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Alexandra Garden Trees

I am a university plant physiologist who has expert knowledge of water and solute movement in plants, an interest in trees, and have also worked in a soil department for some years dealing with problems of movement of water and growth in clay soils. I wish to refute the argument, put forward in the Report to the Committee by the Chief Arboricultural Officer Mrs. Diana Oviatt-Ham of the 17th September and in a letter to residents of 3rd Sept., that the *existence* of London Plane trees opposite to 13 Holland Street is the prime causative agent in the subsidence experienced by this property. It is based on poor science and faulty logic. It is also very painful to see tree officers accepting this argument so readily and apparently uncritically. As the whole rationale for felling depends upon this argument, if it fails then the basis of the proposals also collapses. In view of the value and age of these trees it will be tragic if a decision is made on such poor data and reasoning. I would therefore ask you to postpone any decision on this proposal before considering the following arguments. I have tried to make them straightforward and non-technical.

1. The London plane trees have been there 105 years. After 60 years they were mature and for the last 40-45 years they have reached their mature height and girth with an extensive root spread. The fact that roots have been identified as London plane in the substratum means little – they must be everywhere in a tree of that age, within a distance of a tree height from the bole. They could not have suddenly reached the house in the last few years and caused drying. In fact, drying is not localized to the tips of roots but can spread laterally throughout the whole root zone due to the diffusion of water in clay to any point where the clay has dried most. It is virtually impossible, except in certain special cases and after intensive tests, to say where the gradients of shrinkage are directed from. It cannot be stressed too much that clayey soil water status is a balance of rainfall, lateral movement, transpiration by plants and evaporation from the surface. If the planes had been directly responsible for the problem it would have been apparent a long time ago. Why is it only recently that they might have caused a problem ?

2. This points to an important distinction that must be made in the perturbation of systems. If a tree is suddenly planted near a house and grows vigorously and the house suffers subsidence, then it is not unreasonable to blame the tree for changing things. But in a system where mature trees have co-habited with houses for 100 years and then suddenly subsidence occurs over a short time, it is evident by elementary logic that another agent is involved. In this case it is probably climate change affecting the soil. The real

causative agent is the drying of the clay substratum due to less rainfall over past years which keeps the clay ‘topped up’.

3. It is important to realize that when a tree (like all plants) is subject to a falling water potential in the root zone it responds by cutting transpiration: this is a complex mechanism in which the pores on the leaves start to close and the tree conserves internal water, which also inhibits growth and carbon fixation.

Therefore, paradoxically, the trees are also stressed and conduct *less* water than when water is plentiful - so they must be chopped down for conserving water !

4. The argument may be illustrated by a reasonable analogy. Imagine a region in Africa (say) where the people and animals rely on a water hole. In times of low rainfall it becomes harder to abstract water but people see the animals drinking the water. Would it be reasonable to say that *they* are the problem and that they should be shot ? The causative agent is the lack of rain not the animals. They are merely parallel agents which are also stressed by the drought. The claim that the old planes are suddenly the problem and they must be cut down is really no better than that.

5. If tall-growing replacements are to be planted as suggested – but further back – the problem, if it really is due to trees, will recur after they have reached reasonable maturity. How far back is back ? If they are only a short distance then it is pointless, but if far back, the park will look ridiculous. If the trees are to blame, as seems to be the view of the Officers, then this is just a displacement of the problem in time, not a solution of it. Let us be logically consistent, please.

6. The insurers have claimed, and this is apparently backed by the Arboricultural Officer, that if only one tree is felled, the others must be cut back by 70-90% which will damage them so much that they will fall prey to disease. I dispute this estimate *entirely*; indeed I doubt if it is derived from any proper model of the tree-soil system whatsoever. I am familiar with modelling biological transport problems and this would be a horrendously difficult and probably meaningless calculation – and based on what data ? It must be regarded as a number pulled out of a hat (or the back of an envelope) and does indeed represent the poor quality of advice accepted by the Officers concerned. This is no proper way to manage valuable trees.

7. Should we not ask the proposers and the Council the following question. In this time of Climate Change (in this case a succession of dryer years) should the Council really be responding by cutting down mature healthy trees ? Is this how the Council would like to be seen to respond from now on ? If this is ‘CC Mitigation’, then it is mitigation for the insurance companies but not for the people of Cambridge or future generations.