The Common Property Resource Digest

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Welcome to a special issue of the *CPR Digest*. This issue features an article from the Editor, **Doug Wilson,** on building a knowledge commons for managing common resources. In Doug's provocative article, he discusses different forms of knowledge, and provides an analysis of why certain kinds of knowledge sway more power than others. **Fikret Berkes** responds to Doug's lead by suggesting scientists should perhaps be facilitators rather than answer providers. **Barbara Neis** provides an additional view, pointing out from her experience that historical knowledge is crucial for understanding and using current knowledge. Diverging from the use of fisheries in examples of knowledge, **Heidi Ballard** presents an interesting reminder of the slippery division of knowledge types and cultural groups; like Fikret she suggests the use of holders of knowledge as facilitators of resource management, yet focuses on the role of the local holders of less powerful knowledge. The CPR Forum concludes with a response by **Anil Gupta.** In his article, Anil reminds us that dialogue is possible among different knowledge groups through the blending of formal and informal knowledge systems.

I would like to draw everyone's attention to the fact that this special issue is a farewell by Doug Wilson as he ends his tenure as the editor of the *CPR Digest*. I am sure everyone shares in my thanks to Doug for his years of leadership in Commons research through his editorship of the D*igest* and for his pushing for stimulating discussions and debate across disciplinary boundaries and regions of the world. **Thank you, Doug!**

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Knowledge for Commons Management: A Commons for the Commons

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Knowledge about a commons is a public good that has to be created and shared by the commoners so that they have the information then need to make and enforce operational rules and manage conflicts. On many commons people do different kinds of activities and the knowledge that results is also different. When these different experiences are mixed with different interests coming to an agreement on how to proceed can be very difficult. A fishery is a commons where developing a shared picture of what is happening to the fish is one of the toughest aspects of participatory management. For the past seven years most of my work has involved using tools from the sociologies of science and knowledge to try to understand this problem. I have learned that it brings to diverse groups similar kinds of difficulty and pain.

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Knowledge is always a community product and communities have different knowledge cultures with different ideas about what it means to "know" something. In commons management we sometime use as shorthand the idea that there are two basic knowledge cultures, i.e., the Western scientific and informal "local ecological knowledge" (LEK). There are actually many different knowledge cultures - among scientists and local communities alike. Sometimes these knowledge cultures attach to geographical communities, but they also attach to different professions or fields of inquiry. These communities "socially construct" nature differently.

Recognizing that knowledge is a community product, that different communities have different ideas about valid knowledge, and construct different pictures of nature does not mean we have to believe that facts about nature are impossible to establish as true. When asked how history would interpret the beginnings of the First World War, the French Prime Minister Georges Clemenceau famously replied : "One thing is for certain: they will not say that Belgium invaded Germany." The physical movements of troops and unleashing of weapons were facts in nature, not shared meanings. Clemenceau is reminding us that, while history is all about meaning and interpretation - indeed, every trigger was pulled because someone decided to do so based on their understanding of the situation - the truth of facts can also be very consequential.

In fisheries, large segments of the main stakeholders have acknowledged that fisheries face a global crisis. Most stakeholders have endorsed the "precautionary principle" that when knowledge of the stocks is uncertain the response should err on the side of caution. Most stakeholders have also endorsed the participatory approach that acknowledges that without cooperation through participation this commons is not going to be sustained.

But stakeholders have had a great deal of difficulty deciding how precaution and participation can be done. The majority of conflicts around fisheries take the form of arguments about the facts, even when the underlying conflict is about something else. Under the precautionary approach a common understanding of nature does not require an unattainable consensus, but, under the participatory approach, it does need to be common enough so that responses will not be continually blocked by disagreement. The only time we seem to be able come close to such a common picture is when everyone more or less agrees that an important stock has collapsed entirely. Clemenceau might call this the fisheries equivalent of an invasion.

The underlying problem is transparency and accountability. Only when stakeholders account for how

they know what they say they know is there a possibility of moving toward a common picture. There are two major problems. Obviously, what stakeholders say is coloured by their own activities, financial interests and concerns. The other is the difficulty of translating stakeholder knowledge into a form that can be accounted for in a transparent fashion.

The issue of interests arises for all stakeholders, including scientists and government management agencies. All stakeholders are going to select a certain set of facts as relevant. None of this is necessarily dishonest, everyone's tasks and problems help define their picture of nature. The response to this problem is not to try to privilege one stakeholder group as the carrier of 'objective' information, because the other stakeholders will not long accept this. Nor should we decide that it is impossible to create a common picture of the resource and reject cooperative management in favour of a pure political game where only the winner's picture counts. In the end cooperation is needed for effective management. The response that is left is to attempt to describe the activities and interests of the different stakeholders and how they influence their perception of the resource. This is another way to increase transparency and help them consider things they may not see in their own day to day activities.

The greater difficulty is that different stakeholders and the different knowledge cultures hold different *forms* of knowledge. One important distinction is between *tacit* and *discursive* knowledge. Tacit knowledge is knowledge that is not (easily) expressed, usually based on skills and experience. Gisli Pálsson's studies of boat captains show that they find it hard to explain why they know things because their knowledge comes from immersion in the everyday world. We often think of tacit knowledge in respect to fishers, but scientists rely heavily on tacit knowledge to accomplish their tasks. Because scientists report their results following formal conventions, the tacit underpinnings of their knowledge remains hidden until it is subjected to intense questioning such as during a legal proceeding.

A second critical distinction is between *oral* and *written* knowledge. Walter Ong has written a wonderful book describing the implications of these forms of communication. His many insights include such observations as: oral information is organized in flatter hierarchies than written information and involves fewer categories; because oral information is not stored in a durable form, a much smaller amount of information is preserved and this store tends to be conservative in content; and, oral information is less abstracted from the day-to-day and tends to be related to the immediate and concrete.

A third distinction is between *anecdotal* and *systematic* information. This applies to data, i.e. a set of individual observations, rather than to knowledge, which requires an understanding of the processes that link the observations. Systematic data is gathered by specific procedures. Its purpose is to link scale levels. It is a way to package information at one level so that processes happening at a higher level can be understood. Anecdotal means that the observation cannot be used to characterize phenomena at higher scale levels. It is not a reference to the validity of the information, although the word is often incorrectly used that way.

These different forms of knowledge are important because of the close link between knowledge and power. When it comes to participating in the give and take of participatory management, holding tacit, oral, or anecdotal knowledge rather than discursive, written, or systematic knowledge can mean real disadvantages. These disadvantages are not based on the knowledge being invalid nor on the unexamined assumptions of others about its validity, although such biases certainly play a part. They arise because discursive, written, and systematic information is easier to apply to the practical problems of managing complex, multiple-scale, multi-stakeholder commons.

Several authors have described how incorporating LEK in both scholarship and management changes that knowledge. Petter Holm, drawing on Latour, describes processes of "purification" in LEK fisheries research, in which many kinds of supposed beliefs, speculations, hopes and exaggerations are stripped away transforming it into a discourse that can 'hold its own' in scientific debates. Arun Agrawal argues that LEK can be changed so much that it becomes unrecognizable to the resource users. The intention of empowering local communities by mobilizing their knowledge does the opposite as the knowledge is transformed, alienated and even distorted as it loses its coherence out of context. This problem cannot simply be ignored, however, because unless we are talking about a very small and simple commons, any given local community is required to account to both other communities and other parties with legitimate interests for how they know what they say they know.

Interestingly, research on fisheries scientists has found similar patterns. The way fisheries scientists assess fish stocks in actual practice has real similarities with the way fishers assess them. The scientists analyse their statistical data and make practised judgements based on their knowledge and experience, a great deal of which is in fact skill-based and tacit. In a recent study, European fisheries scientists told us of the great frustration they experience as they are being asked to assess fish stocks and give answers in specific forms when the information they are working with is extremely uncertain. Many scientists are

experiencing a form of anomie arising from having the results of their efforts disembedded from the culture of their scientific community and changed into something they no longer can identify with as "science". Our attitude survey of scientists shows that this experience has a significant, negative impact on job satisfaction. In another study in the United States we found that even when the scientists and the fishers were in agreement about what was happening with a fish stock the official description that the management institutions required them to make was actually different from the one everyone agreed on.

Many scientists are calling for more discussion among stakeholders. They recognize first that they are not the only experts in the process and second that the uncertainty of the marine environment means that no single form of expertise has the right, or even adequate, answers. If the exclusive role of scientists is to offer up to the political process the "objectively real" for all to see and make decisions about, then scientists will continue to be forced to create something in which they do not believe.

Rather than asking the scientists to be less than what they understand "scientist" to mean, perhaps we need to ask them to be more, but as facilitators rather than answer providers. In some ways, scientists are the transparency experts, they know what it means to explain how they know what they know. They have a lot of experience in changing their own tacit, skill-based knowledge into clear discursive claims, though to play the role I am suggesting they would have to acknowledge that this is what they are doing. Scientists can help, and I have observed cases in which they are helping, to facilitate interactions between stakeholders in respect to building a common picture of the marine environment suitable for practical management. This is a much more realistic role than being The Experts who tell the other stakeholders how it is. Such facilitation can go a long way towards building the institutions for the knowledge commons we need to care for the commons we share in nature.

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For further reading:

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CPR FORUM RESPONSE

The Scientist as Facilitator or Adaptive Co-Manager?

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Doug Wilson's commentary addresses the crucial problem of building the *knowledge commons* we need to be able to care for the environment. The example he uses is the fishery, the commons with which he is most familiar. But he could easily have used other commons such as wildlife, forests, or rangelands. In building the argument, he discusses different forms of knowledge, and analyzes the reasons why certain kinds of knowledge sway more power, while making the important point that there are, in fact, many different *knowledge cultures* (and not just the two kinds, Western scientific vs. informal local knowledge).

His concluding point carries significant implications: Perhaps we should be asking (fishery) scientists to become *facilitators* rather than answer-providers — facilitators of interactions among stakeholders, to help build a shared understanding of the marine environment.

My take on this question is a little different. Scientists are highly trained people, but they are trained to specialize. They may specialize by species, by fishing gear, by ecosystem type, and/or by discipline, such as ecology, genetics, toxicology, and so on. A fishery scientist may be an expert on the population dynamics of, say, groundfish species, with little knowledge or interest in the feeding ecology of pelagic species, and even less in the affairs of fishers. Of course there is much variation among individual scientists and among countries. Scientists in smaller countries and developing nations tend to be less specialized and have wider skill sets.

However, I think it is fair to say that in most places in the world, facilitating stakeholders is not in the *repertoire* of skills that scientists normally hold, except perhaps for the rare (very rare) fishery sociologist or fishery anthropologist. Government fishery agencies in many Western countries make a distinction between fishery research scientists and fishery managers. The scientists do the research and provide advice to the managers. It is the managers (some of whom were originally scientists) who have the job of dealing with stakeholders, different interests and different kinds of knowledge.

I see two possible ways to proceed with the suggestion of asking scientists to become facilitators rather than answer-providers. One possible approach would be to go back to the

drawing board in the education of scientists and include in the curriculum (fisheries curriculum in this case) the study of epistemology, cross-cultural relations, conflict management and facilitation. A second approach might be to redefine "science" and "management" to merge them. This is not such a radical view, given that the *adaptive management* approach has always argued that learning-by-doing ultimately eliminates the duality of science and management (Lee 1993).

I see a third option as well. (The options are not mutually exclusive.) On and off over the last 15 years, I have been working in the area of co-management, the sharing of management power and responsibility between the government and resource users. One of the main findings of the vast literature that has accumulated on co-management (fisheries, forestry, wildlife, protected areas) is that scientists engaging in joint problem-solving with resource users, results in better informed users, more humble scientists, and the development of trust and cooperation. For example, co-management researchers in Alaska found that, contrary to expectation, direct user involvement in joint management boards did not increase the likelihood of cooperation. Rather, the key was the frequent and continued presence of government biologists in native communities that established trust and cooperation (Kruse et al. 1998).

Such co-management, I think, is the most effective way to alter the role of scientists from "The Experts who tell the other stakeholders how it is" to co-generators of knowledge and the facilitators of a common vision. I am guessing that my modest third option is already anticipated by Doug Wilson, the wily editor that he is, not only of the *CPR Digest* but also of the excellent book, *The Fisheries Co-management Experience* (Wilson et al. 2003).

However, one of the other findings of the co-management literature is that such trust, cooperation, and mutual respect and learning develop oh-so-slowly, at time scale of about a decade (Kendrick 2003). Developing co-management institutions requires attention to time and scale issues, and to iterative feedback learning from the management experience as it unfolds. So there is an adaptive dimension to collaboration, and this realization has brought in the concept of *adaptive co-management*.

We need scientists and managers who are willing to work with resource users in a hands-on fashion, to share knowledge and decision-making. We need a policy environment that fosters learning networks and rewards scientists and managers who participate in them. Perhaps the agenda of the next phase of commons research and action could include such adaptive co-management for building institutions for knowledge commons that we need, as Doug Wilson would put it, to care for the commons we share in nature.

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CPR FORUM RESPONSE

A Need for Historical Knowledge for Using Current Knowledge

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I come to this discussion of the challenges associated with generating agreement among scientists and others on what is happening to the fish from more than a decade of research on fish harvesters' knowledge and science in Newfoundland and Labrador, Canada. Unlike Doug, my work is less rooted in experiences with participatory management (which are few and far between in this part of the world) than in seeking to understand stock collapses in state-managed fisheries. In the beginning, I worked by myself, talking to harvesters, exploring why some disagreed with stock assessment science for northern cod in the 1980s. Since then I have worked in interdisciplinary teams involving social and natural scientists and we have gone on to compare and contrast fish harvesters' ecological knowledge and science in multiple fisheries.

Consistent with a background in historical sociology, I take the view that understanding what is happening with the fish now and might happen in the future require understanding the past and how we got here. Thus, much of the work we have done has sought to use fishers' knowledge and science to reconstruct the interactive history of fish, fisheries and fisheries knowledge. In contrast to Doug, we have relied primarily on textual and statistical sources when interpreting fisheries science although we have had opportunities to participate in some scientific meetings and to discuss our work with

government scientists. We have used taxonomic and career history interviews with fish harvesters to build an understanding of their primarily oral knowledge about the history and dynamics of their fish and fisheries. In our most recent work, we have sought to use these historical reconstructions to start a conversation with fish harvesters about the ways and means to achieve recovery.

From our work with harvesters' knowledge and fisheries science, I have come to see all knowledge (scientific, harvesters,' my own and that of others) as social-ecological in that it is mediated not only by the social-cultural location of the knowledge producer but also by where, when and how they interact with biophysical environments. I emphasize this here because I think most social scientists are still not sufficiently aware of the ways ecology interacts with social processes to inform knowledge production. For example, harvesters who fish with large mesh nets will probably know little about the location of juvenile fish and scientists who begin studying an ecosystem after it has been heavily fished may have a different sense of abundance trends than fish harvesters whose careers began before fishing intensity escalated.

Hope to see you there! Details on page 15.

Reconstructing the interactive history of fish, fisheries, science and fish harvesters' knowledge (ideally in conversation with these groups) can help us see the complexity of knowledge production and change and their relationships to changes in both fish and fisheries. In this sense, historical work can contribute to the transparency and accountability that Doug argues, correctly in my view, are essential to effective management. It can do this by bringing into the spotlight similarities between science and other forms of knowledge, contributing to our understanding of the basis for knowledge claims, and by helping to counter such problems as Pauly's shifting baseline syndrome which can lead us to underestimate the productive capacity of oceans and hence, often, the degree of degradation and potential for recovery in the sea and in our communities.

Let me illustrate. Hutchings (a fisheries biologist) and Paul Ripley and I (sociologists) wrote a paper entitled the "Nature of Cod" based on historical archival work in which we tracked underlying assumptions about the nature of cod from the late 19th century up to the 1980s among harvesters and scientists. We found that in the 19th century (based on media debates), there were two views about cod: that they were wandering vagrants and that they were local homebodies. The dominant view at the time appears to have been that they were local homebodies. By the 1980s, cod management was premised more on the treatment of cod as wandering vagrants with multiple stocks and populations managed in a single unit. Since then, work on bay stocks (often drawing on harvesters' knowledge), cod homing and Ted Ames work on the extinction of cod and haddock spawning grounds through trawling activity (based on interviews with harvesters) has shifted the dominant frame back towards the view of cod as homebodies some of which migrate considerable distances but even those returning on a regular basis to particular areas to spawn. Needless to say, wandering vagrants need to be managed differently from local homebodies.

Doing work on the history of science and fishers' knowledge has helped me see that the stock assessment science of the 1980s tended to marginalize not only fishers' knowledge but also substantial areas of fisheries science. Older inshore fish harvesters tended to talk critically about technologies like gillnets that "fished out" the "mother fish." Reading stock assessment science through the eyes of these fish harvesters, I found little information about such impacts and nothing in local fisheries management that sought to protect these large, older, known-to-be more fecund fish. I then looked elsewhere within fisheries science including to the work of Ed Trippel on cod reproductive biology that began to appear in the early 1990s. Since that time several scientists have documented the complexity of cod spawning behaviours (male and female) and evidence of differential spawning success and duration between inexperienced and experienced spawners.

In the 1980s there was little parallel science to match harvesters' concerns about the effects of dragging on benthic environments and thus on fish habitat and stocks. A scientist I interviewed in the early 1990s commented that at that time, within the Department of Fisheries and Oceans, the bottom of the ocean was there to "hold the

fish in." He was one of the first to begin studying potential impacts of dragging. Harvesters' observations and concerns about the effects of dragging on the "trees" on the bottom and their knowledge of where those "trees" are located preceded and have informed recent research on deepwater corals in the northwest Atlantic.

In the 1990s, my biologist colleagues Schneider and Ings were funded to re-introduce juvenile cod sampling in inshore areas along the northeast Newfoundland coast that had been carried out in the 1950s. This research helped them compare contemporary juvenile abundance with that from this earlier period and added a new index of abundance to stock assessment science. This work and their involvement with our research on fish harvesters' ecological knowledge led to research on the location of eelgrass (important habitat for juvenile cod and other species). To date, we have no comprehensive database documenting eelgrass locations and juvenile or nursery areas in the waters off Newfoundland and Labrador and thus no way of monitoring changes in that habitat or to systematically protect it from degradation.

This discussion brings us back to the central question in this forum: the relationship between knowledge, interests and what is happening with the fish. Our historical, comparative work on fish harvesters' knowledge and science reminds us that when we seek to understand what is happening with the fish, we need to be clear about what we are looking for. What fish are we talking about? Should we be talking about? To know this, we need to know more about stock structure. Do we simply mean the fish we are targeting – what about the bait? What about the juveniles and juvenile habitat – the dominance of stock assessment science and management based on counting fish and setting quotas in recent decades means we know far too little about many things that influence what is happening to the fish.

Understanding what is happening with the fish is both challenging and essential not only for successful participatory management but for any form of management. The need and challenge are particularly great when, as is too often the case, we are dealing with over-harvested stocks, degraded ecosystems and highly conflicted fisheries. Depletion and habitat degradation both narrow the margin of error and heighten uncertainty: critical and often unknown thresholds can be easily crossed and we know too little about how species respond to these forces. Unfortunately, as our research with harvesters has shown, depletion is commonly associated with accelerating fishing efficiency, mobility, and shifting effort across species contributing to uncertainty and to the need to get it right. Fishing mortality data required for stock assessments are often fouled by unrecorded bycatch and discarding which can threaten the accuracy of the stock assessments, their credibility among harvesters, and the willingness of scientists to trust harvesters' information. As fisheries move from more traditional to new target species and as they become more mobile and dynamic, the quality and depth of available science changes, as does the knowledge of fish harvesters.

Working on fishers' knowledge and science can open the door for discussions about management for recovery and ways to achieve that which are not limited to reducing fishing effort and thus harvester incomes. However, as indicated by Doug, both types of knowledge are highly complex and dynamic. Neither can be expected to answer questions for which the data don't exist (a legacy of yesterday's scientific preoccupations and of the ways technologies and industrial dynamism can mediate the shape and transfer of harvesters' knowledge) or to compensate fully for dwindling research and monitoring capacity which, too often, have accompanied stock decline. Agreement between harvesters and scientists can be comforting but must not lead to complacency. Points of disagreement can provide clues for ways to strengthen and improve our understanding of what is happening in the ocean but, in some circumstances and certainly some contexts, may have more to do with politics and agenda-setting than with marine ecosystems.

One final point. I was struck by Doug's failure to assert a place for fisheries social science in the struggle to know what is happening with the fish. Part of the value of the work we do as social scientists is to bring attention to the ways knowledge is mediated by power, technologies and other processes. Our work can help these groups see what transparency might entail and working with them can inform our social science research. More importantly, we will ask questions that natural scientists will not. As a social scientist, my response to a recent report on cod recovery was to pose the question "Recovery for who?" This question had received no attention in the report but is central to differentiating between recovery strategies and to interpreting scientists', managers' and harvesters' attitudes towards those strategies. Harvesters who are struggling to survive financially and who feel government is trying to force them out of the industry are likely to respond differently to calls for conservation and restraint from those who are doing well (often because they have access to other lucrative, limited-entry fisheries) and who expect to survive. For the former, conservation becomes yet another means to force them out; the support of the latter may have less to do with commitment to conservation than with economic flexibility and the view that strict conservation might reduce future competition for the resource.

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CPR FORUM RESPONSE

Integrating Knowledge of Forest Management

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Doug Wilson discusses fisheries, fishers and fishery scientists, but his insights into the typical dichotomy of local/traditional versus scientific knowledge applies to many fields, especially forests, forest workers and forest scientists. His juxtaposition of tacit and discursive, oral and written, and anecdotal and systematic forms of knowledge offers finer distinctions of the two types often provided. From the perspective of someone working primarily on forest management in the United States, I'd like to add another layer to the discussion: many people in forested areas in fact defy the dichotomy by holding and using virtually all these forms of knowledge simultaneously.

In looking at whether and how local ecological knowledge gets incorporated into monitoring of and research on forest management, I've seen the line between scientists, managers and "locals" blurred quite a bit. In many areas of the U.S., retired U.S. Forest Service personnel and other private forestry professionals, both managers and scientists, are also valuable members of a local community. These and other local people may have long-term, tacit, oral and anecdotal knowledge of their forests, and are also educated and/or scientifically trained in the Western science traditions of discursive, written and systematic knowledge. Hence, a number of people involved in forest management hold and use all of the above forms of knowledge. The same could be said of many people in fisheries, range management, agriculture and even urban planning, though these fields are not my focus here. These "local scientists," who hold a broad range of different forms of knowledge, play an important role in the many communities collaborating around forest management on private or public lands. Examples include a retired technician from the U.S. Forest Service who is a volunteer for the community wildfire protection committee, a local private consulting forester who is on the advisory committee for the collaborative stewardship project, or a Native American forestry department manager who has an advanced degree and extensive traditional ecological knowledge handed down through generations. In these cases, the difference between conventional scientific knowledge and local knowledge becomes harder to distinguish. This is important when agencies, foundations and other organizations increasingly require "local stakeholders" or "local knowledge" to be incorporated into forest management projects and plans.

These local scientists have their feet in both worlds; they form a third category that bridges the gap between conventional scientists and "locals". This has at least two consequences. First, in relation to Doug's suggestion that scientists become facilitators, it might make it easier for a scientist to facilitate the conceptualization of how the ecological system works when everyone in the room can speak the same techno-scientific language of public agencies and scientific journals. Secondly, it may also mean that those local people who are not as able to cross the boundaries between the two worlds, who don't have the discursive, written, systematic knowledge of the ecosystem, are even further marginalized and left out of any discussion of forest management. In a system in which agencies and other organizations oftentimes require that a "quota" of local stakeholders be involved in a forest management project or plan, those locals who have conventional scientific training may more easily fill the slots, further excluding those with the less powerful forms of knowledge. For example, a landscape assessment project in Oregon was initiated and completed by a local community group, and is now being used to scope projects by the U.S. Forest Service. The project is a testament to how locals and local knowledge can produce useful science for agency forest management. However, most of the people that completed the project were well-trained former or current professionals in the natural resources field. Does this mean that their local knowledge was less "local" or tacit, or that their project does not therefore include local knowledge? I don't think so. But it may mean that some other valuable local knowledge was left out.

Take the case of the thousands of non-timber forest product (NTFP, also called non-wood forest product) harvesters in the Pacific Northwest who spend ten months of the year harvesting shrub and fern foliage used in floral bouquets around the world. They gain access to large areas of private timber and public lands through permits or leases, and then sell what they've picked at a piece-rate to wholesalers for between $25-$100 per day. These harvesters (like the many other forest workers who plant tree seedlings, thin stands and do other forest restoration work) have extensive ecological knowledge of the forest, timber management practices and the impacts of their own harvesting. They (like many other forest workers) are also primarily immigrant or migrant workers from Latin America and Southeast Asia who often speak little English and have very little formal education. While there are active debates about whether these NTFP harvesters should be considered "local", the real issue is that they have knowledge of the forest that the

professionally trained and educated scientists and managers don't have because of their livelihood activities. There are also a variety of forest technicians, private landowners, and retired forest professionals who have lived and worked in these forests for generations and may fall into the third category described above, with their feet in both worlds. These people can be great assets to efforts to aggregate knowledge of the forest ecosystem and effects of management, and are much more accessible for scientists and managers to gain local knowledge or public input. But they don't often have the knowledge of overstory-understory relationships and impacts of NTFP harvest that the forest workers have. As managers and scientists try to catch up in their understanding of the impacts of the rapidly intensifying harvest of many species, harvester knowledge should be integrated into the body of information used to manage public and private forests.

With this in mind, what is the role of the local scientists, the people who combine the knowledge forms of conventional scientists and locals? They may either help facilitate the communication between scientists and (in this case) harvesters, or instead provide a barrier between them such that those with tacit, oral and anecdotal knowledge are even more excluded from forest management and science activities. An example of a person who chose the facilitator role is a local retired forest technician, who has also harvested NTFPs in the region for 50 years and helped to found a harvester association. This association helps primarily Latino harvesters negotiate for access to land and collaborate with ecologists. As one of the collaborating ecologists, I worked with the association founder and other harvesters to design experiments studying the impact of different harvest levels on the commercial and biological productivity of a particular NTFP species. We arrived at an experimental design and results that could not have been achieved by only working with forest professionals or ecologists because the harvest treatments and commercial productivity measurements more accurately reflected harvest conditions. This would not have been possible without the association founder.

The harvester example also reflects the issue raised by Doug as to the role of scientists in helping to integrate the many forms of knowledge. Many scientists do not have the needed skill-set for facilitating meetings of stakeholders with conflicting values or inconsistent understanding of an ecosystem. However, some training during graduate school, or even in the form of mid-career workshops, could build scientists' awareness of and respect for ALL the forms of knowledge and all the different groups of local people who hold that knowledge. Of course, some groups may not want to contribute their local knowledge to a project for a variety of reasons, and may be wary of the project or the organization running it. The important thing is that all the groups of local people are informed about the forest management project or plan and can decide whether to participate and add their knowledge or not, in whatever form it is held. In fortunate situations, then, conventional scientists with these improved skills can partner with local scientists who have both conventional scientific and local ecological knowledge. Together they can reach out and facilitate ways to include people who hold less powerful but important forms of knowledge, such as harvesters, other forest workers, non-English speakers, some Native American groups, and those of low socio-economic status. By partnering with the local scientists who have their feet in both worlds, conventional scientists may be better able to collaborate with those who's knowledge is often overlooked.

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CPR FORUM RESPONSE

Traversing Across Knowledge Domains

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When the knowledge of people is neither fully understood nor properly interpreted, it is unlikely to be used for making decisions that help the same people. This is obvious. But to suggest that people's knowledge, because it is oral, may not thus be abstracted or conserved may not be very accurate description of reality in certain parts of the world. Doug is right when he observes, "holding tacit, oral, or anecdotal knowledge rather than discursive, written, or systematic knowledge can mean real disadvantages" for the people. But then sometimes disadvantage is mutual. The pressure under which scientists have to declare a given state of fisheries in an uncertain world as stable, is neither systematic, nor discursive. It is simply opportunistic. And opportunism is not some thing that only local communities thus indulge in.

Anecdotal knowledge can help in scaling up the context enormously which analytical perspective might just miss. In *Honey Bee* newsletter, we published an article by Huntington based on his experience in interacting with a community in the Arctic Circle about how did they deal with beluga whales. The external researcher wanted to know about the behavior of beluga whales and local communities went on explaining about the behavior of salmon. After a while, the expert got exasperated. He said, "Look I am asking about beluga and you are talking about salmon, why not tell me just about beluga?" the local elder then replied, "Sorry, my dear friend, you do not understand. When beavers make a dam, the salmon can not go upstream. Beluga then do not get enough salmon to eat, and thus move away". To understand beluga, one needed to understand the salmon and beaver behavior—

all described through anecdotes. Local knowledge can thus be understood in all its richness and underlying systematics if it is seen as apart of local epistemology which searches the same questions of truth, validity and relevance through a different semantics than used by formal science.

Mobilizing local knowledge, pooling the best practices, and sharing this back with local communities in local language and with due credits, indeed empowers the people, as has been demonstrated by Honey Bee Network for over sixteen years in India and several other parts of the world. The knowledge however, is not held just in commons.

It could be covered by private, common and public domains (Gupta and Sinha, 2002) just as the resources could be covered by similar three domains. The interplay between resource and knowledge domains generates interesting dynamics of rights, entitlements and reciprocities constituting a local community and its pool of shared meanings. Will scientists reciprocate the rules of sharing that local communities observe? This is a legitimate question.

Power relationship between scientist and researcher are neither stable nor fixed. Local communities or individuals can sometimes wield enormous power expressed by silence or eloquent denial of the meanings that scientists may have derived. But it is true that farmers or fishermen or women generally do not get the same respect accorded to the scientists. But things are changing. The Council of Scientific and Industrial Research, signifying excellence in formal research, signed a memorandum of understanding with the National Innovation Foundation to pursue research in four areas of indigenous knowledge, innovations and practices. The Indian Council of Medical Research has also initiated a dialogue with NIF about a systematic research program to analyze the non-codified, non-classical folkloric traditional knowledge systems. Here both the individual as well as community aspect of the knowledge is dealt with. We do not believe that all the knowledge that communities posses evolves only in commons. It could not just be so. After all, dissent and discontinuity at individual level provides the spur for tens of thousands of grassroots innovations that NIF has documented over the years. While it is true that much of the knowledge exists in common, the scope of proprietary knowledge is not insignificant. Even here, while many in the community might know, not all have equal capacity or expertise in practicing the given knowledge. Thus being aware is not the same as being able to put into practice. And being able to practice is not always same as being able to explain.

During the recent Tsunami induced human disaster, it was after all, a tribe in Andaman (and not any scientific institution or community) which anticipated the scale and intensity of disaster and thus escaped all damage almost completely. Their knowledge is now being sought by scientists to be transformed for recalibrating their own understanding of oceanic behavior. So much for the damage that mobilization of local knowledge might bring about.

Elements of different kinds of knowledge systems when woven or bundled together in various portfolios of institutional meanings and support structures, provide the basis of survival for several communities in environmentally stressed regions. The knowledge commons can become even more crucial when climate changes become more frequent and individual capacity of each formal or informal community might get impaired or weakened by the lack of sharing of survival strategies. How will such sharing take place? Our contention is that respect for local individual knowledge experts is as crucial a link in this knowledge chain as the recognition of the knowledge commons and the viable public domain.

Doug has raised several interesting questions in his lead article. We compliment his leadership and support to the *CPR Digest* all these years precipitating debate and dialogue across boundaries of disciplines and regions. In this response, we particularly appreciate the seeds of doubt that he has sown in the minds of those who had believed that accountability and transparency was possible only among shared realm of meanings. We add that even with incongruent meanings, dialogue is possible; transformation can take place by blending formal and informal knowledge systems. Time has come to go beyond just one domain of knowledge and thus traverse across private, common and public domains with facility and faith in local ingenuity. The precautionary principle justifies genuine engagement and respect for ecological integrity. But it can also be an alibi for inertia because in the absence of new interventions, old interventions do not get de-legitimized. The damage by the ongoing practices of resource management must be taken into account while evaluating the likely consequences of new technological interventions. The situation becomes more complex when the benefits and costs of existing interventions and new technological change are not symmetrically distributed over space, season, sector and section of societies. In the absence of scientific assessment of the way these costs are distributed, the precautionary principle can sometimes be a means to perpetuate status quo, no matter how unsustainable that may be. The need is there for balancing the interests of transparency, accountability and sustainability while negotiating the choices across knowledge and resource domains. History, after all, is always written by those who survive, some how!

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Charlotte Hess

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ANNOUNCEMENTS

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For questions about IASCP papers and research contact Charlotte Hess, Information Officer, IASCP, 513 N. Park, Bloomington, IN 47408 USA iascp@indiana.edu Tel: 01-812- 855-9636 Fax:: 01-812-855-3150

Nominations for 2006 IASCP Officers

Nominations for the 2006 election of President-elect and Executive Council will soon begin. Ballots will be sent to membership in early 2006. Members will vote for President-elect and two Executive Council members.

According to IASCP bylaws, candidates may be nominated for elected offices upon written petition from one percent of the membership. Candidates must be eligible for office, members in good standing, and have given written consent to the nomination to the President. The President must receive such nominations no later than four months before the General Meeting.

Nominations may be emailed **no later than February 15 2006** to any member of the Nominating Committee:

Susan Hanna, Chair	susan.hanna@oregonstate.edu
Rucha Ghate	ghates_ngp@sancharnet.in
Isilda Nhantumbo	isildan.iucn@tvcabo.co.mz
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Dianne Rocheleau	DRocheleau@clarku.edu

Conference Announcement

The Eleventh Biennial Global Conference of
The International Association for the Study of Common Property

Survival of the Commons: Mounting Challenges & New Realities

June 19 – June 23, 2006
Bali, Indonesia

Conference Sub-themes

1.1 Contemporary analytical tools and theoretical questions
1.2 Conservation policy and the commons
1.3 Culture, identity, and survival of the commons
1.4 Local resource rights and management institutions
1.5 New frontiers (the new global commons)
1.6 Privatization
1.7 Resurgent commons within public or private property
1.8 The commons and the fate of agriculture, forestry, and fisheries
1.9 The state, legal reform, and decentralization

Special Panel Series: "The International Journal of the Commons"

A selection of papers presented at this series of panels will be published in the very first issue of the "International Journal of the Commons," January 2007. Papers that provide an update of findings related to fisheries, irrigation systems, pastoral systems, digital commons, and forestry would be of major assistance in helping summarize for all of us where we are. Synthesis articles on the impact of the size of a group, its heterogeneity, the kinds of rules in use, the level of governance arrangements, and other major issues are also encouraged.

The conference secretariat will notify individuals of acceptance by **January 15, 2006**. The final papers should be submitted by **April 15, 2006**.

Funding for ParticipantsThe FORD Foundation, IDRC, and the Christensen Fund have supported travel to past IASCP conferences. We are hopeful that they will be able to partially fund a small number of conference participants at IASCP2006. **Please indicate on your abstract submission form if you will need partial funding to attend the conference.**
Visit www.iascp.org for information regarding Multiple Submission Guidelines and for the full conference announcement.

Contact Information:
IASCP2006 Conference Committee

Email: Iascp06@indiana.edu
Website: http://www.iascp.org

Book Series Announcement

MANAGING THE COMMONS: IASCP2004 POST-CONFERENCE PUBLICATIONS

A Series Edited by Leticia Merino & Jim Robson

"So many edited books by academics are focused primarily on scientific topics of interest primarily to one discipline. These four volumes dramatically differ from most post-conference volumes. The volumes are written by scholars who address broad issues of interest across scientific disciplines that are of concern to citizens and policymakers in all parts of the world. If scientists are to have any impact on the policy world, efforts like this are essential to provide readable syntheses that document important findings and their policy implications…these volumes provide excellent summaries of an immense body of research — and they are written by authorities who know the field well."

– Elinor Ostrom, Indiana University

These four volumes have been put together as a follow-up to the Tenth Biennial Conference of the International Association for the Study of Common Property (IASCP), which took place from August 9 – 13, 2004, in Oaxaca, southern Mexico.

A brief analysis of the conference showed that this was the best-attended and most geographically diverse IASCP Conference to date, helping to attest to the global importance of IASCP and the relevance of the themes under discussion. The conference brought together a new configuration of knowledge across disciplinary, institutional, regional and generational lines. It produced analyses of direct and contemporary relevance for policy-makers and political establishments, and it introduced new topics for specific debate and discussion at an IASCP event. These publications are the result of the long-term project of producing a series of cutting edge "referencing tools", based around what were regarded as the most interesting and pertinent conference themes under discussion in Oaxaca.

- **Managing the Commons: Payment for Environmental Services** ISBN:968-817-735-0, Paperback, 72 pages
- **Managing the Commons: Conservation of Biodiversity** ISBN: 968-817-734-2, Paperback, 61 pages
- **Managing the Commons: Markets, Commodity Chains and Certification** ISBN: 968-817-736-9 Paperback, 76 pgs
- **Managing the Commons: Indigenous Right, Economic Development and Identity.** ISBN: 968-817-737-7, Paperback, 72 pages

These four volumes take a look at many of the problems and challenges related to the management of natural resources, and the work presented is a glimpse of the richness and relevance of some of the most interesting research currently being carried out within the field of CPR study.

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The Editors: Leticia Merino and Jim Robson both work at the Instituto de Investigaciones Sociales of the National Autonomous University of Mexico (UNAM). They were President and Coordinator, respectively, of the Oaxaca IASCP2004 conference that provided the platform from which these four volumes were developed.

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