it down, endangering anyone nearby. An attempt was thus made to pull it down with a tractor and rope. This effort proved fruitless, and a conclusion was quickly reached that no wind on this planet was going to topple *this* tree.

Other current options being considered are: concrete drilling, concrete sawing, and even dynamiting. Complicating matters a bit, the moribund tree is now home to a colony of lively bees. Someone then suggested leaving the old concrete-filled wood carcass as a totem pole. Not a bad idea if you are a romantic and think about it—the totem, a standing testament memorializing the once and forever sturdy old tree with its stout heart of concrete.

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Selected for reader interest by the editors.



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