Advancing the role of communications, education, and capacity building in the future of forestry: Communities of practice and community-based learning*

Chris Hollstedt[1]

Abstract

The evolution from tree- and stand-level prescriptions over a rotation to estate- and watershed-level plans over many generations requires individuals and teams to understand and apply scientific, indigenous, and experiential knowledge to address complex issues. The solution must achieve the business and landscape objectives and stand up to public scrutiny while being both practical and cost effective. Communication, education, and capacity building at a community level are critical to defining forestry solutions. Once a discipline only for professional foresters, forestry is now a community of practice represented by forestry professionals. This community includes—but is not limited to—foresters, engineers, biologists, ecologists, technologists, indigenous knowledge keepers, hydrologists, geologists, and geomorphologists as well as economists and social scientists. Forestry professionals must be able to practically apply knowledge acquired through institutional training and education, as well as knowledge and skills acquired through practice and experience. They must be able to reach out to the knowledge sector when faced with unknowns. The knowledge sector must be able to ethically respond as a community of practice to the demands for new science and continuous community-based learning. This paper investigates the role of the knowledge sector in contributing to communications, education, and capacity building for forestry professionals as well as forest-based communities. The concept of ethical commercialization of knowledge and social capital is also introduced.

KEYWORDS: *communities of practice, communication, forestry professionals.*

Contact Information

1 Chief Executive Officer, FORREX Forum for Research and Extension in Natural Resources, 400–235 1st Avenue, Kamloops, BC V2C 3J4. Email: Chris.Hollstedt@forrex.org

The changing context

The forest and and broader natural resource sectors in British Columbia are experiencing significant economic, environmental, and market-driven changes. *Innovative transformation using science and best available knowledge is an essential service to enabling forest sector revitalization and adaptation to climate change.* The world economy is shifting, with a greater reliance on knowledge and the knowledge sector to enable sustainable development. This concept was emphasized in the Johannesburg Declaration at the World Summit on Sustainable Development in 2002. The Summit reaffirmed Agenda 21 and filled some gaps where implementation of this agenda was problematic. The final statements from the XII World Forestry Congress in 2003 confirmed that, to achieve social justice, economic benefits, healthy forests, and responsible use of research, education, and capacity building are needed. To further strengthen the link between people, sustainable development, and knowledge, the United Nations declared 2005–2010 the Decade for Education for Sustainable Development, and also reaffirmed the right of the public to have access to information and information technology. Two recent studies reporting on progress towards sustainable development goals suggest that we are not making progress fast enough in relation to ecosystem sustainability, and that immediate action is recommended (Est et al. 2005; Millennium Ecosystem Assessment 2005). Sustainable forest management requires the evolution from tree- and stand-level prescriptions over a rotation to estate- and watershed-level plans over many generations. Individuals and teams must understand and apply scientific, indigenous, and experiential knowledge to resolve complex issues. The solution must achieve the business and landscape objectives and stand up to public scrutiny as well as be both practical and cost effective. The argument for the knowledge sector to participate in solution development is compelling. Given the barriers to knowledge exchange previously discussed (Deyoe et al. 2005), how best can we participate in this knowledge economy and contribute to continuous learning in partnership with those who manage and make policy decisions about forest resource use?

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A potential solution

I suggest that we must rethink the interactions between science, policy, and management (Figure 1) as well as where we fit. We must revisit the approaches used effectively in the past (discussed later in this session; see Johnson and Norland 2005) and whom we have worked with, and reposition our products and services using a defined knowledge management strategy. The strategy you use will depend on the complexity of the resource management problem to be solved and on how well our community is, or needs to be, connected.

So who is this community? Once a discipline for professional foresters, forestry is now a community of practice[1] represented by forestry professionals. This community includes— but is not limited to—foresters, engineers, biologists, ecologists, technologists, indigenous knowledge keepers, hydrologists, geologists, and geomorphologists as well as economists and social scientists. Forestry professionals must be able to practically apply knowledge acquired through institutional training and education, as well as knowledge and skills acquired through practice and experience. The greatest learning opportunity exists at the interface where practice and experience influence and inform policy or management applications. It is at this interface that the research community can have the biggest impact on community learning and therefore on management or policy outcomes. But how will the opportunity for this interaction occur?

Knowledge management is all about learning, and learning is social (Allee 2000; Smith 2003). How people learn depends not only on the need for, and understanding of, explicit knowledge (those facts and figures research scientists love to share), but also on tacit and implicit knowledge (Figure 2), which comes from value systems and a lifetime of experiences. A community learns not unlike individuals, and that learning is enabled

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[1] A community of practice is a group of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis.
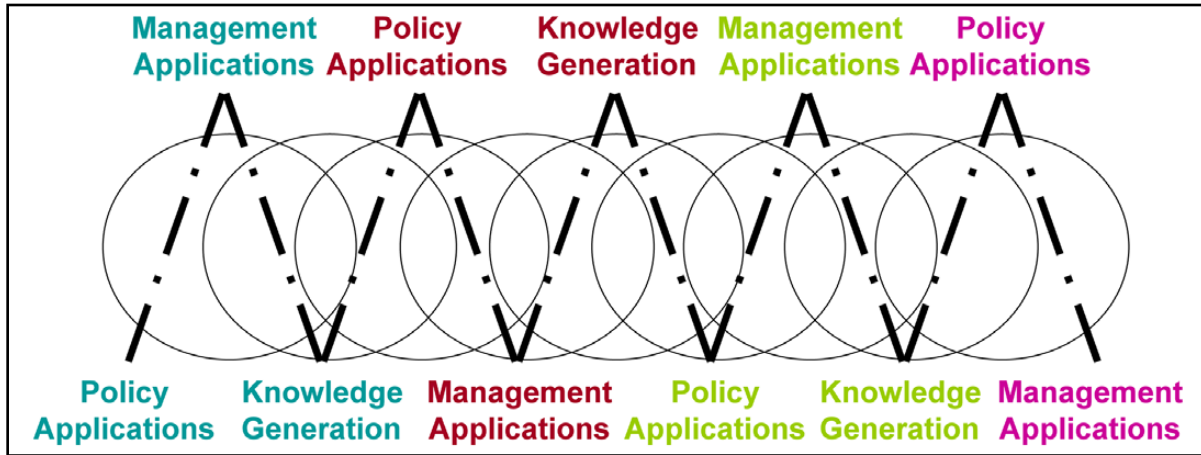
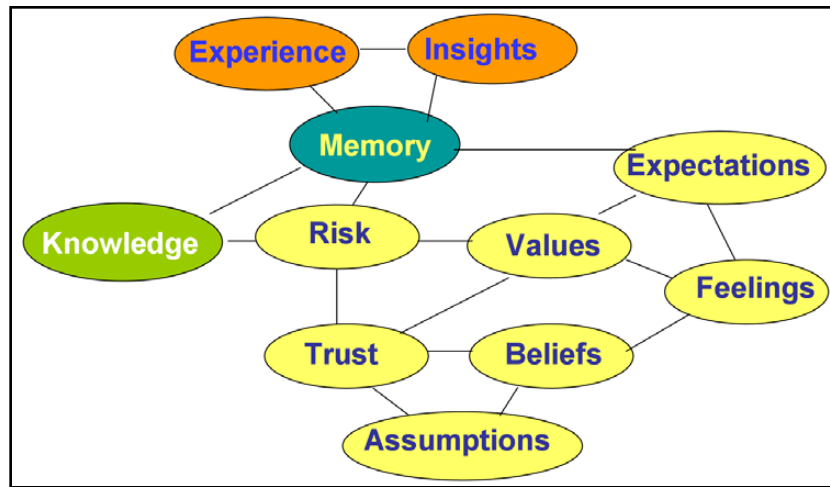**FIGURE 1.** Policy–management–knowledge–generation continuum.

FIGURE 2. Tacit and implicit knowledge mind map.

by a common purpose, common experiences, and a common language. Sometimes referred to as the mind of the market (Zaltman 2003; Figure 3), having a clear idea of the expectations for explicit knowledge exchange—as well as the tacit knowledge capital—is crucial to effective strategy implementation. This might not exist at the beginning of the process, but can grow and be nurtured through the solution-building experience. It is important to note that "there is a marked difference from providing a simple explanation and providing an explanation simply" (Innes 2005). The time you take to understand the operational context of your audience and to put your message in their language is directly proportional to their receptivity to your message and, therefore, to an increased

likelihood that it will be understood and applied. This is because the fundamental elements for community learning are that:

1. learning is social;
2. knowledge is integral to the community that shares values, beliefs, language, and ways of doing things; and
3. the process of learning and the membership in the community are inseparable (On Purpose Associates 2001).

The knowledge management strategy we use is based on the complexity of the issue we must solve and the interconnectivity of the individuals or organizations

we must work with to solve the problem (Figure 4). From least complex and requiring limited connectivity, to most complex and requiring a great amount of connectivity, these include: work groups, project teams, internal communities of practice, external communities of practice, knowledge networks, and then finally business networks (Allee 2000). How we interact, and the structures we use to interact and share knowledge, depends on the driver (management problem or community problem) and whether the solution can be solved internally or needs to cross boundaries.

Work groups are often effective for internal problems defined by management where the expertise is inside the organization. Project teams are another example of a knowledge strategy whose members may be mostly internal but may require external technical expertise to succeed. Rarely is an external expert the leader of a work group or a project team. On the other hand, communities of practice, or knowledge networks, are often led by a charismatic individual who is recognized in the community as a leader, and rarely works for the technical team leading the technical solutions.
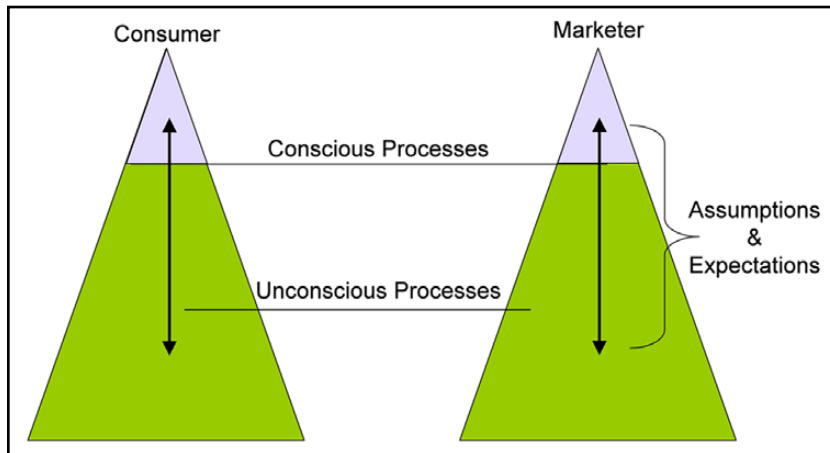

FIGURE 3. Consumer and marketing interactions based on explicit and tacit knowledge assumptions and expectations.
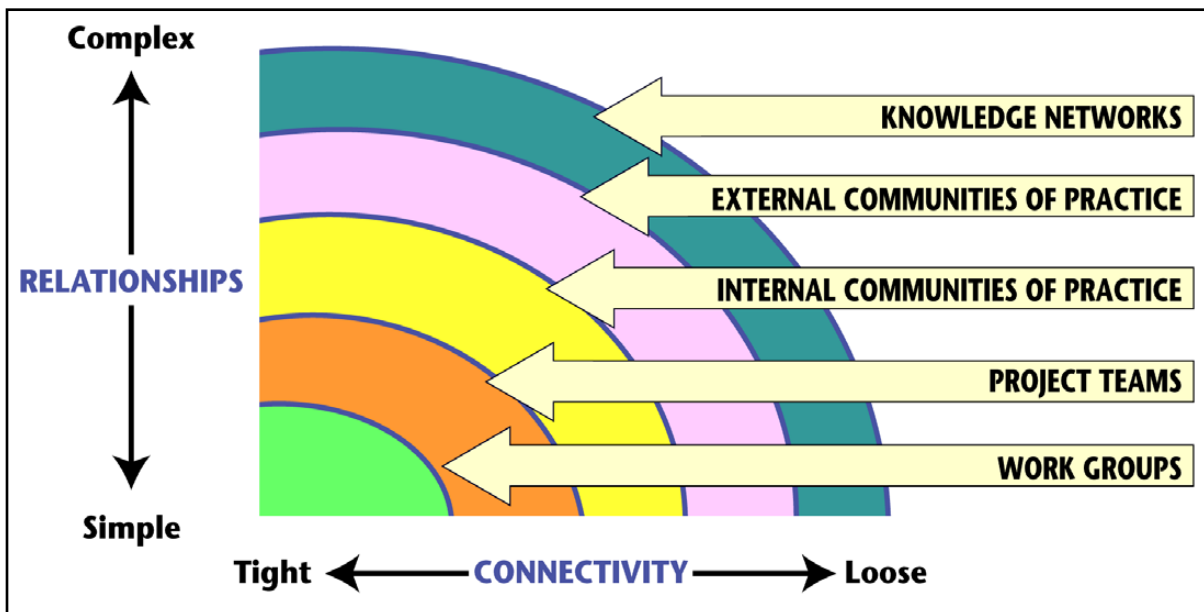

FIGURE 4. Knowledge management strategies (adapted from Allee 2000).

To be successful, communities of practice must have a mutual purpose or a joint enterprise, be engaged as a community, have the ability to share resources, and have similar or complementary social norms (Wenger 1998; Lesser and Storck 2001).

Social capital or venture capital?

The practice of community learning reflects the collective wisdom of those taking part in the community venture, and therefore the results of this collaboration become somewhat community property or a shared enterprise (Smith 2003). This value generated from a knowledge network is sometimes referred to as "social capital" (Lesser and Storck 2001). Working in a knowledge economy with the push to commercialize knowledge presents a challenge to knowledge providers who, in the past, have mainly provided their information for the public good. Table 1 illustrates a model, or process, for commercialization of technology. While not unfamiliar territory in the pharmaceutical and manufactured forest products sectors, the increasing interest in forest biotechnology and value chain benefits presents a unique challenge to the forest science community. The social and environmental benefits of sharing knowledge within and between organizations to build solutions could be weighed against the potential economic benefits to an individual or their employer. Protection of intellectual property rights and patents could confuse, if not prevent, the sharing of important information in a knowledge network. The potential to more quickly overcome resistance of slow-moving organizations, address unstructured problems, build capacity, and

increase opportunities for innovation (Allee 2000; Lesser and Storck 2001) could be viewed as less valuable than potential market benefits. Companies such as Xerox, General Motors, the World Bank, and Shell Oil have used the "internal communities of practice" approach for over 20 years to realize their business, community, and individual benefits. Organizations and individuals participating in external communities of practice or knowledge networks have a different set of tensions and challenges to effectively engage in the network. They must balance the financial benefits with social and environmental success (Allee 2000)—the potential for venture capital with the benefits of social capital, so to speak.

Social capital is defined as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal 1998). Social capital is illustrated through a series of relationships, and through a sense of trust, common interest, and understanding. It appears the point where this issue must be addressed is at the "proof of concept" stage, supported by published scientific findings, expert advice, market research, and trials (Anonymous 2001; Borregaard et al. 2003; Steger 2004). But if the concept is developed by a knowledge network or a community of practice—since this approach is considered a very effective learning and early adoption method—then a clear memorandum of agreement dealing with intellectual property rights and commercialization potential of this social capital needs to be negotiated prior to attracting venture capital. Will the knowledge of potential commercial value

TABLE 1. Technology Commercialization Model (Goldsmith 1999)

	Technical	**Market**	**Business**
Investigation	Technology Concept Analysis or Proof of Concept	Market Needs Assessment	Venture Assessment
Development Phase			
Feasibility	Technology Feasibility	Market Study	Economic Feasibility
Planning	Engineering Prototype	Strategic Marketing	Strategic Business Plan
Introduction	Pre-Production Prototype	Market Validation	Business Start-up
Commercial Phase			
Full Scale Production	Production	Sales and Distribution	Business Growth
Maturity	Production Support	Market Diversification	Business Maturity

and increased interest in entrepreneurship fetter the learning potential or bias the science and knowledge generated by the community? This remains to be seen and requires further study and the attention of the science policy community.

Summary

The context for how we work has changed. How we interact in a knowledge economy depends on our capacity to overcome institutional, cultural, and ethical barriers. Becoming engaged in communities of practice and knowledge networks is an effective way to communicate, share knowledge, learn, and build collaborative solutions. The social capital developed through these efforts will result in sustainable development solutions. However, the potential commercial value of these ventures may present a new barrier—that of an ethical conflict between social benefit and commercial enterprise. Whether you are a policy specialist, natural resource manager, research scientist, or knowledge worker, to be effective in this new knowledge economy you must learn and embrace the working environment, respect the values, beliefs, and culture of the sector you're working in, learn the language, and become an active partner in the knowledge-based joint enterprise.

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Becoming engaged in communities of practice and knowledge networks is an effective way to communicate, share knowledge, learn, and build collaborative solutions.

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Test Your Knowledge . . .

Advancing the role of communications, education, and capacity building in the future of forestry: Communities of practice and community-based learning

How well can you recall some of the main messages in the preceding Perspectives Paper? Test your knowledge by answering the following questions. Answers are at the bottom of the page.

1. Innovative transformation and forest sector revitalization requires:
    A) Using science and best available knowledge
    B) Evolution from tree- and stand-level planning to estate- and watershed-scale planning
    C) More productive interaction at the interface between science, policy, and management
    D) All of the above

2. In the context of community-based learning, the greatest learning opportunity for researchers to share their knowledge is:
    A) When new research is published
    B) Where practice and experience influence policy or management applications
    C) In a formal structured learning event
    D) None of the above

3. Knowledge management strategies:
    A) Start with a research question and end with the transfer of knowledge to a target audience
    B) Are based on the complexity of the issue and the interconnectivity of the individuals or organizations striving for knowledge-based solutions
    C) Are about capturing knowledge and storing in databases for future retrieval

4. Communities of practice and knowledge networks differ:
    A) In complexity of relationships
    B) In how connected on a daily basis the individual members are
    C) On leadership
    D) All of the above

ANSWERS

1. D   2. B   3. B   4. D