

Siewert's Theorems of Urban Forestry

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Theorem: An idea that is demonstrably true or is assumed to be so.

Siewert's First Theorem: Trees are not native to the urban environment. **Implications:** The environmental factors that influence the growth, development and function of a tree, principally light and the competition for light, are not present in the typical environment in which we plant urban trees.

In the urban environment, light is replaced as the limiting factor for tree growth and development by factors of soil and root growth. Soil compaction, grass competition, poor soil nutrition, lack of organic matter and soil biotic activity, and the basic reduction of root volume by streets and sidewalks are factors that limit the growth and development of trees in the urban environment. Yet, the trees we plant in urban settings have had millions of years of evolution to allow them to compete successfully in a light-limiting environment. Not a root-limiting one.

Hence: These trees are “off site” or “non-native” and are predisposed to stress and destined to fail without the artificial replacement of the factors they have been designed to grow in. That is, routine pruning to replace the natural light competition and shedding of branches, and mulching to replace the natural annual leaf fall.

Siewert's Second Theorem: As the roots go, so goes the top. **Implications:** If the root system of a tree is kept healthy and functioning, the tree can be manipulated, pruned, or trained and the tree will continue to function, within reason.

Furthermore, if the root system is kept healthy and functioning the tree will be less susceptible, and even more resistant, to stress and attacks.

Important Note:

This does not apply to the top of the tree! Keeping the top of the tree, trunk branches or leaves does not necessarily ensure the entire tree will be healthy.

Hence: Maintenance of tree health begins with maintenance of the root system.

Siewert's Third Theorem: Transplanting is not a natural process.

“If God meant trees to be moved, he would have given them wheels, not roots.” - Anonymous **Implications:** Tree seedlings do not go through a two-stage development process in which, for the first five years of life they grow short, fibrous roots, then after a violent geotropic disorientation and reorientation, begin to expand and seek stable growing conditions. If they did, transplanting would be simple.

Hence: Transplanting is major surgery and, as such, needs to be done correctly by qualified people with all of the small details looked after. Trees also need extensive postoperative care.

Siewert's Fourth Theorem: Relative time for trees is significantly different – slower – than relative time for humans.

Implications: To the casual observer, trees do not appear to move. They seem unaffected by change or time. Only after years can the average person see proof of the movement of trees, as evidenced by their growth. This difference in relative time is even more significant when catastrophic injury occurs. If a mammal suffers significant damage to its heart or lungs the results are immediate. The animal falls over and without treatment dies within minutes. If a tree suffers the same level of damage- such as girdling with a chainsaw- the first signs of the damage will take days or even weeks to show up, and complete death may take several years.

Hence: To the casual observer, relating the cause of tree death to the “smoking gun” is nearly impossible without assistance. Developers kill trees through ignorance and are long gone when the tree dies. The homeowner weed-whips a young tree to death and can't understand why it died.

Siewert's Fifth Theorem: Arboriculture is counter-intuitive.

Implications: Some arboricultural treatments, which appear to stimulate healthy tree growth, are in fact damaging to the plant.

Topping creates rapid, lush growth of the tree. Topping also causes giant wounds, extensive decay as well as stressing the tree. High nitrogen fertilizer creates rapid, lush, green growth of the tree.

Excessive fertilizing can also make the tree more susceptible to herbivores. Fertilizing stressed trees increases mortality. Pruning paint, flush cutting, cavity filling and extensive thinning were all thought to be proper practices at one time until research demonstrated otherwise. Tree research is very difficult because of how we measure the success of a treatment. What is a healthy tree?

Hence: Education and research are as important as practical experience

Siewert's Proverb: Experience is not the repetition of an action.

Experience is remembering what was done and what happened as a result of that action and the ability to apply that knowledge to other situations. If you do not learn from what you have done then you do not have 25 years experience, you have one day's experience that you have repeated for 25 years.

Siewert's Last Theorem: The pest that causes the most damage to urban trees is humans.

Implications: The average person residing in a community is extraordinarily ignorant of the function, growth habit, or needs of the tree in the urban environment. Between this theorem and Siewert's first theorem, we in the arboriculture industry get lots of calls about dead trees. We also have lots of stories about “stupid human tricks”.

Hence: Tree diagnosis often involves informing people of their arboricultural shortcomings and explaining the foolishness of their “treatments”, and does it all so the client says thank you for this information. Often the arborist can find this experience less than fulfilling. If the arborist uses too much enthusiasm while demonstrating the homeowner's shortfalls, the homeowner may not complete the transaction with the appropriate gratitude and the arborists find themselves “invited in and asked to leave.”