

FORESTRY EDUCATION IN A CHANGING LANDSCAPE : EMERGING LESSONS FROM UGANDA

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Abstract

Both forestry and tertiary education are undergoing profound changes. Critical changes in forestry include: the conceptualisation of forests and forestry as complex soft systems; the changing roles of public and private sectors, and of civil society; the changing social, economic and environmental values of different sorts of forests; and the globalisation and commoditisation of many forest products and services. Critical changes in tertiary education include: the broadening of access at undergraduate and postgraduate levels; the parallel widespread diminution of resources on a per-student basis; the shift from teacher-centred to student-centred learning; rapid technological developments, particularly but not only in information technologies; and globalisation and commoditisation. These changes define both strategic and practical challenges, and constraints and opportunities, for forestry education. There are advocates of both radical and more cautious reforms of forestry education. This paper describes how the Department of Community Forestry and Extension, Makerere University has responded to these challenges and opportunities, and reflects on some personal experiences and current issues.

Introduction

Forestry education, like forestry, has evolved largely in response to changing markets, social attitudes and desires. While research and education have contributed to the evolution, they have played a smaller role. Unless this changes as forestry enters the third millennium, the risk that forestry will become marginalised as a profession will increase. Key forest policy decisions, and key decisions about practices, will increasingly be made by individuals or organisations that lack an adequate understanding of ecological diversity and ecosystem function, the fundamental issues in sustainable forest management and conservation, and the social, economic and cultural dimensions of forestry, topics that a contemporary forestry education should cover (Abel, 1989).

Forestry has been defined as the art, science and business of managing forested landscapes to sustain a desired balance of forest values, services and conditions. By the very definition of the profession, forestry must change as the desired balance changes. However, as a profession, forestry must resist changes suggested by society that are inconsistent with the ecology and sociology of the values, services and conditions desired by society.

In the face of these responsibilities, forestry education must equip its graduates with a strong sense of ethics towards the forest, the broader environment and society. This ethical training must equip future foresters to play a more active role in the evolution of forestry and prepare them for change. It must also equip them to resist suggested changes that are in conflict with the broader management objectives that society has chosen (Baron and Byrne, 1999). They must understand and be able to effectively communicate the social, cultural and ecological constraints that render public demands for certain changes impractical or contrary to the very values society wishes to sustain.

This is not a trivial challenge. Our response to it will determine to a large part whether forestry continues as a profession or is replaced by some other institutional arrangement with which to regulate the relationship between the present six billion humans and the 60% of the world's "original" forests that are reported to remain (Kamugisha, 1993).

What is a forest? What is forestry? What is education?

The issues of what we understand by "forest", "forestry" and "education" are fundamental to forestry education. In essence, I suggest that each of these terms has come to be interpreted more broadly of late than during much of the 20th century. Arguably (and simplistically), our understanding of:

"Forest" has evolved from one which emphasised the bounded primeval wilderness (Schamhart, 1994) and the regulated normal forest to a more encompassing view, which recognises explicitly the diversity of configurations and forms of trees and forests in both rural and urban landscape. The conceptualisation of forests as "soft systems" for example the ecosystems component of a larger interdependent natural-social system, and whose extent, condition and persistence are dependent on human choices and actions is a fundamental (paradigm) shift in how we understand "forests" (Rogers and Taylor, 1998);

"Forestry" has evolved from a scientific discipline which focused primarily on the regulation of yield and use to an amalgam of disciplines which more explicitly recognise the social and cultural dimensions and implications of forest management (Buyinza, 2003). This evolution mirrors that of our understanding of forests, and suggests that forestry is as much a social science as a natural Science (Abel, 1989);

Tertiary "education" has evolved from a linear process in which knowledge was seen to be transferred from teacher to student to a more collaborative process in which the "teacher" enables and facilitates the "student" learning (Schamhart, 1994; Buyinza, 2003). It is also evolving from the traditional undergraduate/postgraduate on-campus mode to one which is both more flexible, and problem solving oriented.

One could argue about the precise articulation of the points summarised above, but it is the general sentiment of each that is important. According to Mehl (1990), these sentiments suggest common themes of greater diversity - of forests, forestry, and education - and of greater interdependency between the components of each of these systems. They suggest a challenging and an exciting future for forestry education and forestry professionals, and emphasise the bi-directional linkages between education and practice.

The terms "forest education" and "forestry professionals" are used here in the same broad sense as "forest policy" is used by Bawden, R. (2000). He uses the term "forest policy" as shorthand for "policies about forests which include but are not limited to "forest policies" in the narrow sense. Similarly, I use the term "forestry education" to include "education about forestry", rather than that limited to foresters; and "forestry professionals" to include those whose education and professional activities include elements of forestry, but whose primary interests and expertise are not in forestry. Examples would include environmental scientists and advocates, social scientists whose work focuses on forests and communities, and many working in any of the forest-product sectors.

The purpose of forests, of forestry, and of education

In the early days of my exposure to forestry, I had occasion to discuss forestry problems with very many foresters, of every conceivable specialisation. Had I believed implicitly everything they told me, I would have been driven inexorably to the conclusion that forestry is about trees. But this, of course, is quite wrong. Forestry is not only about trees, it is about people and it is about trees only insofar as they serve the needs of people.

I suggest that Westoby's apparently heretical and paradoxical statement is an accurate analysis of the purpose of forests and forestry. It is explicitly a 'soft systems' view, and it describes the purpose of the myriad forms of forestry: amongst others, for the sustainable livelihoods of forest-dependent people; for commercially-driven and focused industrial plantation production; for the management of protected areas or extensive native

forests; on farms; and in urban and peri-urban environments.

Sayer and Byron (1996), summarised the purpose of education as to help the student to discern what knowledge is relevant, where to find it, and how to use it; bring the student to an understanding of the interrelatedness of phenomena, and the interpenetration of the various disciplines; cultivate in the student a sense of responsibility - responsibility for his own actions, responsibility for the welfare of others; inoculate the student against received doctrine; and help the student overcome the problems, and taste the joys, of cooperating unselfishly with others.

In Uganda, none of this is new, however, the principles they enunciated are consistent with those articulated by contemporary educationalists for the practice of tertiary education. For example, Mayer's (1997) principles of effective teaching in tertiary education give effect to the broader goals of forestry education, namely the quality of explanation and stimulation of student interest; concern and respect for students and student learning; appropriate assessment tasks and helpful feedback; clear goals and intellectual challenge; student independence, control over learning, and active engagement; and learning from students.

The consequent challenges for forestry and forestry education

Many concerned with forestry education have grappled with the challenges implied by the goals and principles above. This article does not pretend to do justice to those efforts, which have taken place in the context of individual institutions, agencies and corporations, and wider society; within the forestry professions of each country; and in international *fora*. What is relevant here is their implications for the interdependent domains of forestry and forestry education.

One of the most recent national forestry workshops addressing forestry education was that convened by Department of Community Forestry and Extension, Makerere University, in April 2002. The participants included individuals who had initiated changes in the arenas of agriculture and natural resource education. Their deliberations included emergence of joint, and complementary, natural and social sciences approaches to learning, problem solving, and professional practice; recognition that effective curriculum reform involves reform of educational processes; and acknowledgement that forestry curricula and the "domain" of forestry (the arenas in which practiced) are interdependent, that reform of either could not succeed without reform of the other, and that active reciprocal engagement could facilitate change in both forestry education and that of forestry.

The workshop participants agreed on the set of assumptions, assertions and actions which represent a reasonable synopsis of the basis on which the next direction of forestry education might take. According to Joachim and Healthier (1991), these assumptions are that the multipurpose nature of forests, including social, economic and ecological services; forests will only persist as a consequence of international collective action; forestry institutions are increasingly challenged by changing demands, lack of funding and lack of perceived relevance to society; and there is now a prevailing shift in educational philosophy from teacher-centred to a learner-centred focus and believing that there should be a shift in emphasis from education of foresters towards education for the domain of forestry; and forestry education at all levels should foster repeated critical examination of its contexts, values and informed action.

Review and reform of forestry education

In this article, the author uses "review and reform" in a positive sense - given the universality and inevitability of change, and the advantages of an adaptive rather than a reactive approach in both education and forestry practice. Those engaged in forestry education are thus inherently involved in review and reform - though, there are inevitably differences of opinion about the appropriate scope, scale and rate of change. There are many advocates of both radical and more incremental change in forestry education.

Many institutions have sought to give effect to analyses such as those reported in the preceding section on curriculum review and reform processes (Nakintu, et. al., 1999). Many of these have been informed by assessment, usually with at least some of the external stakeholders, of the knowledge and skills required of forestry graduates.

The skills needed for long-term success in forestry include:

- Ability to work in teams that include individuals with a variety of perspectives, both within and outside the organisation.
- Ability to listen and address public questions and concerns and to explain the principles of environmentally responsible forest management practices.
- Understanding of the requirements of a healthy forest ecosystem and the full variety of silvicultural and other tools available to manage that system.
- An innovative approach to working with the public to address forest management problems.
- Ability to evaluate and synthesise information from a variety of disciplines when developing resource management plans.
- Understanding of landscape-level planning of forest ecosystems and how to manage them to meet ecological, economic and social needs.
- The ability to communicate to the public, politicians and other stakeholders (Ludlow and Panton, 1992).

Target graduate in forestry from Makerere University

A graduate of forestry programme can design and implement a plan for a stand and a forested landscape that meets the goals and objectives of the owner(s) and related societies. Accomplishing this task requires:

- (a) a scientific understanding of forest systems dynamics by knowing and being able to measure ecological functions at the tree, stand, and forest levels for the purpose of forecasting ecological outcomes of management actions; accepting the tentative nature of scientific knowledge; and employing a scientific approach to reflect on and extend knowledge continuously in practice throughout a lifetime.
- (b) An understanding of social issues in forestry and of the role of forests and foresters in society by appreciating the full range of forest values understanding and articulating, in written and spoken words, positions on social/forestry issues; capacity to discover and understand the desires of a forest owner, or collective owners, with respect to forest goals, and developing the ability to advise forest owners with respect to biological and technical limits of forest management.
- (c) A professional attitude towards the practice of forestry realised through the ability to think critically about forestry issues as opposed to applying standard prescriptions; capacity to accept responsibility for the quality of work done; understanding and taking ethical positions in practice; understanding the bounds of ones own competence; and being comfortable working in the forestry

Observations from personal experience

The present forestry curricula at Makerere University emphasises:

Field- and problem (issue)-based learning, which is increasingly student-centred;

The development of more contemporary and better balanced curricula, reflecting both the natural and social science dimensions of forestry, and their integration. These developments reflect both changes within forestry curricula per se, and the integration of forestry curricula with those offered by other academic programmes in both the social and-natural sciences;

More flexible modes of learning, and learning resources - particularly but not only those based on online material and delivery;

Dialogue with a diversity of external stakeholders in forestry and forestry education, although this is more often as part of research and teaching programmes than a more formal process of particular curriculum review and reform.

There are, however, challenges associated with providing the above type of education. These include:

Significant resource and administrative constraints to developing field- and problem-based learning more fully; These constraints reflect both the relatively high staff and resourcing costs of supporting both these forms of learning, and the practical difficulties of integrating a curriculum structured to facilitate field- and problem-based learning with curricula which do not have such a focus. This problem can be particularly acute in the case of interdisciplinary programmes which depend on scheduling the input of a number of Faculties (or the equivalent), and mitigates against the integration of forestry and other disciplines in joint curricula.

Where the forestry programme operates in isolation from others, as is the case in at least one year of the programme at many universities, there is scope for more fully developing field- and problem-based learning. However, isolating forestry students from those engaged in other programmes carries the risk of fostering disciplinary and professional isolation, with potentially adverse consequences (Ahmed and Mahmood, 1998). As with other elements of curricula, striking the right balance" is difficult.

The question of what constitutes a "balanced curriculum" is much like that of defining sustainability because there are multiple valid perspectives. There does seem to be general agreement that there should be integration of the social and natural sciences from the outset of the programme, but the issues of "what to leave out" in already-full curricula challenge all university forestry programmes with which the author is familiar.

Some Science based Faculties of Makerere University have elected to address this issue by maintain a 5-year undergraduate programme, but most are constrained to a 4-year programme. An obvious option at the undergraduate level is to develop specialised streams, but this is not feasible at many institutions where staff and student numbers are insufficient to support them. Alternatively, the development of specialisations can be left to (post)graduate programmes or other forms of continuing education. Many graduate forestry programmes provide a means for those with undergraduate qualifications in other areas to enter or advance in forestry. In my experience, this is of great benefit to forestry and the forestry profession.

The shift to student-centred learning at the undergraduate level is challenged by, in particular, the economic circumstances of students, which requires them to engage in substantial part-time employment whilst they are studying, and limits the time and energy they are able to commit to their learning. Some welcome relief is afforded for a small number of students by scholarships and awards offered by forestry sector agencies and businesses, and by universities, but these are generally insufficient in number and magnitude to assist more than a small proportion of students.

There is limited capacity for Makerere University to expand traditional graduate programmes because of the substantial direct and opportunity costs to students associated with most graduate degrees. Furthermore, the government scholarship system intended to support students is so inadequate that even those with outstanding undergraduate qualifications and university awards are not able to secure scholarship support. Some employers and external partners are very supportive of graduate students, but in any case traditional on-campus graduate degree programmes are of limited relevance to many in the workforce and community.

Makerere University engages with external partners - in government, business and civil society - in a variety of ways: for example, through research projects, teaching and learning programmes, or joint outreach and community activities. Many of these external partners are also engaged in processes associated with curriculum review and reform, and in other forms of strategic review and planning. However, these processes tend to be more advisory than the fully participatory involvement described by Ahmed and Mahmood (1998); whilst the latter has obvious appeal and strengths (Bawden 2000), it also raises - at least in principle - the issues of academic freedom and the appropriate balance in university education between the needs of the short-term and those of the long term future. Bawden (2000), for example, is adamant that a university education should be directed at the needs of the future; while this is inarguable, the majority of graduates need also to have sufficient credibility with current employers to gain employment so that they can be part of shaping the future from within the profession. As in other aspects of forestry curricula, there is clearly a balance to be struck.

Changes to the funding of tertiary education in Uganda meant that fewer tertiary institutions would be able to support stand-alone Faculty of forestry, continuing the trend for relatively small specialist departments (or the equivalent) to merge with others with cognate interests such as merging into a College of Natural resources or something similar to provide both challenges and opportunity for the continuation of strong forestry programmes. Regardless of the particular institutional structure, strengthening links with complementary disciplines, and its comparators elsewhere - is of obvious benefit to forestry programmes.

Forestry extension education in the Forestry curricula

Currently there is a change in the attitudes of authorities involved in natural resource management from the traditional top-down to a bottom-up approach, accomplished by involving local communities in the management process. This requires well-trained professional extension agents. At present, no educational program specifically addresses community participation in the management of natural resources. The Bachelor of community forestry degree programme aims to fill this gap. The degree programme shall help to build capacity in community forestry and extension to spearhead grassroots development of community based forestry management, enable the university to become more active in the grassroots development through participatory designing and

implementation of appropriate local community-based development programmes (MAAF, 2001).

The emergence of forestry and tree management outside "forests".

Over the past decade, there has been an increased demand for Community Forest workers (extension agents). This has come as a result of Uganda's New Forest Policy, which emphasises the involvement of communities in forest resource management. Similarly, the proposed decentralisation of forest services to the districts has also increased the demand for professional community forestry and extension staff throughout the country.

Furthermore, there is a need to upgrade and equip traditional foresters with recent advances in forest science, extension and problem-solving skills needed to meet the challenges in the modern forestry sector. This will enable the forest agents to effectively communicate with all the stakeholders involved in community forestry. The proposed Bachelor of Community Forestry degree should be designed to produce trained professionals who can effectively work with local communities in all aspects of community forestry.

Conclusions

The current forestry education objectives, content and delivery methods do not adequately respond to the changing needs of conservation, management and sustainable development nor cover adequately issues of food security and poverty alleviation. Expectations from foresters have expanded to deal with an ever increasing range of stakeholders. Forests are intimately involved in issues of food security and poverty alleviation and governments should give adequate emphasis to these issues in education programmes.

Forestry education in Uganda will - both by necessity and design - continue to adapt to the changing contexts: technologies and practices relevant to forestry and education. Critical questions for all of us engaged in forestry education include how to:

- address the common theme of greater diversity in forests, forestry and education;
- best integrate the social and natural sciences relevant to forestry;

- build and sustain the linkages between universities and external partners, in mutually supportive rather than mutually-bothersome forms;

- develop field- and problem-based and student-centred learning in the face of resource and administrative constraints, and in the light of other legitimate demands on students' time and energy;

- maintain integrated and complementary programmes, within campuses and between institutions, which capitalise on existing or potential institutional strengths;

- strengthen the extent, relevance and accessibility of graduate-level (including continuing) forestry education;

- establish strong, dynamic and innovative forestry programmes in the face of amongst other factors - institutional reorganisations, financial constraints, and continually increasing demands on academic and support staff.

Recommendations

The key elements of reform for forestry education in Uganda should include:

- Change from a discipline-based to an issue-based approach
- More integrated and better balanced curriculum (technical, social and ecological);
- Field-based learning and feedback (including research);
- In-service education linked to formal and informal education, and
- Networking and linkages to achieve the above.

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