Teaching Borlaug—Or Valuing the “Expertise of Breadth”

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Forestry is a profession and its undergraduate form is based on a professional model of education. In this model there is a tension between the breadth of subject matter, the need for depth in some areas, and the integration of new subjects. The standard approach requires a core curriculum that spans subjects such as biology, economics, management, applied ecology, and policy and is unique and appropriate to professional education. This is the kind of approach the Society of American Foresters requires through its accreditation process. However, this broad-based approach is challenging when total credit hours are limited, programs remain at 4 years, and new subjects are added while few, if any ever leave the core. When they do, often, it is a difficult loss, such as the reduction in forest protection requirements at various institutions to make way for subjects such as geographic information system, general education requirements, electives, ethics and leadership, conservation biology, and others. Forestry has retained the 4-year degree for entry into the field, whereas our closest sister discipline, agriculture, gave up on a single or even a few degrees decades ago. After beginning 100 years ago or more as a single department, university agriculture generally has split into a dozen or more departments at land grant universities (i.e., Rutgers, 12; Tennessee, 8; Oregon State, 14; Minnesota, 11; North Carolina State, 19; Wisconsin, 21; and Georgia, 10). University engineering has done the same.

The dilemma for forestry is whether to stay lumped or to split. Both approaches have been embraced and have pros and cons. At many universities wildlife and fisheries have long been split from forestry, as well as wood products, outdoor recreation, and range management, among others. These subjects often were taught within forestry curricula some decades ago. When split into separate departments, these disciplines often lose the breadth of coursework that remains required in forestry. This represents some shift toward the accommodation that is most developed in agriculture—leaving behind some aspects of the fully integrated program, with benefits and challenges.

There are new and revisited approaches to lumping and splitting, such as separating the social from biological sciences or the applied from basic aspects of forest science and management, creating concentration areas within existing curricula, or combining departments that have common interests. In recent years a number of universities have undergone such changes (North Carolina State University, State University of New York—Environmental Science and Forestry, University of Idaho, Utah State University, and others). The success of these approaches in retaining the breadth of study that makes a professional forester, depends on the linkages among curricula and breadth of requirements within them. If the devil is in the details, this is where he resides.

The reasons to split are many, and in some respects best fits the academic mold. However, the value of a fully integrated approach is also apparent and well recognized through the many and varied calls for more inter-/multi-/transdisciplinary work. Some new forms of splitting and lumping, through reorganization, can enhance various aspects of multidisciplinarity, while others are diminished. The undergraduate professional forestry degree teaches this multidisciplinarity without hesitation. This is a good thing and should be maintained. Although professionals trained this way risk being generalists with little specific expertise, the very breadth of this integrated learning experience is, in fact, the expertise foresters have. It is the foundation on which they develop as professionals. This deserves recognition. Graduate school and experience are available for specialization. Some universities begin forestry education at the graduate level, and many now also offer curricula broader than forestry in the form of environmental sciences and natural resources. These options provide breadth and flexibility but not the “expertise of breadth” that makes a forester unique.

Recently, the North Carolina State University College of Natural Resources hosted the 1970 Nobel Peace Prize Laureate Dr. Norman Borlaug. At 91 years of age he is one of the most senior and active, and one of the world’s most important foresters. He is a Minnesota graduate (BS Forestry 1937, MS Forest Pathology 1940, PhD Plant Pathology and Genetics 1942) and father of the Green Revolution—considered to be the single person to have saved the most human lives of any person who has ever lived! Although most of his professional work has been in agriculture, he is a proud forester. While here at North Carolina State he spoke about, “Bridging the Divide Between Environment, Agriculture and Forestry” (www.cnr.ncsu.edu/borlaug.htm). He spoke about competition among land uses in an increasingly crowded world; embracing technology and policy; pests and genetics; working with farmers and government ministers; and economics, sociology, and management. In short, he spoke about the many disciplines taught in professional undergraduate forestry programs but not always well covered in disciplines that have been split off and are not well articulated with the central core.

In conversation and in his presentation Dr. Borlaug often came back to the value of his early education in forestry. He indicated that the broad-based education he received as a forester helped him to appreciate the many disciplines that informed his capacity to be an innovative scientist, and to translate that innovation into action around the world. The implication was that without broad and integrated learning, he might have been less successful. We cannot afford to miss out on any future “Norman Borlaugs.” Foresters should have an increasingly
important role as land-use conflicts and choices intensify, along with demands for all the goods and services that forests provide. A broad-based integrated education will serve them well. We need to be careful when we split, and at all costs preserve the integrated nature of the undergraduate forestry experience. Graduating students in forestry social sciences with only a very few credits in applied ecology will not serve them or society as well as they might, nor the converse. Just as forestry programs still somehow manage to “teach” Pinchot and Schenck, we should all also “teach” Borlaug. He is one of us, we should be proud of him, and his specific message to us is to not lose the “expertise of breadth” during the very decades when our work is increasingly complex and important.

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