The Redesign of Wood Science & Technology Academic Programs in America

The Changing Landscape of Forest Products-Sustainable Biomaterials-Renewable Materials Education

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in cooperation with

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Introduction:

- The direction of the field of Wood Science and Technology has been changing. Why?
- How to best present the importance of “what we do” to students?
- The future focus needs remain focused on the educational mission, but these changes will have great impact on industry and (hopefully) the shape of environmental policy to come.
Changing to What?

- Over the last 80-100 years the field has changed from being primarily focused on milling and machining of wood to:
  - Nanotechnology
  - Packaging
  - Lean Management
  - Biomaterials and Bioenergy
  - Innovation-based Manufacturing
  - Advanced Engineered Composites
  - Lignocellulose conversion
  - Life Cycle Analysis
  - Pharmaceutical Delivery Systems
- ...but also of course, we still do milling and machining of wood!
An Identity Issue

• The public’s perception of “Wood Science”, or “Forest Products” is tied to the harvesting, milling and machining of wood.

• With this perspective, students have told us:
  – “No one wants to major in being a lumberjack!” or,
  – “You are the ones responsible for destroying the forest!”

• This perception limits the visibility of the field and also, the negative perceptions that are continually reinforced in society do not allow us to tell a more positive story of what the field is about.

• In turn, this limits interest by students (and their parents). As a result, the terms “wood science and forest products” have been disappearing from educational programming.
Is that really possible?

Perceptions of Green Biomaterials and Where they Come From.

Are there analogous situations?

• The American public loves a great, home-style grilled meal, but images of their Food coming from the Slaughter House have turned many into vegetarians.

• Similarly, the American public does not like to think about beautiful wood furniture coming from “Forest devastation”. But, even if it is a false perception, that imagery and perception has been deeply engrained in the American mind.
If “Everyone loves trees”, do they hate wood?

Understanding how students think about terminology is important!

“Survey Says....?”

• A survey¹ and a focus group² on the east and west coasts (respectively) showed some surprising things:
  ❖ The term “Forest” ranks relatively high but combining it with “Products” gives a low ranking.
  ❖ Students have a strong preference for terms like Sustainable Biomaterials and Renewable Materials.
  ❖ When making the selection of a “major” in College, students have little perspective or interest in job title or salary. The want a job that will be “interesting”, and a future after graduation where they will be “comfortable”.

² [http://legacy.forestprod.org/IC64/future_docs/OSU_2010.pdf](http://legacy.forestprod.org/IC64/future_docs/OSU_2010.pdf)
Our Prior Strategy: “We must better educate students to appreciate Forest Products!”

- We have tried that approach for 30 years and results suggest that it may not be the correct strategy!
- Students are smart, but their opinion of “Forest Products” has already been shaped since early childhood. Their opinion is different than ours, and it has been shaped for many years by powerful public advocacy groups.

Options:

We can “fight harder” to win a battle that too many in academia have already lost.

Or we can recognize that we have already changed (in academia and in industry) and we need new terms and rebranding strategies that are strategically aligned with well-entrenched positive themes.
Transformative Change

Given the pace of Wood Science programs being lost in the US, it is difficult to approach rebranding as incremental change.

Transformational change is occurring, and the programs that are making transformational changes are now seeing enrollment increases.
The Society of Wood Science and Technology accredits University programs in the field.

What trends are occurring in the accredited programs?

– Most used to be called Wood Science, or Forest Products, or some similar derivative.
– This has now changed dramatically as schools have:
  • Eliminated those programs because of lack of enrollment
  • Reinvented their programs under broader “umbrellas” to capture a more diverse student population.
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<th>SWST Program Reviews</th>
<th>Initial Accreditation</th>
<th>Most Recent Accreditation</th>
<th>Current Accreditation Expires</th>
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The Forest Products degree was consolidated into an option within Forestry. Enrollments declined, with five students at present.
North Carolina State University

Changes in the last 5 years?

Change in Department name to Forest Biomaterials. Enrollment in a B.S. in Wood Products Business Management and B.S. in Wood Products Manufacturing & Engineering in the department remains stable at ~ 36
Oregon State University

Changes in the last 5 years?

Degree has changed to “Renewable Materials” within a Department of Wood Science and Engineering. Undergraduate enrollment is growing. Currently at ~ 52.
Pennsylvania State University

Changes in the last 5 years?

Faculty have been consolidated into an Agricultural & Biological Engineering Department. Wood Products will phase out as a new undergrad (and grad) program in Biorenewable Systems is developed that will retain a “wood” core, but also embrace other bioproducts. Currently Wood Products has ~ 20 students.
State University of New York

Changes in the last 5 years?

Department renamed to Sustainable Construction Management and Engineering with the elimination of the Wood Products Engineering degree. Currently SUNY has a Construction Management major. Enrollment has been stable at about 85 students.
Univerisity of Idaho

Changes in the last 5 years?

New degree in “Renewable Materials” in a Forest, Rangeland and Fire Dept. Already they are growing enrollment at ~ 17.
University of Maine

Changes in the last 5 years?

Wood Science option consolidated into a Forest Operations, Bioproducts & Bioenergy option in the School of Forestry. Five students at present.
University of Minnesota

Changes in the last 10 years?

Bioproducts Marketing and Management option within a department of Bioproducts and Biosystems Engineering. Stable enrollment at 32.
Changes in the last 5 years?

- Newly named department of Sustainable Biomaterials.
- Degree in Wood Science and Forest Products currently is still in place, but three new Degrees are moving forward.
- Undergraduate Enrollments doubled to 70 students over a two year time period.
University of West Virginia

Changes in the last 5 years?

Wood Science option within a School of Forestry. Currently stable at 35 students, but the faculty are moving forward to consider a modified curricula with a new name in the future.
Other Non-SWST Accredited Programs in North America

• US Schools
  – Iowa State University: Option within Forestry. Six undergraduate students in Sustainable Material Science & Technology option)
  – Louisiana State University: Forest Products Option within a Forestry Program. Zero undergraduate students in Forest Products currently.
  – Purdue University: Just lost their Major in Wood Products Manufacturing Technology

• Canadian Schools
  – University of British Columbia: “Wood Products Processing” within a Wood Science Dept. A stand-alone Major with 128 undergrad students)
The Path to the Future?

• Only one program (UBC in Canada) has been successful in maintaining strong enrollment under the WS&T Banner.

• US Schools are growing enrollments, but only by rebranding under “Renewable” and “Sustainable” themes with curricular changes consistent with that branding.

• Only one US school (WVU) has successfully maintained a Wood Science educational option within a Forestry program. Still that enrollment is limited and changes are being considered.

• New names:
  – Bioproducts and Biosystems Engineering (UMinnesota - Dept.)
  – Sustainable Biomaterials (Virginia Tech – Dept.)
  – Biorenewable Systems (Penn State – Degree)
  – Sustainable Construction Management & Engineering (SUNY – Dept.)
  – Forest Biomaterials (NCSU – Dept.)
  – Renewable Materials (Oregon State - Degree)
  – The Center for Renewable Carbon (UTK – no educational program...yet!)
Concluding Thoughts

• **The future is here** – Wood Science and Technology programs in the US have already changed and broadened to the point where the “WS&T” term has largely disappeared.

• An opportunity for mass branding may have been lost. Uniform naming of educational programs across the US has not occurred.

• New terms focused on “Renewable” and “Sustainable” themes do appear to be working in attracting students.

• Despite the new directions, student are still receiving a strong education in wood science, but new terminology and “greener” themes are helping to attract students and once they get into our classes they see the importance of the field.
Thank You!

Questions?
The Need for Rebranding

• We have a strong attachment to current terms vs. embracing new terms and concepts of “green” and “sustainable” biomaterials and bioenergy.

• In academia in the US, we have tried hard to make grown interest in Wood Science and Forest Products, but if the public refuses to associate that term with sustainability and a vital future, then are we communicating correctly?
Width and Breadth of Current Programs

Challenges:
– Getting students to “notice” our field through the use of identifiers they have interest in, and find of value.
– Fitting all we do under one “umbrella” name, that also still represents Forest Products, but also new areas.