

No Place for Old Trees—PART IIb

By Cass Turnbull

The New Green Infrastructure— Friend or Foe of the Urban Forest?

Green Walls, Green Facades, and Permeable Pavement

Like trees, green spaces, and the critters that call them home even here in the big city. That must be why I like the term *Urban Forest*, which implies so much more than the word we used to use—*landscaping*. I am amazed by the good research that continues to quantify the benefits of the Urban Forest—there's something new every year. We've gone from recognizing the social benefits of planting trees, to valuing the green infrastructure and ecosystem services of the Urban Forest, to examining the health benefits, and back again to the discovery of more social benefits. You probably already know many of them.

Like the Wizard of Oz, the Urban Forest seems to bestow whatever is needed upon whoever is in need. If your city suffers from heat waves, the Urban Forest will cool you; if the poor suffer from violent crime, the green will lessen it. The ailing senior will have fewer health problems, the shopper will linger longer, and even the kids learn will pay closer attention and retain more of their schooling.

Trees are not without their drawbacks, though. They buckle sidewalks, their leaves clog gutters and drains, they can cause power outages, and one might even fall on your house. But the main problem with trees is that, in order to provide maximum benefits, they require land—specifically, unbuilt land. Vacant land is growing increasingly rare and expensive in Seattle. It is land that many people would rather see used for housing and commerce. Because of that fact, our city's plans, codes, and funds are being diverted from parks and tree-oriented initiatives toward what I call the new Green Infrastructures, or GI. In the last issue of the newsletter, I took a look at the unknowns and potential drawbacks of two of them—bioswales and green roofs.

I can't help but react to the mad rush to incorporate the new GI into our city without a full accounting of costs, the likelihood that they will be sufficient to our environmental needs, their maintenance requirements, and their possible failure points. There is no doubt that GIs should be incorporated into our city as fast as possible, perhaps even be mandated. *But they should be used as an addition to, not a replacement for, the Urban Forest.*

Green Walls

Take green walls, for example. I know of no one, including myself who doesn't think they are just the coolest looking things ever. They represent a phenomenon—when viewed outside their normal context, or when doing something uncharacteristic of their type, natural things are regarded more highly and

can become a source of interest and pleasure. A few examples are flowers in a vase inside your house, topiary, dancing bears, and aquariums.

What are green walls? Usually, green walls are either freestanding vertical walls or are attached to the structural walls of buildings either indoors or outside. They are planted several different ways with different media—in mats, in bags, in sheets, or in blocks. They have irrigation systems. The plants or sections of plants are replaced as needed, or sometimes routinely.

Green walls outside of buildings act as insulation to keep the interior cooler, thus lowering energy demands for air conditioning. They will cool the air outside and refresh it with transpiration and the release of oxygen. Never underestimate the



Green walls can be drier on the top and wetter on the bottom

good that plant transpiration does on a hot day in the city. Green walls are installed inside buildings to clean the air, though most building codes require a traditional air circulation and filtration systems anyway, so their work may be redundant. But they are, as already mentioned, really cool.

Trees in a park setting or a back yard can take fairly long periods of abandonment when the irrigation is turned off. But what about the plants on the walls on the outside of buildings? How long, I wonder, can they make it on their own if there is a prolonged drought or if the building changes hands and they are left without care in the interim?

I just saw a beautiful green wall in the lobby of an office building in South Lake Union. It looked like artwork, a giant living quilt of plants. I had to walk over to take a closer look and to do plant ID, a compulsion of all gardeners. We can't help ourselves. I wondered about the white carpet beneath it. Being a gardener, I know what goes on with living things. I was curious. Where does the debris go? And the water? I noticed that the part of the panel nearest the lobby window would catch some sun, but what about the plants on the other end?

I am certain that the failure rate for green walls must be big. Foot by square foot, can there be a higher installation and maintenance cost for green things? I like green walls, but I'm glad I don't have to maintain one. The gardener would have to be up on ladders all the time grooming plants, replacing plants, misting the top of the wall every day, carry around the shop-vac, and have a big load of clean carpet runners available. At least weed seeds wouldn't be a worry—or would they?

Because of the well-known response of water to gravity, the tops of the walls tend to get under watered and the bottoms get soggy. You know what that means—irrigation guys need to be called in to fix and adjust the system. They are expensive and always too busy, well, at least in the summer.

Trust me, you do not want to be under a green wall when the earthquake hits.

Green Facades

Green facades are different from green walls. They are made of vines growing up the outsides of buildings. They have a better chance of survival because, unlike the plants in green walls, they are planted in earth, which is almost universally the preferred location for plant roots. Like green walls, they are used to cool the air. The hot, reflective surfaces of buildings create the Urban Heat Island Effect that makes the temperature several degrees hotter than surrounding areas. That's a big problem for walkers and bikers in the summer. Plus the vines insulate the building itself, reducing the need for costly air-conditioning. Vines can provide visual relief and sometimes delight us with their seasonal shows of flowers or color. According to famous architect Frank Lloyd Wright: "*The physician can bury his mistakes, but the architect can only advise his client to plant vines.*"

If you have ever tended vines for any length of time you know that maintenance can be problematic, especially when

compared to maintaining a green space by mowing grass and raking leaves, both being chores well understood by laymen.

Most vines are okay until they reach the windows, roofs, or balconies. Then the battle begins to keep them away lest they seal people in their rooms, blotting out the sunlight, or start to tear up utilities like the electrical lines that go to the power poles. Some vines, like wisteria, can actually do structural damage. After many years vines can get very heavy, with a top layer of fresh new growth above what my friend Kate calls the *wisteria mattress*—tangled layers of dead stems, dead leaves, and crud, which are the universal result of an unmanaged vine. To make matters worse, it is often a habitat for certain unwanted critters, the kind one downtown gardener I know calls *Pike Place squirrels*.

Once established, vines grow really fast. After several years of futile attempts to nibble the vines back from windows, signs, and balconies, the maintenance crew will eventually resort to the *cut it all down to the ground system* of vine management. This method is a perfectly acceptable way to manage many of the vines in home gardens, but on a tall commercial building it can present unique challenges. Once one of these vines is cut at or near ground level, the top portion will turn brown, but still be firmly attached to a 60-foot expanse of wall, which looks awful! Will someone climb up there to hack and pick it off? I suppose it will eventually fall off on its own. I wait and watch with anticipation.

The Other Stuff

Rain barrels are not big enough to water much of a garden in summer. They are not very attractive either. There's money to be made for the first person to invent tasteful looking rain barrels or even rain-barrel cozies.

Cisterns are what we need, but they are hard to retrofit for homes and require that debris be kept from clogging them. We're back to no trees again. On the other hand, capturing rain from the tops of tall buildings and storing it in large below-ground vaults might work and make a significant difference.

Permeable pavement has its own maintenance requirements. It needs to be scrubbed down periodically to keep it from getting slippery and ceasing to let water through. Sometimes store owners can't even keep leaves raked from in front of their buildings. Will they be up for scrubbing—and be able to afford it? I guess with the possibility of a slip-and-fall lawsuit, they will find a way.

Despite being a curmudgeon, I recognize there is actually a good chance we will learn how to successfully incorporate new green infrastructures—bioswales, green walls, green facades, cisterns, permeable pavements, and others—into our city and that they will do the good we need them to do. However, we must not abandon our remaining greenspaces and Urban Forest efforts and protections. After all, they have a great track record here at home. We know their benefits and costs, failure points, and maintenance needs. Besides, no kid will build a snowman in a bioswale, climb a tree in a rooftop garden, play tag in a rain garden, or catch butterflies on permeable pavement. ▲