Transformative learning for better resource management: the role of
critical reflection

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Since 1992, integrated management has been promoted as the solution to challenges facing governments and civil society around the world when managing natural resources. It was argued that integrated management could lead to sustainable development if new participatory approaches to social learning could be developed. Since that time, social learning theory has been an important component of resource management literature. This paper argues that until social learning theory leans more heavily on group processes of transformative learning, sustainable development will elude us. Further, a process of systematic, critical reflection is key to transformative learning, as we illustrate using a five-year research project into the role of communities in integrated management in the Canadian Maritimes. Our experience shows how critical reflection processes can strengthen participatory research to further inform the practice of integrated management. We conclude by observing that room must be made for critical reflection and for true social learning in all integrated management institutions, whether community-based or government-initiated.

Keywords: integrated coastal management; community-based management; participatory research; community-university research alliance; transformative learning; social learning; critical reflection

1. Introduction


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and Mitchell 2003, Allan and Curtis 2005, Keen and Mahanty 2006, Armitage et al. 2008, Berkes 2009). The integrative management literature, for example, focuses participant learning on adopting values around sustainability (e.g. Fitzpatrick and Sinclair 2003, see also Agrawal 2005). In adaptive management, whether active (experimental) or passive (in which management is adjusted as new learning emerges), learning is thought to somehow increase local ability to buffer change (Folke et al. 2002). However, as Finger and Verlaan (1995, p. 510) point out, capacity building may not be the best pedagogical model for learning our way out of environmental and social problems.

The concept of capacity building generally relies on external sources of knowledge that will improve local capacity. Where will this knowledge come from? In the standard model, regulators, policy makers, scientists and resource users will all learn together to better manage resources (see Diduck et al. 2005, p. 282). However, Allan and Curtis (2005) have found that natural resource managers tend to value “activity, control, comfort, and clarity over reflection, learning, and embracing complexity and variability” (p. 423). Regulators may thus resist being part of the learning process. In addition, scientists and resource users often devalue the knowledge base of the other. In fact, all parties to resource management have institutional and cultural reasons to resist collective learning, leading to institutions that are brittle instead of resilient (Holling and Meffe 1996). The question is how do we encourage collective learning capacity among policy makers, regulators, stakeholders and academics?

What is needed is some new thinking on the social learning process, which many acknowledge is not well understood (Schusler et al. 2003, p. 311, Bouwen and Taillieu 2004, p. 150, Armitage et al. 2008, p. 86, Muro and Jeffrey 2008, p. 326). In this paper, we rely on transformational learning theory to demonstrate that critical reflection is one of those fundamental processes of social learning not fully understood or appropriately utilised in natural resource management. We report on an experiment in social learning for better resource management, one that offers several lessons toward designing institutions that encourage that capacity.

We illustrate the value of critical reflection by describing the reflection process undertaken by the members of a large, multi-sited research project on integrated coastal and ocean management (ICOM) in the Canadian Maritimes. This project, entitled the Coastal Community University Research Alliance (Coastal CURA), built a place for critical reflection into the heart of the project.

To prepare for reflection, we drew from the literature both on transformative learning in adult education (Taylor 2007) and on social learning in natural resource management. In transformative learning theory we found a more rigorous and nuanced approach to adult learning, which encouraged us to design the first year of our project around critically reflecting on the past experiences of our community partners when confronted with changing institutional, political and ecological environments. This involved a multi-stage reflection process. First, we collectively discussed local community experiences to select specific case studies for lessons learned. Case studies ranged from 400 years of aboriginal experience in loss of access to resources, to 10 years of experience in groundfish management boards (see Table 1). Each partner organisation then analysed their individual case studies for lessons learned, and their analysis was subsequently shared with all participants. Several rounds of group reflection on these cases followed, which we found valuable not only for creative development of new management approaches, but also for
deepening participatory research. This paper reports on that experience. We offer lessons for enriching integrated management, through the theory and methodology of critical reflection to support transformative learning. Further, we offer lessons on how to improve participatory research to inform a reflective practice of integrated management. Finally, the learning that resulted from the Coastal CURA reflection

Table 1. Reflection projects and their outcomes.

<table>
<thead>
<tr>
<th>Community Partner</th>
<th>Reflection Topic</th>
<th>Learning Outcome</th>
<th>Timeline</th>
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<tbody>
<tr>
<td>Fundy North Fishermen’s Association</td>
<td>Historic displacement from fishing grounds in Saint John Harbour (film).</td>
<td>Film changed internal (within FNFA) and external (local public) perceptions of management of Saint John Harbour and increased support for fishing in the harbour.</td>
<td>Film released 2008</td>
</tr>
<tr>
<td>Bay of Fundy Marine Resource Centre</td>
<td>History of clam harvest and governance (2 reports); community perceptions of ICOM (Master’s thesis).</td>
<td>Facilitated the reunion of 2 formerly divided harvester organizations and local demands for consultation during privatization of clam flats.</td>
<td>Reports completed 2007; Wilson 2007; Parlee 2011</td>
</tr>
<tr>
<td>Fundy Fixed Gear Council</td>
<td>Review of ten years of community based management of ground fishery (report).</td>
<td>Focused attention on challenges (maintaining handline fishery) and successes (managing ground fishery with limited support, expanding into ecology projects).</td>
<td>Report completed 2008</td>
</tr>
<tr>
<td>Acadia First Nation</td>
<td>Impacts of the Marshal Decision.</td>
<td>Project incomplete.</td>
<td>n/a</td>
</tr>
<tr>
<td>Bear River First Nation</td>
<td>Reviewing recent history of community resource management.</td>
<td>The revitalization of a fish habitat and stream restoration project, and of recognition of connections between livelihoods and stream systems.</td>
<td>Community meetings 2007–2008; Stream restoration re-initiatied 2008</td>
</tr>
<tr>
<td>Mi’kmaq Confederacy of PEI</td>
<td>The chronology of Mi’kmaq resource utilization (poster, report, thesis).</td>
<td>Built internal community awareness and furthered efforts to develop an ICOM approach for Malpeque Bay.</td>
<td>Harvey, 2009; Porta, 2007</td>
</tr>
<tr>
<td>Academic Partners</td>
<td>Reflection on past participatory research (journal publication).</td>
<td>Challenged us to think about participatory research in new ways.</td>
<td>Kearney et al., 2007</td>
</tr>
</tbody>
</table>
process had many outcomes and this also suggests new directions for evaluating social learning.

Our paper proceeds in several sections. First, we discuss the literature on integrated management and social learning. Next we describe the need for transformative learning through critical reflection, before turning to the Coastal CURA reflection process and outcomes. We then discuss how our experience illustrates the possibilities of collective learning, as well as some blocks that confront the reflection process. We conclude by highlighting several lessons learned and by emphasising the need for institutional support for critical reflection.

2. The role for learning in integrated coasts and oceans management

The coastal zone is the interface between land and sea, encompassing inshore waters, inter-tidal zones, estuaries, watersheds and adjacent tracts of land (Weiss Reid 2004). A growing proportion of the global population is located along the coastal zone, where a wide range of critical problems include habitat degradation, pollution, major conflicts between users and climate change impacts (Cicin-Sain and Knecht 1998). To address these problems, Integrated Coastal and Oceans Management (ICOM) has been developed as part of a general shift away from centralised resource control and toward multi-scale, multi-stakeholder governance (Pahl-Wostl et al. 2007). In principle, ICOM can improve resiliency by addressing cumulative impacts of multiple industrial activities, at multiple scales, and as regulated by different institutions. Further, by involving coastal resource users, policy can be better suited to local social-ecological systems.

In the Canadian context, ICOM is mandated under the Oceans Act (Government of Canada, 1996, Chapter 31), which authorised Fisheries and Oceans Canada (DFO) to develop ICOM approaches for the sustainable use of Canada’s oceans (DFO 2002, Guénette and Alder 2007). The government has recognised that building better management institutions will require linking across scalar levels, both vertically (channels of authority) and horizontally (among equals), and across jurisdictions (see Berkes 2009). Further, while DFO documents posit ICOM as a qualitatively different way to govern oceans and coasts, one that should involve open discussion of the values and objectives that planning would promote as well as open sharing of relevant information, there is little concrete guidance on how this shift should be accomplished (see Turner 2000, Kearney et al. 2007). To date, formal DFO-driven ICOM projects have been limited to Large Ocean Management Areas (LOMAs), located offshore, with stakeholder advisory groups heavily weighted toward offshore industry (Rutherford et al. 2005). In contrast, locally-driven efforts to promote ICOM have been small scale and under-funded. Bastien-Daigle and colleagues (2008) surveyed such small-scale efforts and discovered that far from prioritising and acting on a common set of objectives, project staff focused on environmental remediation while government bureaucrats emphasised the control of conflict between users (Bastien-Daigle et al. p. 104). It has become obvious that local and government expectations of ICOM differ significantly (see Charles et al. 2010).

This lack of common expectations and of support for institutions offering the community a real role in ICOM stimulated the Coastal CURA project. The concept of integrated management raised community expectations that those who relied on coastal resources would be more involved with management decisions. When these expectations went unrealised, several community organisations turned to academics...
for help in thinking about the institutions that might promote better community involvement.

A review of the literature suggested that social learning would be central to improved management institutions. This is because, as Bouwen and Taillieu (2004) noted, social learning:

actively engages different groups in society in a communicative process of understanding problems, conflicts and social dilemmas and creating strategies for improvement ... It involves understanding the limitations of existing institutions and mechanisms of governance and experimenting with multi-layered, learning-oriented and participatory forms of governance. (p. 43)

From this perspective, integrated management, like many other innovative management approaches, must involve “a process of joint decision-making among key stakeholders in a problem domain directed towards the future of that domain” (Bouwen and Taillieu 2004, pp.138–139). Because this process is radically different from conventional hierarchical oceans and coastal resource management, all resource users, coastal citizens and managers will have to learn how to do this together.

3. Transformative social learning and scalar issues

Excellent summaries of the social learning literature and its sources in a number of disciplines can be found in Armitage and colleagues (2008), Bouwen and Thaillieu (2004) and Muro and Jeffrey (2008). These approaches see learning as essentially an individual phenomenon (see also Finger and Verlaan 1995, p. 510), following adult learning models (see Armitage et al. 2008, p. 88, Van der Veen 2000). According to Kolb (1984), adult learning is a process or ‘learning cycle’ that includes four key stages: concrete experience, abstract conceptualisation, active experimentation and reflection (self-evaluation through reflecting on experiences and actions). Does social learning differ from this individual learning process? Armitage and colleagues (2008) suggested that there are three key learning theories, only one of which focuses on group learning. Experiential learning (learning-by-doing, or Kolb’s model, above) and transformative learning (learning that alters individual consciousness, see below) are both modelled on individual learning. Social learning, on the other hand, is a process of iterative reflection that occurs when we share our experiences, ideas and environments with others. Armitage and colleagues (2008) argued that social learning can be particularly valuable for rethinking governance institutions; it can include single-loop (to correct errors from routines), double-loop (to correct errors by examining values and policies) and triple-loop learning (to rethink governance norms and protocols) (see Figure 1). Our learning process was specifically designed to critically examine governance norms and protocols in order to find room for a community-based approach; in other words, we wanted to promote double and triple-loop learning.

Other literature suggested, however, that triple-loop learning would only be possible when supported by transformational learning. We agree with Armitage and colleagues (2008) that most approaches to transformative learning are focused on individual transformation. Transformational learning occurs when “the ways in which adults see things – their frames of reference” (Percy 2005, p. 130) or in Mezirow’s terms, ‘meaning perspectives’, become more “inclusive, differentiated permeable (open to other points of view), and integrated” (Mezirow 1991, p. 7). This
promotes inclusivity and opens the door for learning from each other and for creative synergies, which feeds into the transformational approach of Paolo Freire (1970, 1994). Freire’s approach calls for examining societal structures that lead to inequality and oppression, and how those structures shape how we see the world (Dirkx 1998). This critical perspective to transformation, coupled with an action orientation, makes Freire an especially good fit for double and triple-loop social learning that is focused on values and governance (see Figure 1).

If social learning is: “collective and collaborative learning that links biophysical to the social, cultural and political spheres, the local to the global arena, and action to reflection and research” (Finger and Verlaan 1995, p. 503), then it must be at least partly transformative for those involved. According to Bouwen and Taillieu (2004 pp. 138, 143) the collective element of this learning involves a communicative process with an ontological outcome, such that a joint social construction of reality emerges. This process is iterative, reflective and contextual (Keen and Mahanty 2006, p. 498, Armitage et al. 2008, p. 89) and can take place at different scales (Pahl-Wostl et al. 2007). As Van der Veen (2000) pointed out, at its best, such collective learning should involve a complex interplay of divergence and convergence:

... not only the competence to oversee and to review all relevant facts and arguments, but also the opposite competence to integrate these divergent facts and arguments in a new, converging synthesis. (p. 18)

Such a complex process cannot be reduced to capacity building. Furthermore, it requires a deep shift in management approach, one that recognises our fundamental interdependence, the way that each action taken affects many others (Kearney and Berkes 2007). As Bouwen and Taillieu (2004) noted:

In this learning for interdependence process not only stakeholders in local communities are involved, but equally important is the way scientists, politicians, policy makers and business leaders interact with each other on different levels. (p. 148)

For such interactions to encourage collective learning, a few important hurdles must be taken into consideration.

One challenge for social learning involves power dynamics. Current stakeholder-based integrated management institutions operate under the assumption that the
simple sharing of information or experiences at a common table will result in a collectively-shared understanding of problems and solutions. However, such institutions rarely address important questions: when and why is certain knowledge shared and by whom; how is knowledge valued differently across the group; and how does the different levels of power across group members contribute to shaping knowledge production, exchange and valuation? In fact, the process of forgetting, rendering visible or making silent parts of our collective experience is always political (Bouwen and Thallieu 2004). A specific focus on critical reflection acknowledges these challenges and challenges participants to think about how to addresses them.

Freire’s approach to learning also focuses attention on the issue of power in relations between community and academics (see Wiber et al. 2009, p. 173). Thus in the Coastal CURA we specifically sought ways to empower the community in the knowledge generation process, and to encourage both academic and community partners to critically reflect on the role of power in that process.

4. The role of critical reflection

There is some disagreement in the literature on the role of reflection in social learning. Greenwood (1998, p. 1049) viewed the purpose of reflective practice to be “the creation of a world that more faithfully reflects the values and beliefs of people in it, through the construction or revision of people’s action theories”. This implies that reflection works primarily to maintain a close match between values and actions. Keen and colleagues (2005, p. 3) argued for a more complex learning process in which reflection is just one activity among others such as gaining a systems orientation to focus on integration, negotiation and participation. As a group exercise, Keen and Mahanty (2006, p. 508) suggested that reflection plays a critical role in considering “what relationship our own knowledge has to that of others”, opening us to challenges on the assumptions and values that underlie our knowledge.

We relied on the learning literature to suggest several methods of group reflection in the Coastal CURA. Greenwood (1998, p. 1049), for example, discussed four types of reflective practice organised around action: reflection before, during and after action, and returning to experience to reflect on outcomes. Smyth (1992) further specified elements of these stages: (1) describe – a post-factum analysis of practice experiences; (2) inform – uncover the principles that drive our actions and inform ourselves about where they come from; (3) confront – to question the legitimacy of the practice as is; and (4) reconstruct – that is, to act in the world in a way that changes it. Taylor (2007, p. 1051) suggested questions that further collective reflection around all four stages of action: what do our actions say about our assumptions, values and beliefs? Where did these ideas come from? What social practices are expressed in these ideas? What is it that causes us to retain our theories? What views of power do they embody? Whose interests seem to be served by our practices? What constrains our views of the possible? These reflection strategies proved central to transformative learning in the Coastal CURA. As we will illustrate below, they first deepened the participatory nature of our research, and then generated space for group creativity.

Our experience also suggests that the three learning loops outlined by Armitage and colleagues (2008) may rely on at least three different levels of reflection, with different levels of engagement and creativity (see Figure 1). Content reflection allows for the members of a group to collectively agree where errors are occurring and how
routines can be adjusted to address that. Process reflection allows a group to correct policies to better align with shared values. Premise reflection allows a group to revisit normative structures and procedures in the light of critical debate about diverse needs and wants.\(^2\)

5. The Coastal CURA and the reflection exercise

Beginning in spring 2006, the Coastal CURA brought together partners from across the three Canadian Maritime provinces. These included six academics, two universities, one government employee, four First Nation communities, two fishing organisations and a community-based marine resource centre. Over the life of the project, 14 graduate students were also involved. The project was founded on existing collaborations between community organisations and university researchers who had already done much to build trust (see Kearney 2005, Wiber et al. 2008, Wiber and Kearney 2009). Collectively, the Coastal CURA partners brought diverse experience to the table; they had collected scientific data, built consensus among their membership, developed and advocated alternative management regimes, implemented community-based management plans, developed systems for sanction and enforcement, and collaborated with other groups. That is to say, the members all had experience in many of the elements of resource management.

However, each of the partners differed in terms of experiences, contests and constraints. The Coastal CURA enabled these participants to learn from each other. This is sometimes described as learning across platforms, or across “various forms of group or ecosystem entities undertaking collective decision-making and action” (Maarleveld and Dangbégnon 1999, p. 276, Keen et al. 2005, p. 6). The Coastal CURA participants represented a number of such platforms, including the Bay of Fundy Marine Resource Center, fishermen’s organisations and confederacies of aboriginal communities, each of which itself brings diverse individuals and groups together. Stein (2002, pp. 408–409) noted that platforms promote a broader perspective on the resource, balancing the interests of interdependent users and promoting social learning towards improved practice.\(^3\) As a group, Coastal CURA organisations could also be characterised as a ‘community of practice’ that “engage[s] in joined activities, and by doing so ... form[s] a common problem understanding and a common experience of some group identity” (Bouwen and Tallieu 2004, p. 143).

The Coastal CURA research methodology was closely connected with our governance structure. A governing council made all the decisions. It was made up of representatives from each partner organisation, spoke monthly on conference calls and met face-to-face twice a year. Between the fall of 2006 and spring of 2007, each partner’s proposal for a reflection research project was discussed and approved by this council before research funds were released. A small management committee, which comprised two academics, two community partners, an office staff person and one graduate student, took direction from the council and facilitated day-to-day operations. This governance process was consensus-based and fully inclusive; we held repeated meetings; everyone had opportunities to influence the process; we had open communication and diverse participation; we did not restrain thinking and multiple sources of knowledge were represented (see Muro and Jeffrey 2008, p. 332).
Each of the resulting seven reflection projects involved collaborations of one or more academics and one community partner in the research design and completion. Many projects also involved student support. While this approach did not have a standardised research design, it respected the individual contexts and interests of each partner organisation. For example, some partners reflected on past failures (loss of fishing grounds in Saint John Harbor, lapse of stream revitalisation in Bear River First Nation), while others reflected on past successes (10 years of community-based groundfish management). Nevertheless, the questions identified in the section above as key to critical reflection were incorporated into the research design, ensuring that each partner underwent a similar process. Space is too limited to allow for a discussion of the seven projects undertaken, but it should be noted that the academics also undertook a reflection process on their past participatory research projects. A full list of projects can be found in Table 1.

At the end of their reflection process, each partner produced documentation of their findings (publication, film or unpublished report, as described in Table 1), and these were then circulated to all members of the Coastal CURA. Following this, in the fall of 2007, a small team of two animators – council members experienced and trained in facilitation and adult education – visited each partner organisation to discuss what they had learned and how this might feed into collective learning for the group. Semi-structured interviews were held with between one and seven representatives from each organisation. A total of 19 interviews were conducted by the two animators. These interviews drew out information and analysis that then fed into a summary report (Bull and Pictou, unpublished report, October 2007), which was distributed to all Coastal CURA council members. Council members then met at a Reflections Workshop in October 2007, where we collectively discussed what we had learned from the projects and from the animator report. During that workshop, the participants creatively responded to the reflection information by identifying six crucial themes around which further research activities should be structured. We discuss these themes and some of the research outcomes further below. Finally, a smaller subset of the Coastal CURA council volunteered to ‘reflect on our reflection’ by comparing our experience with the literature on social learning, and to see if we could offer valuable lessons for other groups struggling with similar problems. This paper is the result of that final step.

While this reflection process allowed us to identify problems and to plan further research around them, it is important to note that this was not just a case of arriving at a common view of the relevant problems. Group reflection encouraged creativity. In what follows, we describe our reflection outcomes briefly before returning to the role of reflection in social learning.

6. Creativity as an outcome of critical reflection

When the various reflection pieces of the CURA partners were discussed at our Reflections Workshop, our efforts to generate convergence (Van der Veen 2000, p. 18) transformed the direction of our subsequent research. Several themes emerged as crucial, including:

- transformative learning (preparing all participants to play a more effective role in management institutions);
claiming language (particularly to challenge common understandings of key
terminology and to highlight community values and objectives);
cultural production (including methods of communicating our collective
learning outcomes);
engaging with power (both within the community and as exercised over the
community);
relationship building (both vertical and horizontal); and
governance (particularly how to ensure real community participation in
decision-making).

Participants in the reflection workshop collectively developed a rough research matrix
that identified potential research projects which integrated these themes in a cross-
fertilised research approach, as each theme reinforced the others. The council then
prioritised projects that would build on these themes to further iterative learning in the
present. We also collectively considered how these themes might help us better organise
and build institutional capacity for the future. This process has been crucial to a critical
assessment of current ICOM processes as well as to creative responses to overcoming
barriers to community-level involvement in ICOM institutions.

There is only space here for one example of a reflections project that illustrates
how reflection facilitated transformative learning both at the partner level and at
wider levels of all CURA participants, and even the general public. As their
reflection project, the Fundy North Fishermen’s Association (FNFA) selected the
displacement of lobster fishermen in Saint John Harbour as a consequence of large-
scale oil and gas developments. They collaborated with a Master’s student to create a
film called ‘Sharing the waters: Saint John New Brunswick’. This film was a portrait
of the long history of the inshore fisheries in the Saint John Harbour and the recent
challenges faced.

The film had several important impacts. First, the membership in this fishermen’s
organisation had been internally divided as to the best response to displacement by
industrial development; many fishermen who did not fish in the harbour believed
that too many association resources were consumed by that problem. These internal
debates had spilled over into public feuds and were threatening the strength of the
organisation. When the film was viewed at an annual general meeting, however, it
created a space for dialogue and ultimately transformed the thinking of many
previous detractors, accomplishing what many stakeholder meetings and advisory
boards had failed to do. It created support within the organisation for continuing to
experiment with ways to work around powerful opponents, including association
support for direct sales of lobster on Saint John wharfs to further highlight the
problems. Second, when a public film launch was arranged in Saint John, it
engendered greater awareness in the broader non-fishing community of problems
faced by fishermen. This in turn led to increased attention from media, government
agencies, schools, universities and the local museum. Third, the success of this film
prompted other partners to reflect on times within their own organisations when
internal divisions weakened their position and to think of strategies to create internal
dialogue. Finally, at the reflections workshop, this experience stimulated partners to
adopt a theme of ‘engaging strategically with power’ in future research together.
Each of the reflection projects contributed in this way to identifying similar strategic
research themes (transformative learning, claiming language, cultural production,
engaging with power, relationship building, governance).
Below, we further discuss how these themes informed subsequent project work before concluding by linking our subsequent experience with these themes to lessons on critical reflection, transformative learning and improved resource management.

7. Restructuring our actions in the world

Our reflections work allowed us to improve future actions in creative ways (sensu Smyth 1992). Because day-to-day power struggles challenges capacity to plan for the longer term, strategically engaging with power became a key theme for several partners. We subsequently studied several stakeholder consultation settings in which power distorted decision making. These included: the failure of ad hoc committees to restore fishermen wharf access in Saint John Harbour (Wiber and Recchia 2010); the inability of a local management board to prevent privatisation of clam beds in the Annapolis Basin (Wiber and Bull 2009, Wiber et al. 2010); and the collapse of an aquaculture/capture fishery planning committee as a result of sea lice chemical problems in Southwest New Brunswick (Wiber et al. 2011). These and other experiences suggest that the ICOM governance model has not yet effectively responded to power imbalances among resource users.

Subsequent to our reflection workshop, we also highlighted further transformative learning by connecting with other communities across Canada in order to learn from their experiences. We held a series of learning circles on topics as diverse as ecological concerns with industrial development in the Bay of Fundy, community GIS, ecological consequences of shellfish aquaculture and the role of subsistence fisheries in food security. We also organised a workshop on media training for community participants. Several partners became involved in podcasting and other online media to boost cultural production. For example, one partner organisation captured the successful attempts of a local clam harvesting organisations to re-seed clam beaches, which local government officials had denied was possible. We created films, posters, public events and media stories. We also developed a school curriculum module on management problems in Saint John Harbour, which was successfully piloted in three Saint John high school classes (see Douglas 2011). Finally, we produced a second film that summarised our Coastal CURA findings.

The claiming language theme was developed in response to the co-optation of terms in government policy, including ecosystem-based management, traditional ecological knowledge, social capital, resilience and integrated management, that had originated as a critique of past management failures. Use of these terms does not always signal a change in the status quo. A language workshop helped the CURA partners to creatively envision a process of integrated management that all felt comfortable with. This required extensive discussion of the underlying values of and objectives for ICOM, as well as indicators that were acceptable measures of success (Wilson and Wiber 2009). This alternative approach to ICOM was reported in a policy discussion paper that has since been distributed through several federal government policy forums (Charles et al. 2010).

The theme of relationship building encouraged us to reach out to other communities, NGOs and government organisations, including international linkages. This promoted recognition of and acceptance for the contexts and constraints under which different parties operate and that are central to understanding the scope of each partner’s responsibilities and capabilities. For example, the legal context for First Nation involvement in fisheries poses an important
constraint on members of their own communities and on relationships with other communities or with government (Wiber and Milley 2007). Building relationships with government and with industry has also been valuable in building alternative ways to address conflict (Parlee 2011).

All of the above outcomes also contributed to a better understanding of the theme of governance and to creative solutions for governance problems in the future. We have hosted meetings with government representatives to discuss such alternative approaches and have subsequently been invited to government workshops to explore alternatives.

8. Assessing reflection outcomes

Taylor (2007, p. 176) noted that it is difficult to separate out transformative learning outcomes from “normal development of the individual and/or socio-cultural change within society”. Van der Veen (2000, p. 19) also noted the difficulty in quantitative assessments of learning. We do not want to decontextualise either the learning process or the learning outcomes for the Coastal CURA. Our funding shaped much of the project in that we had to fit the granting agency framework and rules, and while some of our activities and objectives were a good fit, others, such as supporting non-academic participants proved a challenge. Federal and provincial regulators have been experimenting with different processes of consultation and collaboration in resource management – an ongoing process has influenced the thinking of many of our community partners. However, we would argue that our critical reflection process illustrates the creativity possible when reflection is taken seriously and that our subsequent research supported a different way of acting in the world.

The different outcomes of our reflection exercise can be viewed as a product of the several ways in which our objectives differed from others reported in the learning literature. First, the Coastal CURA members did not all equally share in a common practice (business management, nursing or teaching) or in a formal learning environment (university programmes). This increased the complexity of the reflection exercise. Second, we prioritised and herein report on two types of reflection:

1. **process reflection**, by testing the validity of assumptions about how natural resource management should proceed and who should lead it, and;
2. **premise reflection**, by critically interrogating several premises of natural resource management, such as what are we managing (fish or people?); why are we managing (for sustainability, for equity, for community survival?); who should be involved? How should they be involved? What should the process look like? How would we know if we are doing a good job?

These questions emerged naturally after the reflection workshop (and in the subsequent workshop on reclaiming language). Outcome reflection, in which we evaluate the outcomes of our project activities and their real impact in the world, is to be undertaken in the latter half of 2011.

Third, unlike other natural resource management cases, the CURA served as a platform to learn across platforms. Individual members learned from reflection on their own organisations, and then brought those reflections to the CURA reflection workshop where we creatively sought to reflect and reprogramme our management methods.
Fourth, we had a long time frame for our collective learning than previous collaborations. This fostered trustworthiness (*sensu* Lincoln and Guba 1985) and allowed relationships of mutual respect to build and for research to be conducted in several different settings at different scales.

Fifth, the community university partnership (encouraged by the funding template) empowered communities to ‘teach’ university partners as well as to be taught – not ‘capacity building’ in the normal sense, but collectively learning from each other. The research process was much more driven by community partners (as opposed to by academic partners) from problem identification, to theory building, to method, to dissemination, which helped assure relevancy to communities.

Sixth, we used reflection to develop problem-oriented learning exercises, followed by further multi-platform reflection at each face to face meeting – so we cycled in and out of reflection multiple times, although much less formally. We tried to move beyond capacity building to set transformative learning goals for the group in order to develop alternatives to top-down management approaches (reflecting for triple-loop learning).

Critical reflection provided the space for dialogue, for re-evaluation of action and for new forms of action. Learning from experience as part of an adaptive management strategy is a beginning. However, critical reflection allows for a discussion of values and power relationships underlying coastal management, and for organisations to acknowledge accomplishments and frustrations and to formulate new creative strategies. In this way, attention to learning processes, especially to critical reflection, is also essential to the democratic engagement that is part of ICOM.

Taylor (2007, p. 176) argued that there has been a lack of critical reflection on what we have learned about transformative learning processes, which has led to a reification of transformative learning (in the education context) and to a redundancy of research. Our reflection exercise offers a rare case study of “the possibility and process of transformative learning occurring in a particular context” (Taylor 2007, p. 176) – the context here was widespread stock collapse and concern about better management of ocean resources. It suggests that a new focus should be on transformative learning in the context of groups dealing with resource crises.

It is important to structure room for collective learning exercises as this generates the creativity that springs from group reflection on experience. Creative group learning goes beyond improving institutional memory or building individual capacity to improve group performance; transformative learning in a group setting allows for critical reflection on common problems and creative innovation in behaviour so that behaviour better matches values that are explicitly brought to front of mind in planning exercises. However, as Taylor (2007, p. 177) noted, transformative learning in action research does require some planning to manage the “highly emotive consequences associated with transformative learning and the learner-centered approach often inherent to action research”. Social learning literature needs to learn to factor in emotions, which can be a powerful source for creativity – but also a powerful source for blocking real change (Taylor 2007, p. 188).

9. Conclusion

Participatory action research can vary in terms of how ‘top-down’ or ‘bottom-up’ it is. Capacity building, in which external experts can provide information on what actions need to be taken, as advocated in many conventional approaches to resource
management, can be top-down. We argue that this is not the best pedagogical model for devising actions to solve our resource management problems; social learning theory must take lessons from Paulo Freire’s concept of transformative learning (Freire 1979, 1994). Further, a process of systematic, critical reflection is key to transformative learning, as we have illustrated from our five-year research project into the role of communities in integrated management. In the Coastal CURA, we all individually reflected on past practice, but the next and transformative step was to collectively agree on what we had learned and on how this could direct future actions (in this case, research needs) for a better future management regime. Transformative learning must ultimately be a group exercise, one that can deepen participatory action research. If we truly want to support community engagement in integrated coastal and oceans management, we must make room in our management institutions for bottom-up, collective reflection processes that stimulate transformative learning and creativity.

This paper also highlights the central role for critical reflection in participatory action research. Reflection allows us to build a shared knowledge about facts, values, problems and opportunities, areas of agreement and disagreement, alternative actions and possibilities for working together. Participatory action research without the emphasis on transformative thinking, and without room for collective creativity, may simply result in learning not to resolve problems.

Thus, our experience offers lessons for enriching ICOM in two ways. First, we contribute to the theory and methodology of social learning by highlighting the transformative power of critical reflection. Second, we reflect on how critical learning processes can strengthen participatory research to further inform the practice of ICOM. The learning that resulted from the Coastal CURA reflection process had many outcomes and this also suggests new directions for evaluating social learning, including the extent to which it promotes alternative and creative restructuring of our actions in the world. What is needed now is to make room for critical reflection and thus for collective learning in ICOM institutions, no matter the resource in question.

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Notes

1. An innovative funding programme called the Community University Research Alliance (CURA), supported research where universities and communities worked together to solve problems of interest to both.
2. According to Armitage et al. (2008) “this type of multiple loop learning directs attention to the norms and protocols upon which single- and double-loop learning are predicated or governed. In designing and/or revisiting these norms and protocols learning provides a reflective mechanism to foster changes to the underlying governance system” (p. 88). Therefore, the three learning loops are embedded in and build on one another.
operate as part of collectives that form nested entities (p. 416). She also reminded us that platforms can be sites of struggle.

4. The success of this film inspired other Coastal CURA partner communities to develop films as well as an end-of-project Coastal CURA capstone film. Other reflections projects helped to encourage, for example, organisational restructuring (such as at the Marine Resource Centre), or to spread awareness of a community’s historical resource use (such as at the Mi’kmaw Confederacy of PEI), both of which were less tangible and less visible than the film project, but nevertheless supported community-based resource management work. While defining success in participatory research is challenging, as we were focused on learning (specifically reflections) outcomes, we viewed each project as successful if it involved triple-loop learning within our partner organisations and fed into a triple-loop learning process within our Coastal CURA governing council.

5. For information on the Marshall Decision of the Supreme Court of Canada, which recognised an aboriginal right to participate in the commercial fishery, see Wiber and Kennedy 2001.

6. Stein (2002, p. 412) gives an example from a shellfish farming co-operative in Ireland, where apparent management failures were actually a success from the point of view of the participants.

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