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AN INEXTRICABLE LINK BETWEEN TREE BIOLOGY AND WOOD SCIENCE

In the January issue of *Wood and Fiber Science* (vol. 36, no. 1), Greg Brown and Bob Youngs provide a persuasive case for halting and, hopefully, reversing the decline of wood science and forest products utilization programs at universities. In particular, they point to the economic and environmental gains brought about by more efficient utilization and recycling of all harvested wood, including sawdust. They also provide psychological and moral links between those in wood products and forest management by quoting Aldo Leopold and Bernhard Fernow—two fellows whose words can cause many a forester to choke-up with pride. And finally, they link, arm-in-arm, students "interested in forest management, environmental conservation, wildlife, fisheries, and outdoor recreation," and ask: "Should we deprive these students of (knowledge in wood science)?"

All of these arguments are cogent and defendable, but I would argue that the linkage goes much deeper and is more compellingly critical to our collective future than is portrayed in this editorial. The real problem, as I see it, is the long history of poor communication between academic and practicing forest biologists and wood scientists. Each sees the other in abstract terms: "probably needed, but not well understood."

Let me be specific (and apologize at the outset to those who do not fit the stereotype). Silviculturists dote on tree shape and spacing, sapwood area and crown size, and other aspects related to what they think a forest should look like. But how often do they relate their activities to the quality of wood produced? Do they consider growth-rate and wood quality, and that quite different strategies might be needed for abrupt-transition conifers and ring-porous hardwoods? On the other side of the coin, do wood technologists try to influence forest managers—or do they more often say "Give us what you have and we will devise a technological fix" (after all, that's what keeps us employed)?

Biologists interested in tree biomechanics rarely, if ever, read the literature on wood mechanics, and wood scientists are equally ignorant of tree biomechanics. Wood scientists delve into the mysteries of wood permeability in relation to wood drying and preservation but are mostly unaware of the voluminous literature created by tree biologists studying hydraulic conductance. I could go on and on, but will conclude this analysis with one small example from a recently published paper (Jagels et al. 2003. *Annals of Botany* 92: 79–88).

In that paper, we present the hypothesis that short-lived trees and trees with high wood density are less likely to produce decay-resistant heartwood than trees with low-to-moderate density. Our rationale was that Brazier buckling would be most critical in lower density, long-lived trees. Because of my background in both wood science and plant biology, I hardly hesitated a moment before "mining" the *Wood Handbook* for data on decay resistance and plugging it into a table (in that same paper we also used other information from the *Wood Handbook* to discuss strength properties in living trees).

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The point that I hope I am making is that we need to build stronger *real* linkages—in teaching, research, and practice—that will ensure the viability and strengthening of both wood and forest science programs. I currently teach a course entitled Functional Structure of Woody Plants (formerly known by the name Wood Anatomy). My class of upper undergraduate and graduate students over the past 17 years has been, on average, a near even split between wood science and forest biology majors (with an occasional wildlife or environmental science student). The interaction between the students often begins with guarded reserve and ends with new friendships—and hopefully a better understanding of each other's field of interest.

I am approaching retirement. What will happen in the future will be decided by others. I hope that the inextricable linkage will be strengthened—not lost.

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