We all know that forests are valuable, but it seems that as a profession we are still struggling to quantify the true magnitude of this value and present convincing figures to our fellow citizens. The 2010 NZIF conference last June set out to explore the true value of forests with a particular desire to address the commercial, environmental, cultural and community aspects of this value. Throughout the conference and the associated workshops various metrics and tools were introduced that attempted to capture and quantify parts of this picture, and pretty much each of these presentations concluded that there was much more to forest value than “just” the timber or chipwood tonnage. For example, James Turner and his colleagues concluded that the estimated economic gain to the region from mountain biking in the Whakarewarewa forests was “...five times the annual revenue from timber production in the forest...”

Part of the reason that forests do not get counted as valuable as we know they really are may be due to the current metrics and tools used for valuation. Several of the presentations in the conference (Bruce Manley, Martyn Craven and others) explored these issues and looked specifically at how the separation of “the land” from “the trees”, and how “land rent” is incorporated into calculations will significantly impact on the final value estimates. Similarly, Andre Neumann pointed out that the ways roads are treated (as infrastructure to improve harvesting/access or as a cost to develop/maintain) and associated with either the “land” or the “trees” will have an impact on the valuation of a forest. Rosa Palma on behalf of her colleagues concluded that the value of the forest for its erosion and water quality/quantity roles was dependent on the demographics of the stakeholders (gender, education and family size), while Richard Yao found that the “biodiversity value” of forests may be measured “in kind” rather than in “cash”.

Bill Liley threw us a curved ball when he concluded that the value stream from 2nd (and subsequent) rotations should not be included in a forest valuation largely because it made the valuation look poorer - and this is despite us “knowing” that sustainable yields and multiple rotations are a “good thing” and thus inherently valuable! A similar long term view was expressed during the session on forest value from a Maori viewpoint where it was concluded that true valuation must be made in the context of inter-generational and hence multi-rotational considerations - there is value in “planning for the next generation to flourish”. I thought Bruce Manley also tossed us a curve ball when he concluded that valuers need two separate discount rates when valuing a forest: a relatively high one for “timber products” where the revenue occurs in the future and a low one for “carbon products” where the revenue occurs in the future and a low one for “carbon products” where only the costs occur in the future!

Other presenters looked at ways of improving the value of the forest through the development and marketing of co-production goods and “new” products, e.g. Ginseng producing $5-10,000 ha⁻¹ yr⁻¹ (Graeme Parmenter); “wood...
waste” powering our industries and homes (Peter Hall, Elseph MacRae) and of course carbon (Wayne King, Bruce Manley, Graham West, Barry Poole).

If you put all these products and services together, you can easily conclude that a well located forest is easily worth ten times more than the timber products it contains. However this conclusion may easily lead to a “perverse outcome”, and unfortunately the national and international history of forest management is littered with such outcomes. A perverse outcome is one which is the opposite or antithesis of the outcome desired flows from an action. An example of such a perverse outcome that I have been involved with is the introduction of “tree preservation” legislation - legislation obviously “designed” to maintain or even improve the tree cover in a city, but which time has shown (again) to lead to immediate felling of trees before the legislation comes into effect and the cessation or at least significant reduction in the planting of trees for fear of causing tree maintenance issues in the future. Thus legislation to preserve trees has a perverse outcome of getting them felled and stopping them being planted in the first place!

While keeping with the urban tree example, there has been considerable effort expended on valuing these trees over the last couple of decades. A number of urban amenity valuation systems have consequently been developed and accepted by various countries and councils. There are about a dozen protocols currently used (or at least published in international journals) for estimating amenity tree value. A measure of size (height, volume or sectional area) is common across all these protocols with other factors, in decreasing order of use, including:

- Location
- Life expectancy
- Form
- Health / evidence of stress
- Vigour
- Species
- Heritage
- Visual impact
- Special value
- Occurrence
- Age
- Detracting properties

These methods generally combine indices, measurements or estimates of size, age, physical and social qualities (health, environmental and social benefits, life expectancy, initial growth rates, form and social significance), which is then multiplied by the expected cost of supplying and establishing a reference sized tree. Only in one example was there a potential for a “negative value” (detracting properties) which allows that it may be “valuable” to remove an “ugly”, “damaged” or “dangerous” weed species of tree. Unfortunately the values determined by these protocols can be highly variable. In a case study, Garner (1999) reports that “professionals” evaluating the same single tree (Eucalyptus smithii, Figure), using various accepted protocols, arrived at amenity values of $5,000 - $130,000! The forestry profession could devote considerable efforts to developing similar amenity protocols for plantations forests - building on and tightening up the criteria and weighting for the “social” and “environmental” values developed for their urban cousins. But....

The potential for perversity in urban tree outcomes is that the “owner” of the tree is not credited with its value - if the owner wants to remove the tree then he/ she has to “compensate” society for the loss of the estimated value! Thus, the amenity value of the tree in “your” front yard may be an estimate of the liability you are growing should you ever want to move it! Interestingly, the original urban tree amenity protocols were developed in the US to support compensation claims by tenants who had had “their” trees damaged during car accidents. Thus, if the profession “proves” that the value of plantation trees is 10 times greater than their timber component, then the perverse outcome of this proof may be that industry could never be able to afford to harvest those trees!

So, what can the profession do to gain public acceptance of the worth of the forests if the very act of valuing the forests has the perverse outcome of increasing liability for the owners/managers of those forests? It is fast approaching time to change to paradigm of forest valuation. The Faustmann approach to valuing forests is now centuries old, but still forms the basis of our forest valuation approaches. We “tinker” with aspects of the formula like the appropriate interest/discount rates applied and the inclusion and timing of specific costs/products to manipulate “inappropriate” valuations, but the introduction of amenity and carbon may be too much to allow ongoing tinkering to offer a viable solution. But what are the alternatives?

Around Rotorua, the Central North Island and New Zealand generally, forests provide essential services - the conference demonstrated that their simple existence allows tourism, recreational and hospitality businesses to operate successfully; allows the major industries of the region to
operate commercially; allows the carbon trading market to have a visible basis; provides habitat for bio-diverse fauna and flora; and filters water and air. Should the forests then be valued more as the provider of essential services with the timber being a mere “means to an end”? Consider the transmission of electricity - an essential service without which tourism and industry would collapse and domestic upheaval would surely follow during the cold dark nights. Is this essential service valued on the basis of the resale price of the power poles? Of course not, even though there is a good market for these poles in the horticulture and gardening trades. Is the value of electricity supply into the future discounted to zero when the power poles are expected to reach the end of their safe life? Of course not and in fact the value probably increases as the poles are renewed. Incidentally there seems to be very little argument when poles are replaced even if the general public cannot see any evidence of increased risk of failure in the old poles. Do users of the electricity that passes over the power poles pay the full cost? Of course not - subsidies both hidden and visible abound, with Governments and Councils recognising the essential nature of the service and offering everything from free land rent through to tax incentives, etc. Similar arguments can be made for road networks - users pay a fraction of the cost even on toll roads.

New Zealand has been experimenting with the privatisation of essential services like forests since last century but they didn't manage to factor in the essential services in those sales and it is pretty obvious now that these sales were undervalued. The Government is continuing with the sale of other essential services like electricity generation and transmission - they have still not got it all right yet, but there is increasing knowledge about how these essential services need to be valued and how they are much more than just the re-sale value of the buildings / trees! I am pretty confident that valuing these essential power supply services would not lead to the perverse outcome of fewer people using electricity in New Zealand.

I believe it is time to change the whole basis of the valuation of forests - the view of the forest value has been blocked for too long by the wood in the trees. Whatever is done, any new value system must make the forest worth more to the owner and result in more forests being established and well maintained! Trees are useful but they are just the poles that hold the forest up.