

# The Role of the Academic Community in Community-Based Research in a Full World



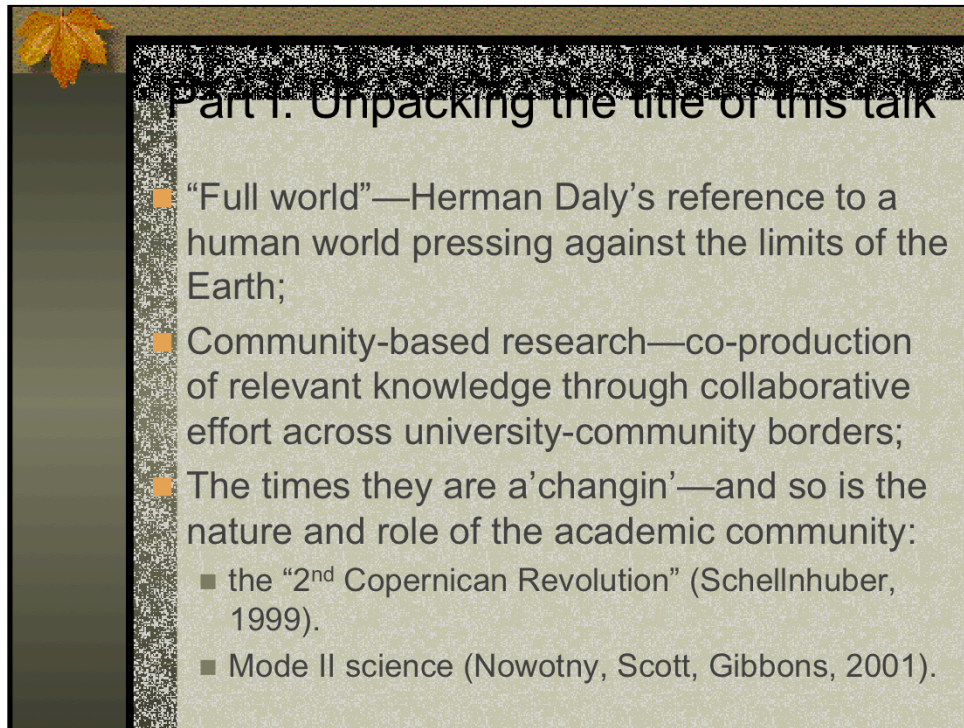
Rod Dobell  
Centre for Global Studies, University of Victoria

Notes for Presentation  
Institute for Coastal Research  
Malaspina University-College  
April 28, 2008

It is a great pleasure to be here on the Malaspina campus of the new University of Vancouver Island, as we meet in the traditional territories of the Coast Salish peoples, on the margins of the international Salish Sea. (I come, as has been mentioned, from what I guess is now to be considered the Victoria campus of the University of Vancouver Island—unless we've been voted off the island, and I just haven't yet heard.)

In the 2006 inaugural symposium of the Institute for Coastal Research, I sketched, in a very brief expository survey, the outlines of what I saw as the best—or at least a promising—approach to a research program based at Malaspina and centered on coastal communities. I argued that such a program would have to be a transdisciplinary undertaking fully engaged with a wide range of interests within communities and focused on issues that those communities saw as important, framed to reflect the perspectives from which those communities approached those issues. An edited version of the notes for that presentation are to be published by the Institute for Coastal Research; I believe that text will be accessible on the ICR website.

The message from that presentation was that within the academic context, the central task for ICR should be to explore how the intellectual and analytical resources of the academy might best be mobilized in supporting deliberative processes within communities of place themselves. The suggestion was that these many different communities must attempt to develop awareness of, and workable agreement on, the ethical norms they wish to embrace, perhaps most particularly in regulating the access of others to the adjacent resources that make up part of the essential life-support systems of the Earth. (In his presentation in this Symposium just a moment ago, for example, Bryan Williams mentioned the importance of the academic community directing some of its effort to working with First Nations in building capacity in science-based resource management that takes advantage not only of traditional ethical frames and concepts of responsibility as well as traditional knowledge, but also of the rapidly evolving, more formal apparatus of computer-based cooperative work in monitoring, mapping, visualizing and implementing integrated adaptive management strategies.)



Part I. Unpacking the title of this talk

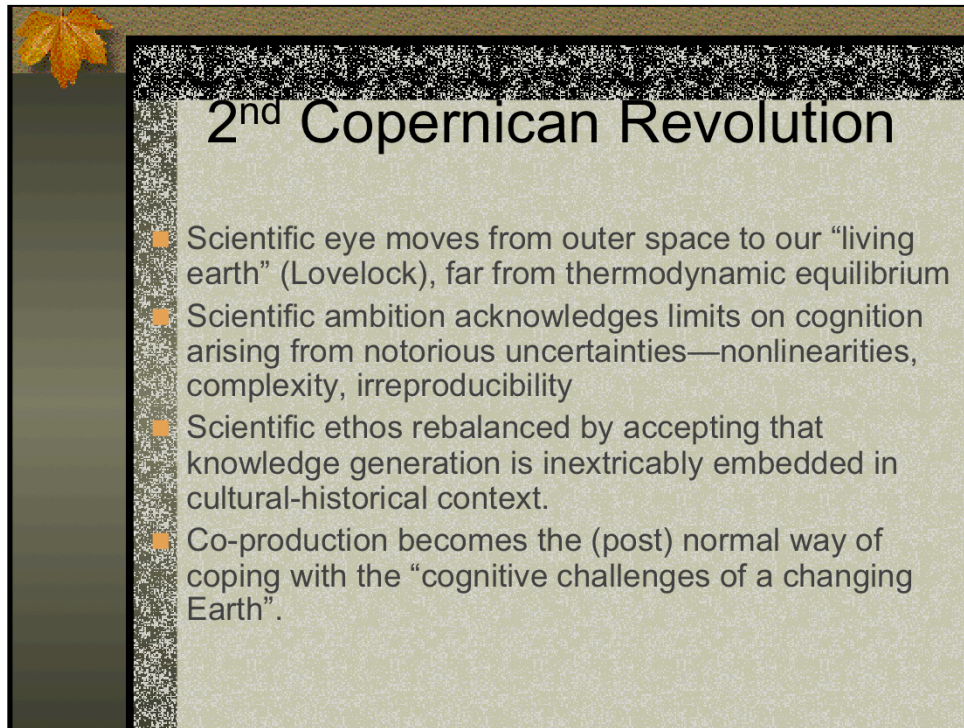
- “Full world”—Herman Daly’s reference to a human world pressing against the limits of the Earth;
- Community-based research—co-production of relevant knowledge through collaborative effort across university-community borders;
- The times they are a’changin’—and so is the nature and role of the academic community:
  - the “2<sup>nd</sup> Copernican Revolution” (Schellnhuber, 1999).
  - Mode II science (Nowotny, Scott, Gibbons, 2001).

But now, for this symposium, we are charged to look beyond the research agenda itself, to look specifically at possibilities for reciprocal involvement in respectful interaction with other communities in order to identify issues of greatest current concern and to learn from the tacit local and traditional knowledge of those communities how such issues should be framed and addressed. This, I suppose, is what we mean by effective community engagement, and that is the subject of this present gathering. Thus the earlier symposium links up very nicely with this present session, looking at the dynamics of community-university connections in community-based research and community-based management. I have some suggestions about what the academic community needs to do in order to play better its roles in these dynamic processes.

But first I need to say a few words about the title for this presentation.

The *Scientific American* article by Herman Daly cited in the bibliography added to this presentation sets out the story around the idea of the ‘full world’, or ‘crowded earth’. One should see also his farewell speech as he left his position with the World Bank in 1994, and indeed the 1991 report of the Trilateral Commission, titled *Beyond Interdependence: Meshing the World’s Economy and the Earth’s Ecology*, also cited in the bibliography.

We’ll come back to the question of co-production later. First let’s just comment briefly on these last two notions.



## 2<sup>nd</sup> Copernican Revolution

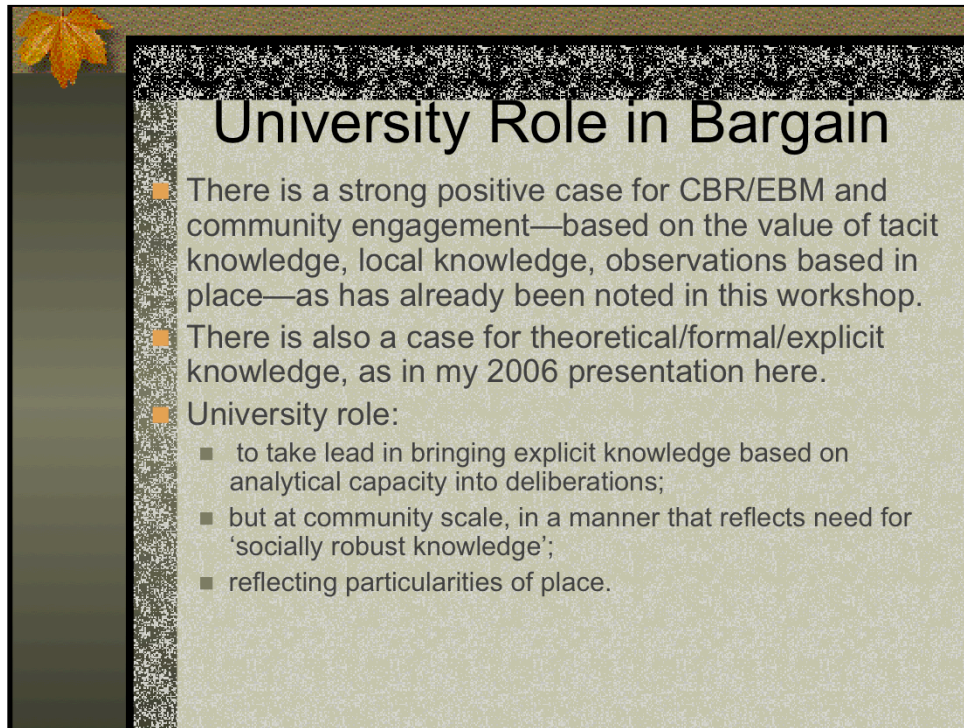
- Scientific eye moves from outer space to our “living earth” (Lovelock), far from thermodynamic equilibrium
- Scientific ambition acknowledges limits on cognition arising from notorious uncertainties—nonlinearities, complexity, irreproducibility
- Scientific ethos rebalanced by accepting that knowledge generation is inextricably embedded in cultural-historical context.
- Co-production becomes the (post) normal way of coping with the “cognitive challenges of a changing Earth”.

The ‘second Copernican revolution’ is an important notion. The changing nature of the academic community and changing understandings of the research enterprise form a topic for books and conferences all on their own. Here I wish just to quote a few lines from an article by Clark, Crutzen and Schellnhuber suggesting a new paradigm for sustainability science. They refer to the work of Copernicus in 1530 that put the Sun, rather than the Earth, at the centre of our planetary system and “set the stage for the development of modern science”. About this so-called 2<sup>nd</sup> Copernican revolution they say:

“This novel revolution is deeply rooted in the original one, yet transcends it in several crucial ways:

1. The scientific eye is re-directed from outer space to our ‘living Earth’ (Lovelock 2003), which operates as one single dynamical system far from thermodynamic equilibrium.
2. The scientific ambition is re-qualified by fully acknowledging the limits of cognition as highlighted by the notorious uncertainties associated with nonlinearity, complexity, and irreproducibility (Schellnhuber, 2002); if the Earth system is a clockwork at all, then it is an organismic one that baffles our best anticipatory capacities.
3. The scientific ethos is re-balanced at last by accepting that knowledge generation is inextricably embedded in the cultural-historical context (Nowotny et al, 2001) ... Thus the research community becomes part of their own riddles, the research specimens become part of their own explanations, and *co-production* becomes the (post)normal way of coping with the cognitive ‘challenges of a changing Earth’ (Steffen et al, 2002).”

The reference to the (post) normal way of doing things is intended to cast back to the influential work of Funtowicz and Ravetz (1993), proposing an approach that is appropriate for cases where “facts are uncertain, values in dispute, stakes high and decisions urgent”.

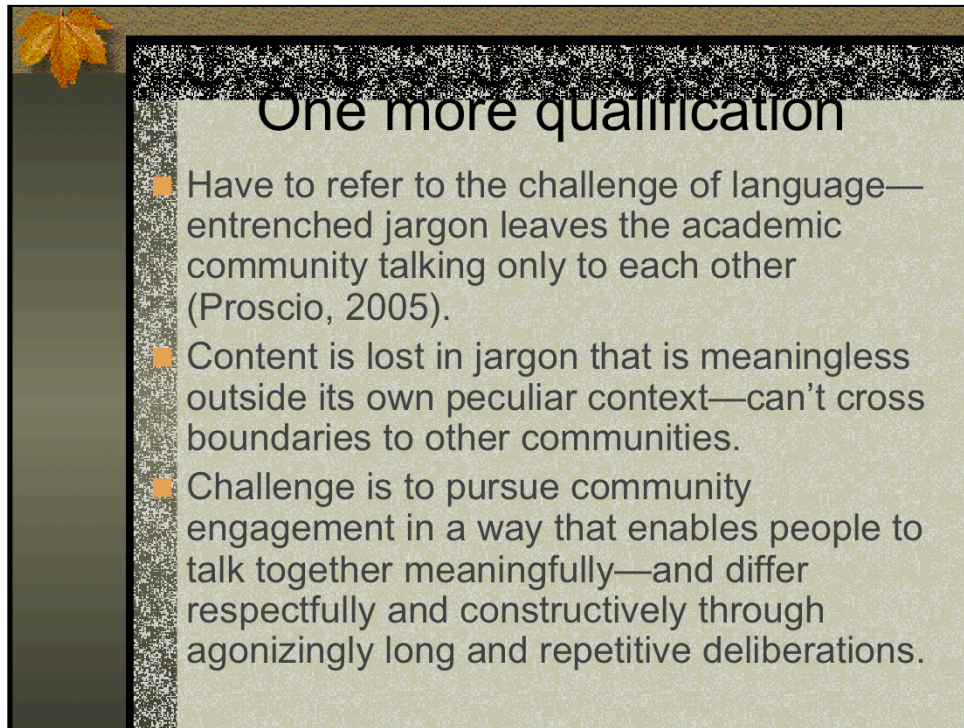


## University Role in Bargain

- There is a strong positive case for CBR/EBM and community engagement—based on the value of tacit knowledge, local knowledge, observations based in place—as has already been noted in this workshop.
- There is also a case for theoretical/formal/explicit knowledge, as in my 2006 presentation here.
- University role:
  - to take lead in bringing explicit knowledge based on analytical capacity into deliberations;
  - but at community scale, in a manner that reflects need for ‘socially robust knowledge’;
  - reflecting particularities of place.

My 2006 presentation tried to argue that various ways of knowing and seeing are of value, and must be brought together. The key word in thinking about community-based research is *interactive*. The university role is to offer a resource in addressing challenges framed by the community, but also to draw on local knowledge for research reflecting particularities of place. (The well-known work of James C. Scott—for example, *Seeing Like a State* (1998)—has made this argument more readily acceptable, even in hard-core academic settings. So also has the growing advocacy of regional or place-based oceans governance in the academic literature. See, for example, Young, Osherenko et al, 2007.)

In the same issue of *Nature* as the Clark et al piece just mentioned, Michael Gibbons goes on to describe ‘science’s new social contract with society’, suggesting that the contract prevailing through the last few centuries was to sustain the production of ‘reliable knowledge’. He suggests that a new contract must ensure ‘socially robust knowledge’ based on more open, socially distributed, self-organizing systems of knowledge production that generate their own accountability and audit systems. This argument is fleshed out in the path-breaking book by Helga Nowotny, Peter Scott and Michael Gibbons, *Rethinking Science: Knowledge Production in an Age of Uncertainty*, introducing the concept of Mode II science. Again this notion is central as we explore academic work embedded in the dynamics of community engagement.



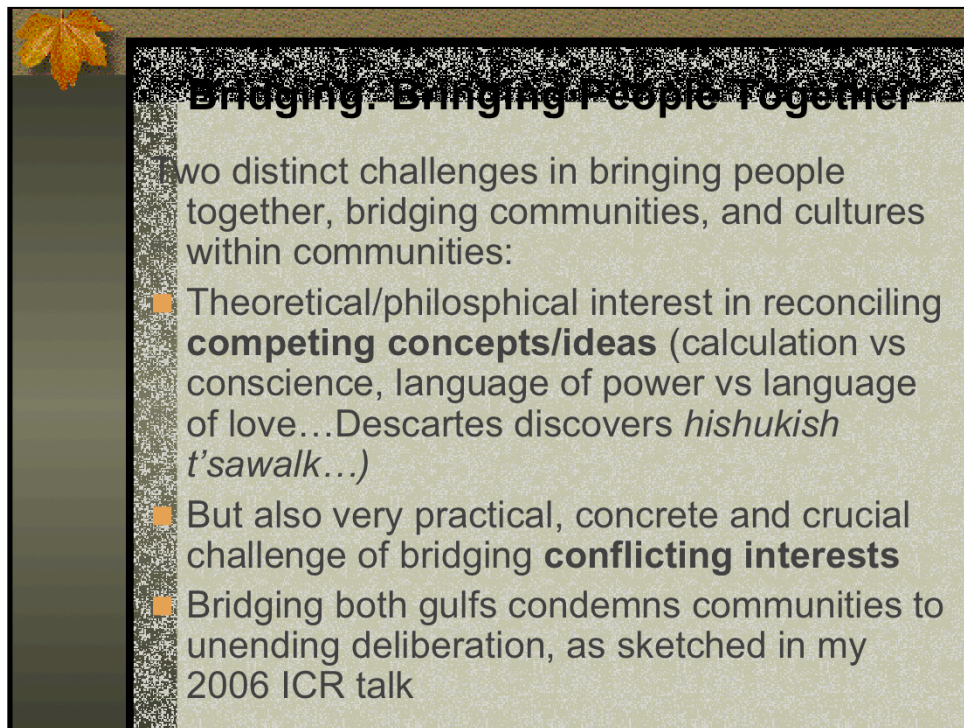
## One more qualification

- Have to refer to the challenge of language—entrenched jargon leaves the academic community talking only to each other (Proscio, 2005).
- Content is lost in jargon that is meaningless outside its own peculiar context—can't cross boundaries to other communities.
- Challenge is to pursue community engagement in a way that enables people to talk together meaningfully—and differ respectfully and constructively through agonizingly long and repetitive deliberations.

Just last night I was told that I must read the essays prepared by Tony Proscio, originally for the Edna McConnell Clark Foundation, on plain speaking. (I felt a little hurt that the advice was stimulated by a preview of my presentation here, but took the advice seriously.) I tried to confront the challenge of spelling out what all the nice words in my text really mean, and went through that text deleting those where I could not come up with a ready answer. (You can try this exercise yourselves with the help of the jargon-finder at <http://www.comnetwork.org/JARGONA.htm>, based on Proscio's work.)

I deleted all those words that he (properly) criticized as potentially meaningless. Unfortunately, at the end of the exercise, almost the only things remaining were either conjunctions or articles. With the rest of my words, I could be accused of laziness in failing to do the work to find the vocabulary that would give precision and concrete content to a thought, rather than using language so abstract and general that all substantive content—all recognition of particularities of place—is lacking. When that happens, the message cannot travel effectively to other communities or cross boundaries to other cultural contexts.

To the extent that we share this problem, we are talking to ourselves, in ways that only our own peculiar academic in-groups can understand.



## Bridging: Bringing People Together

Two distinct challenges in bringing people together, bridging communities, and cultures within communities:

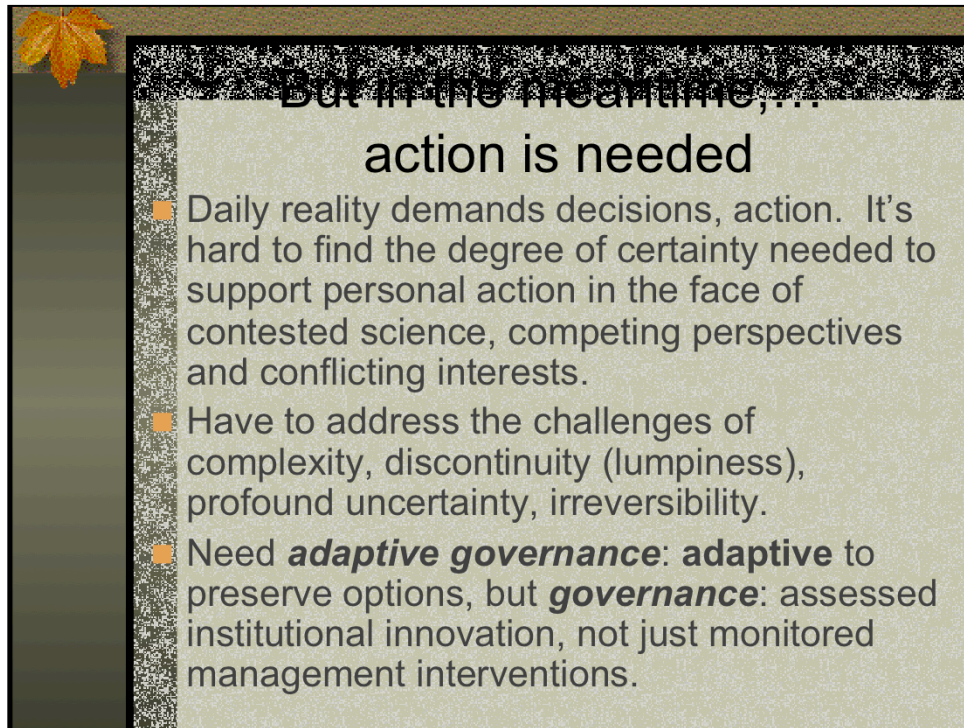
- Theoretical/philosophical interest in reconciling **competing concepts/ideas** (calculation vs conscience, language of power vs language of love...Descartes discovers *hishukish t'sawalk*...)
- But also very practical, concrete and crucial challenge of bridging **conflicting interests**
- Bridging both gulfs condemns communities to unending deliberation, as sketched in my 2006 ICR talk

Competing concepts underlie Cartesian practices of analysis, which advocate decomposing systems in order to examine in detail their distinct core components, as contrasted with the precepts of *hishukish tsawalk*, the Nuuchah-nulth expression loosely translated as ‘everything is one’. This latter approach attempts to achieve a level of synthesis of all the essential elements of a complex system so as to be able to focus on emergent features of that system as a whole.

The distinction between competing concepts and conflicting interests is crucial. But of course they are also inter-related: interests shape concepts, as has often been remarked. “What you see depends on where you stand; where you stand depends on where you sit.”

And it is important to note that “being condemned to unending deliberation” is not necessarily a bad thing in a democracy. Indeed it is really just another way of saying that our understanding of the truth evolves continuously, and that we should pursue adaptive management seriously.

And notice, as said earlier, there is the additional unending challenge of learning and using language that enables us—as the kind of outward-looking academic or professional community that we have here—to go beyond talking to ourselves.

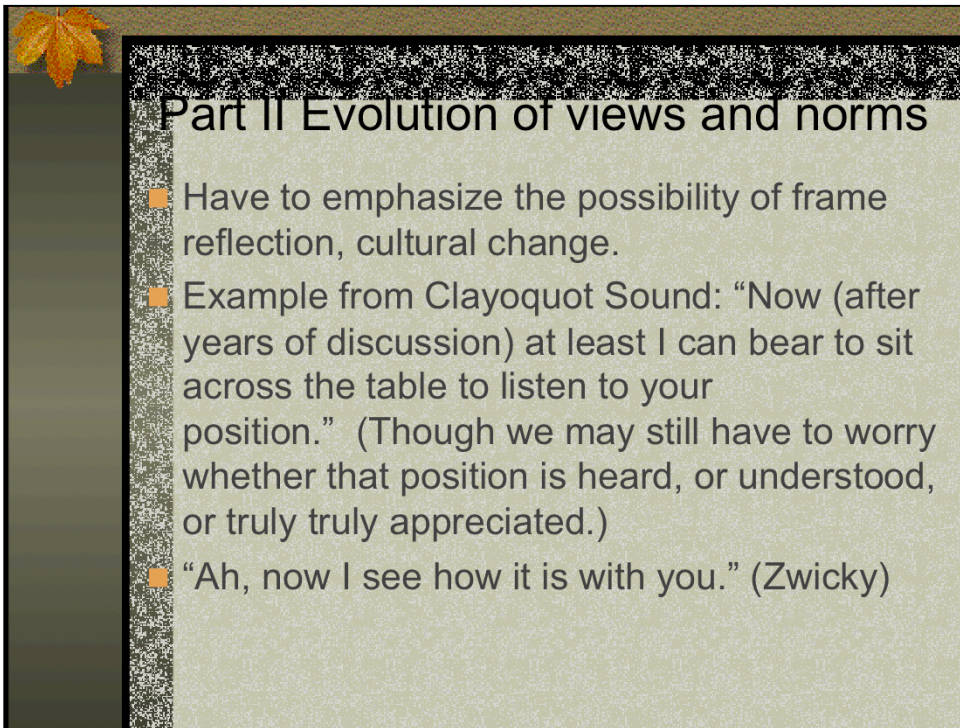


**But in the meantime, ...  
action is needed**

- Daily reality demands decisions, action. It's hard to find the degree of certainty needed to support personal action in the face of contested science, competing perspectives and conflicting interests.
- Have to address the challenges of complexity, discontinuity (lumpiness), profound uncertainty, irreversibility.
- Need **adaptive governance**: **adaptive** to preserve options, but **governance**: assessed institutional innovation, not just monitored management interventions.

The distinction I'm seeking here is between adaptive management, which is, as originally developed, largely formal and numerical in character, resting on precise empirical observation and statistical analysis, and adaptive governance which also addresses issues of change in the informal institutional structures, norms and dynamics of communities and deliberative processes.

We need to develop ways to appraise and evaluate institutional effectiveness, and ways to negotiate changes. The research program of Elinor Ostrom over the last few decades has confronted these issues. (Ostrom et al, 1994 provides an interim summary of several central ideas.)

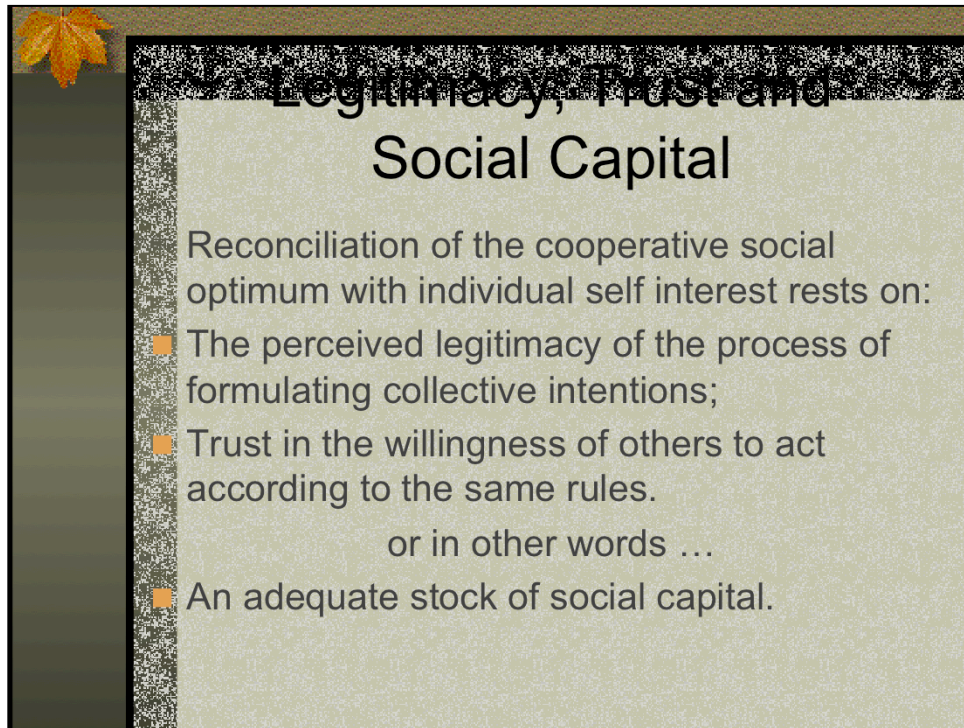


## Part II Evolution of views and norms

- Have to emphasize the possibility of frame reflection, cultural change.
- Example from Clayoquot Sound: “Now (after years of discussion) at least I can bear to sit across the table to listen to your position.” (Though we may still have to worry whether that position is heard, or understood, or truly truly appreciated.)
- “Ah, now I see how it is with you.” (Zwicky)

The classic book by Donald Schon and Martin Rein, *Frame Reflection*, is the essential guide to this notion. They look to the possibility of mutual understanding emerging and developing to a more promising point where I can sit *with* you around the table as we work together on reframing our perceptions of the challenges we face and crafting together a community response to those challenges.





## Legitimacy, Trust and Social Capital

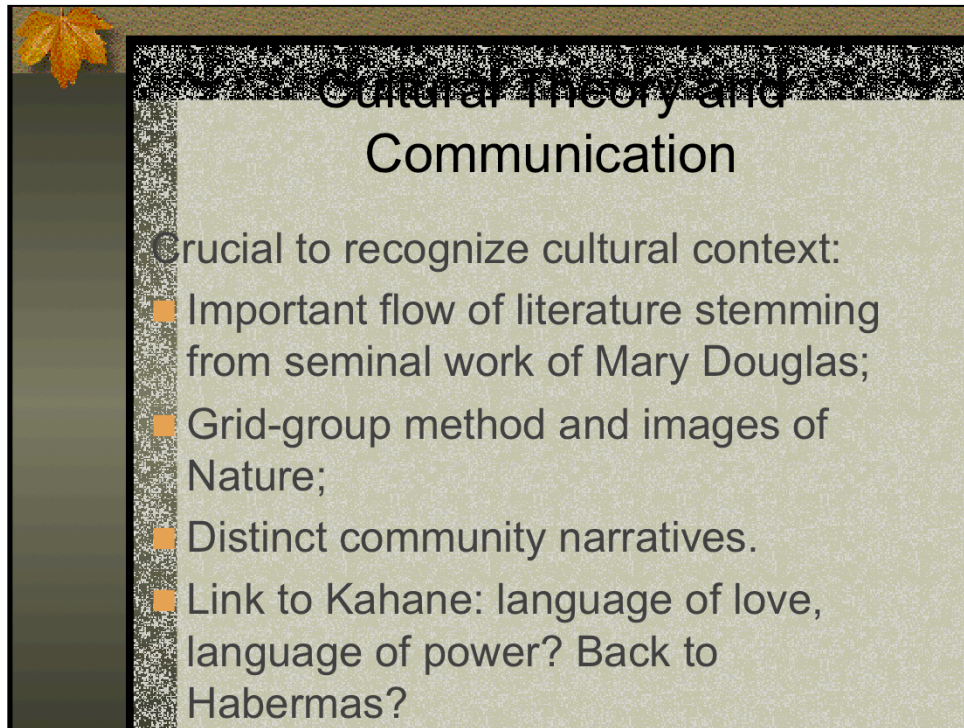
Reconciliation of the cooperative social optimum with individual self interest rests on:

- The perceived legitimacy of the process of formulating collective intentions;
- Trust in the willingness of others to act according to the same rules.

or in other words ...

- An adequate stock of social capital.

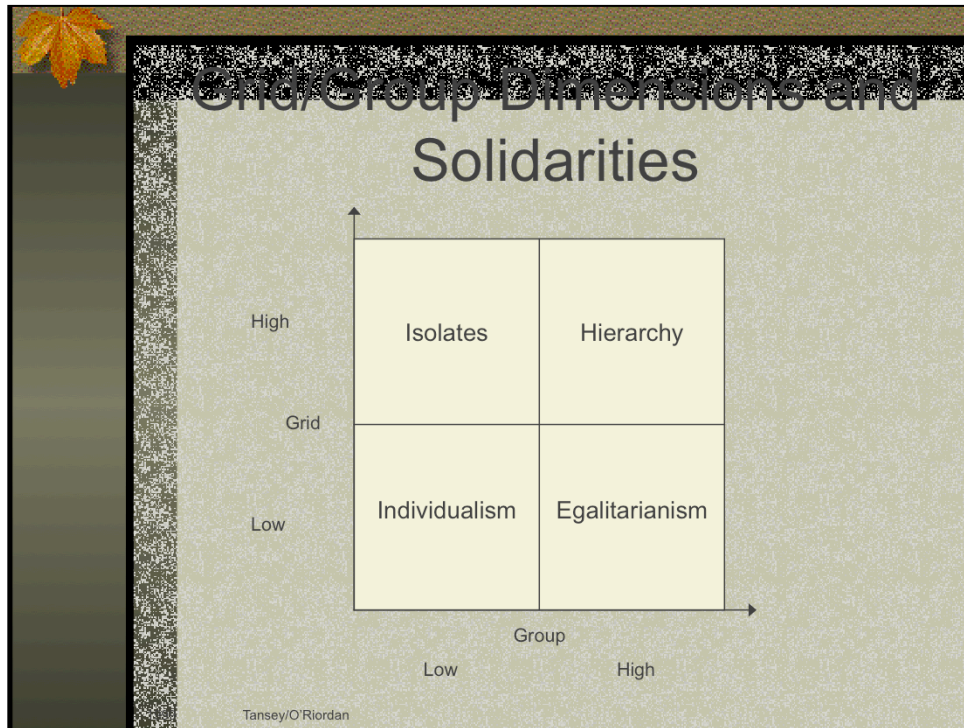
As we pursue academic initiatives intended to support ongoing deliberative processes that engage the community, we have to recognize the crucial influence of two non-analytic aspects of the work—trust in the process and trust in the others.



## Cultural Theory and Communication

- Crucial to recognize cultural context:
  - Important flow of literature stemming from seminal work of Mary Douglas;
  - Grid-group method and images of Nature;
  - Distinct community narratives.
  - Link to Kahane: language of love, language of power? Back to Habermas?

In exploring the engagement of the academic research community with communities of place or communities of interest, it is crucial to recognize that, within communities, problems are framed, risks are perceived and construed, actions are contrived and consequences are weighed within a complex, shifting and place-specific cultural context. The grid-group typology developed by Mary Douglas has been used by Douglas and Wildavsky (1983) and further by Douglas (1992) to explore ways in which different groups within any society might differ in their outlook and norms. This typology proposes characterizing cultural settings according to the extent to which an individual feels bound within a group (solidarity), and the extent to which the individual feels regulated by external constraints (stratification).

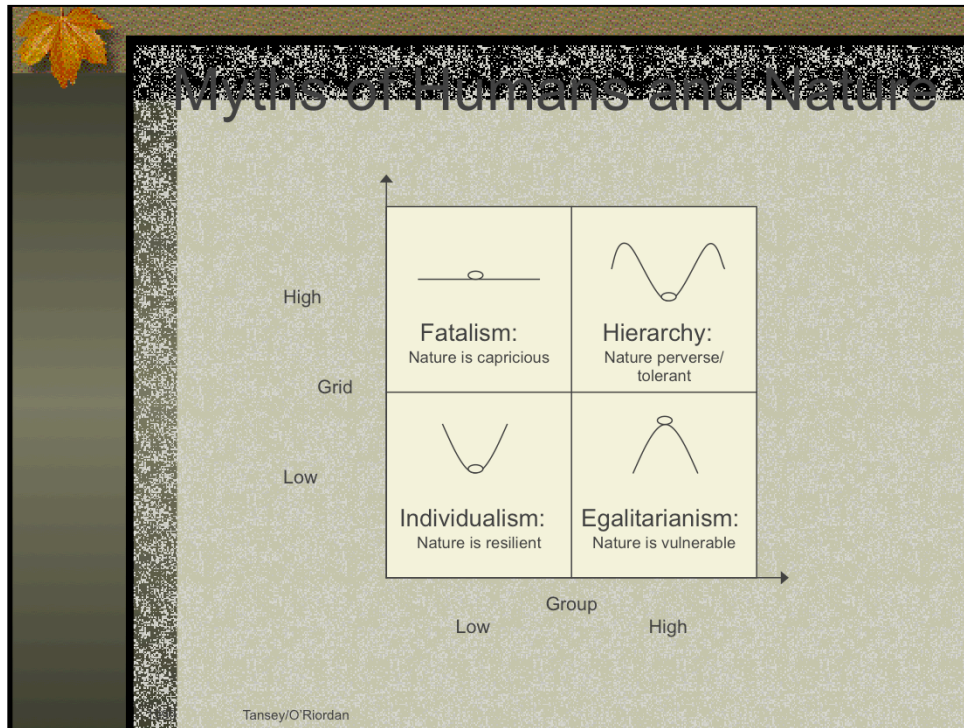


The argument here is that all societies contain a mix of groups characterized by these different cultural features and norms. The review article by Tansey and O’Riordan (1999) provides an excellent and accessible brief account of the theory leading up to application of this typology, and a range of variants or interpretations within it.

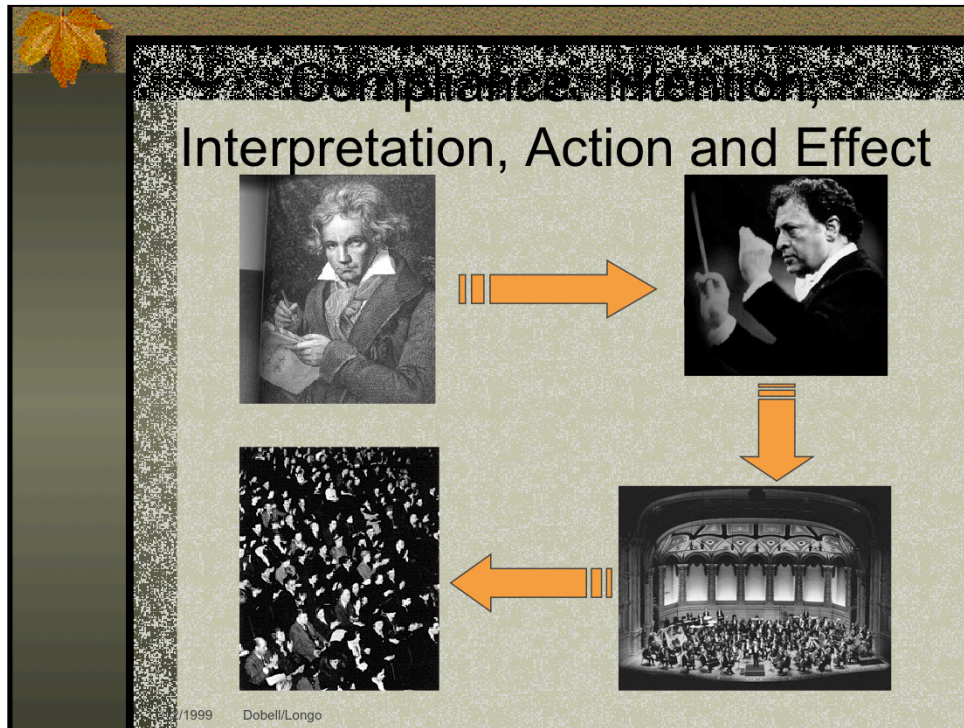
Some observers see the structures of market and state organizations identified with lower left and upper right quadrants, respectively, as generating a stable axis, while the isolates (fatalists) and sects associated with the upper left and lower right quadrants, respectively, lead to unstable associations.

It is interesting to speculate whether the groups associated with what Kahane styles the language of power are those on the stable axis, while those employing the language of love are those on the unstable axis.

In any case, the main point is the suggestion that all the communities researchers might engage, or be engaged with, probably contain elements of these distinct cultural blocs, in a constantly shifting balance.



The source for this diagram is the paper by James Tansey and Tim O’Riordan cited in the bibliography. The basic insight is the link between the different cultural groupings and the perceptions of risk and core underlying narratives. Evidently the framing of research problems will be definitively shaped by the way they are construed within these different cultural settings. Tensions within community deliberations and decision processes can readily be traced back to starting points shaped by these alternative outlooks and worldviews. Attitudes toward precautionary approaches offer one obvious example.



And with differing cultural orientation, different perceptions and narratives, different community contexts emerge, and the respective audiences hear very different interpretations and messages from research and from deliberation.

There is a fascinating and growing literature on problems of interpretation, performance practice and challenges of authenticity or ‘fidelity to the text’ as practitioners explore analogies between performing arts and professions such as law or the public service.

The actions on the ground, deep down and personal, that can lead to compliance with the community intentions and decisions emerging from research or deliberation are thus shaped by many determinants, at every stage of community decision processes, from concept to compliance.




## Shared Values, Community Context and Social Learning

Scrutiny of compliance must consider:

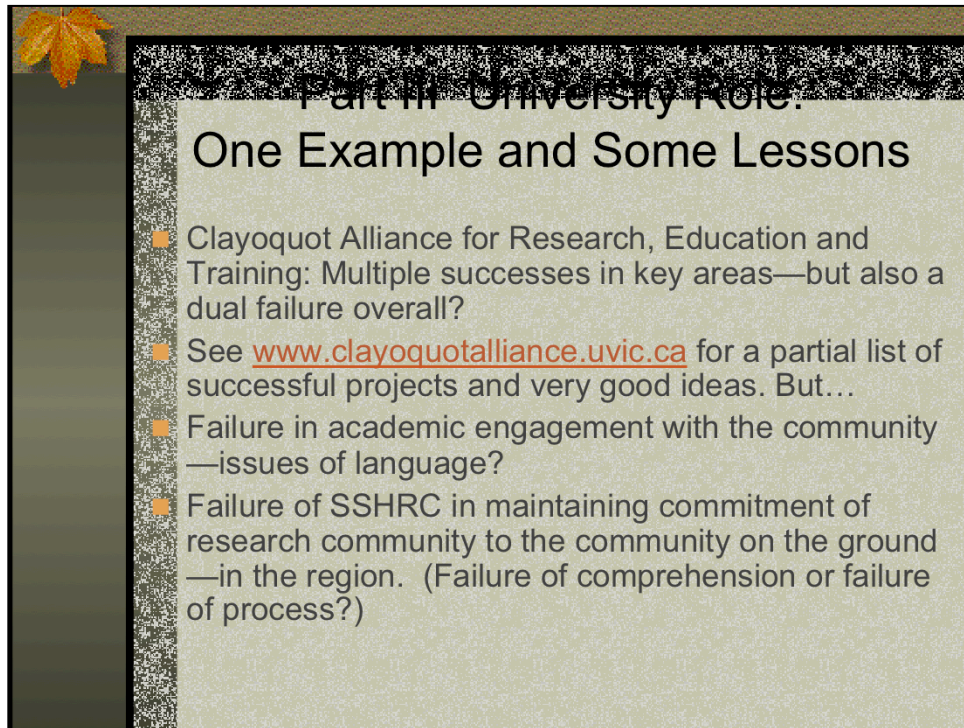
- The intent of the work in the context when formulated;
- The impact of the work as interpreted, in the context when realized.

or in other words...

- Realization of community intentions or cooperative action rests on an adequate foundation of shared values and community context.

- 
- Note that both beliefs and values are your own, but may be continuously subjected to elements of reality testing.
  - Beliefs may be required to confront empirical evidence, subjected to varying degrees of testing and possibly refutation through observation.
  - Values—or perhaps better, norms—may be subjected to tests of evolutionary fitness, with a search for evolutionarily stable strategies.
  - All of this leads inevitably to unending conversation, with the hope that workable beliefs (contingent truth?) emerges from the continuing exchange.

A vast and fascinating literature has emerged on the evolution of norms, and the circumstances in which cooperation and altruism might emerge, for example. (See, amongst other things, the literature on the evolution of cooperation, the evolution of social contracts, the study of cellular automata in simulation of the role of trust, reciprocity or reputation in social relationships.)



## Part III University Role.

### One Example and Some Lessons

- Clayoquot Alliance for Research, Education and Training: Multiple successes in key areas—but also a dual failure overall?
- See [www.clayoquotalliance.uvic.ca](http://www.clayoquotalliance.uvic.ca) for a partial list of successful projects and very good ideas. But...
- Failure in academic engagement with the community—issues of language?
- Failure of SSHRC in maintaining commitment of research community to the community on the ground—in the region. (Failure of comprehension or failure of process?)

The Clayoquot Alliance for Research, Education and Training was funded by SSHRC under its remarkable Community-University Research Alliances initiative, in its early years when the CURA grants were for a three-year period. It was unsuccessful in its application for a two-year extension when these were introduced, and subsequently unsuccessful in a re-application for a full five-year grant.

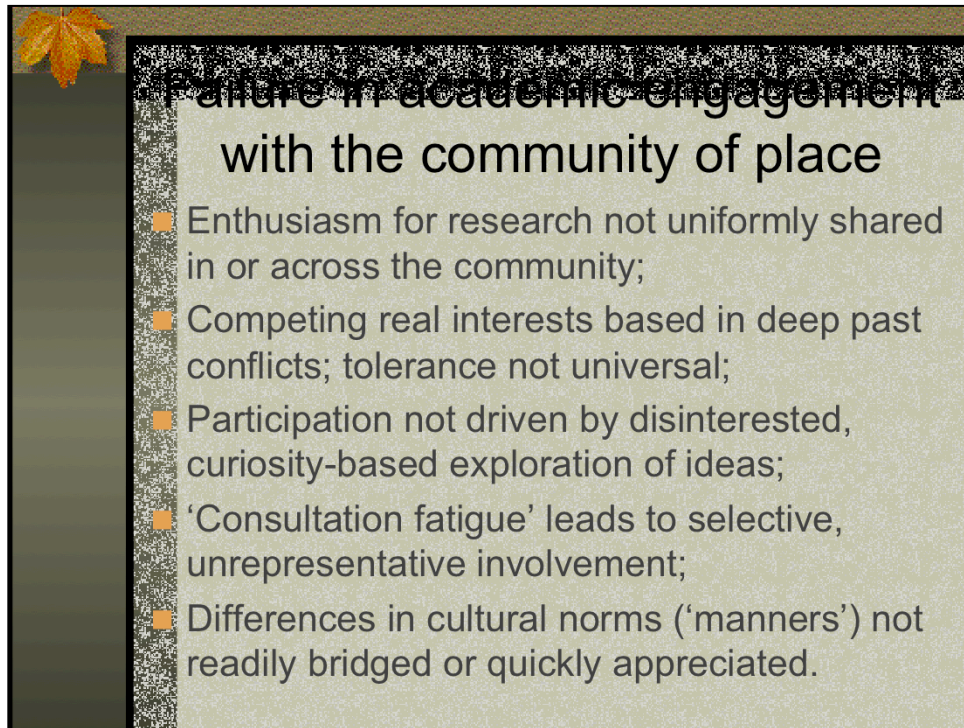
One can argue that the research team—which I served as PI—simply failed in its marketing of what was at heart a very successful and potentially very significant undertaking over a longer run. But it seems to me there are some systematic flaws and failures that need to be addressed in light of what we have just said about the changing nature of science and the changing character of the engagement of external communities with the academic research community.

First, we as the academic component of the community-based research enterprise did badly underestimate the depth of the language barriers and differences in cultural setting and expectations. We failed to appreciate the depth of the scars within the community from past history, and the differences in outlook and perspectives that we've just mentioned in our comments on cultural theory. I and my academic colleagues failed to appreciate the communications problems entailed in attempting to undertake community-based research from a distant academic base.

But in addition there were serious systemic barriers. The first is the funding agency's impatience for results. SSHRC funding in this setting does not represent patient capital. The desire for so-called measurable outcomes—which cannot meaningfully be represented by numbers of articles in peer-reviewed journals—leads to a counterproductive frenzy of publicity-seeking. More fundamentally, the uncertainty of continued funding—indeed the absence of any possibility of a continuing funding commitment—raises a problem almost of entrapment as community participants are led to make personal commitments and take potentially controversial positions in support of the research, and can then, as a result, be left vulnerable within the community and disappointed by the failure of their own personal investment in the shared initiative. I have argued in other settings that SSHRC and CURA researchers must address this question of funding commitment, at least to the extent of having clear views and plans for bridging provisions and exit strategies (akin to emerging best practices around mine closures, perhaps).

In part there is also a deeper conceptual problem in the inability of SSHRC adjudication committees to comprehend the true significance of particular initiatives in particular community contexts. We can return to this question briefly later.






## Failure in academic engagement with the community of place

- Enthusiasm for research not uniformly shared in or across the community;
- Competing real interests based in deep past conflicts; tolerance not universal;
- Participation not driven by disinterested, curiosity-based exploration of ideas;
- 'Consultation fatigue' leads to selective, unrepresentative involvement;
- Differences in cultural norms ('manners') not readily bridged or quickly appreciated.

How might the academic community best engage with communities of place and communities of interest down in the pit of practice? Community-based research requires coming down from the tower on the hill into the yard or arena where action is negotiated. How can academics plausibly and genuinely descend from the tower (home of doctrine and dogma) to the arena of negotiation and action in what Habermas has labelled Lifeworld?



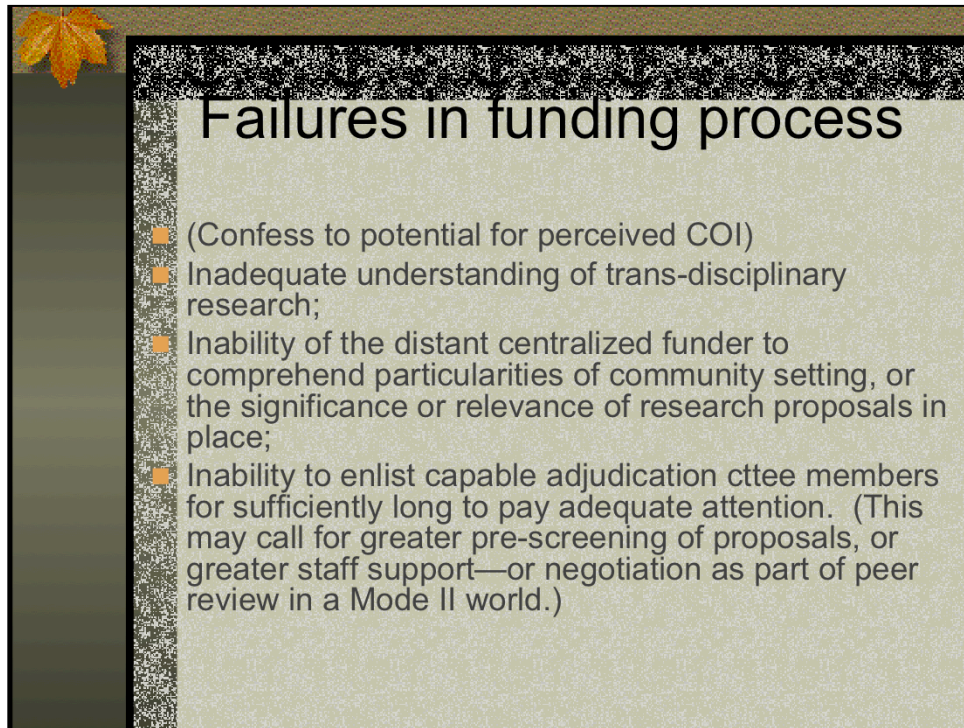
## Illustrative case: protocols, or standards of conduct

- Geographically specific standards of conduct within a set of general principles from UVIC Aboriginal Governance Program;
- But minimal involvement, consultation fatigue, many competing priorities;
- Problems of implementation or application through competing institutions such as NTC, CBT, ...
- So what was intended to be a 'living document' subject to periodic review in order to progress with the community as ideas and circumstances evolve is still not really established or accepted.

One of the successful initiatives undertaken through the Clayoquot Alliance was the negotiation with the community of a set of standards for conduct of research in this specific community of place. Originally conceived as a general protocol to govern research by outsiders entering a community of people who were tired of being research subjects, particularly for research proposed in ignorance of past work and community contributions to it, a more specific set of standards emerged from 18 months of discussions with aboriginal and non-aboriginal participants. These standards emerged with two features not clearly discerned at the beginning. First, they did not represent a general protocol (indeed the language of protocol was seen as inappropriate in this setting) but rather as guidelines particular to the Clayoquot Sound region. Second, it was agreed that they must be viewed as an 'evergreen' or 'living' document to be revisited periodically and revised as experience developed, circumstances changed and understanding evolved.

Such a geographically-focused set of guidelines was seen as helpful in particular for researchers entering the region. These standards begin by encouraging some orientation to ensure adequate appreciation of the extensive body of past research (to be documented in databases to be developed and maintained by the Clayoquot Biosphere Trust) as well as greater awareness of the widespread and varied research interests and activity of the local non-academic residents. These standards were also seen as offering specific content appropriate to the particular geographic region, within more general sets of principles enunciated, for example, by the Nuu-chah-nulth Tribal Council and the program in Aboriginal Governance at UVIC.

But many loose ends were left as the Clayoquot Alliance funding ran out, and the status of the present agreement is now somewhat in limbo. Nevertheless, I would still argue that the negotiation of such an understanding, no matter how time-consuming the task, is a crucial initial step in any process of community engagement. (Some of you may know that one of the lessons cited from the extensive work of the Commission on Resources and Environment is that an investment of up to two years in building agreed mutual understanding of the groundrules and expectations in the negotiation process proved essential.)



## Failures in funding process

- (Confess to potential for perceived COI)
- Inadequate understanding of trans-disciplinary research;
- Inability of the distant centralized funder to comprehend particularities of community setting, or the significance or relevance of research proposals in place;
- Inability to enlist capable adjudication cttee members for sufficiently long to pay adequate attention. (This may call for greater pre-screening of proposals, or greater staff support—or negotiation as part of peer review in a Mode II world.)

As mentioned earlier, my comments on systematic flaws in the funding process have to be assessed in the context of the perceived conflict of interest stemming from my own lack of success with that process. Nevertheless, the evidence of systemic structural problems seems to me overwhelming.



## Lessons, Part I

Academics must, substantively:

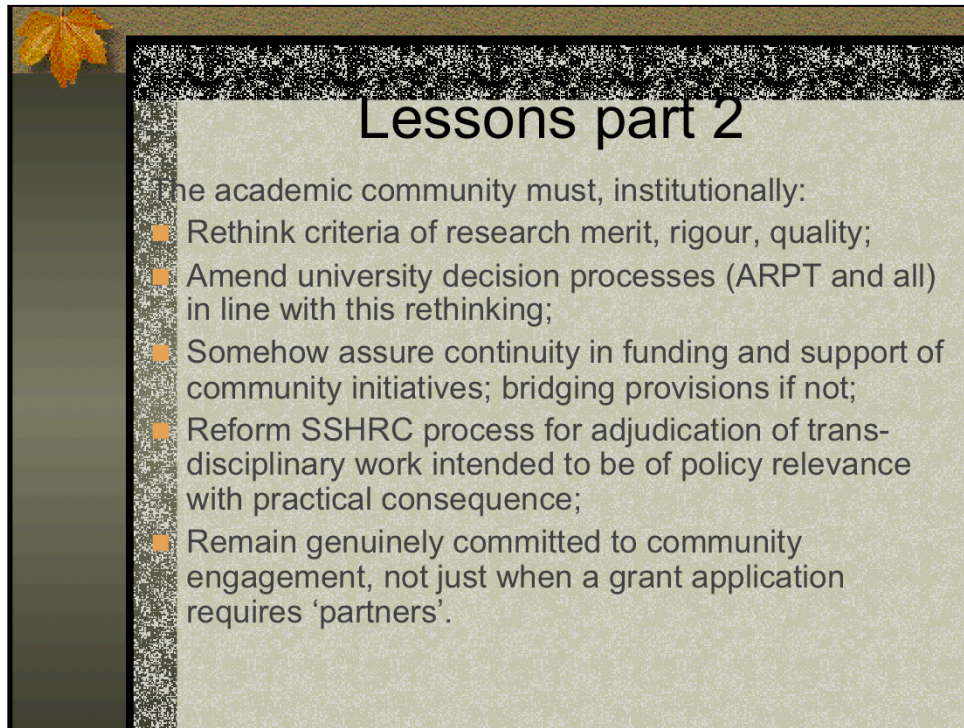
- Adjust to the realities of new roles;
- Address the need for evolving institutional structures responsive to change and put their mind to the challenge of adaptive governance in an uncertain world;
- Respond to community priorities and build common understandings based on staying engaged as citizens;
- Help to forge community norms that can accommodate the deep changes in public policy—and in underlying concepts of property rights—that may be needed to respond to changing understandings of a changing world



## Lessons Part 1, continued

This suggests that the academic interested in community engagement must be

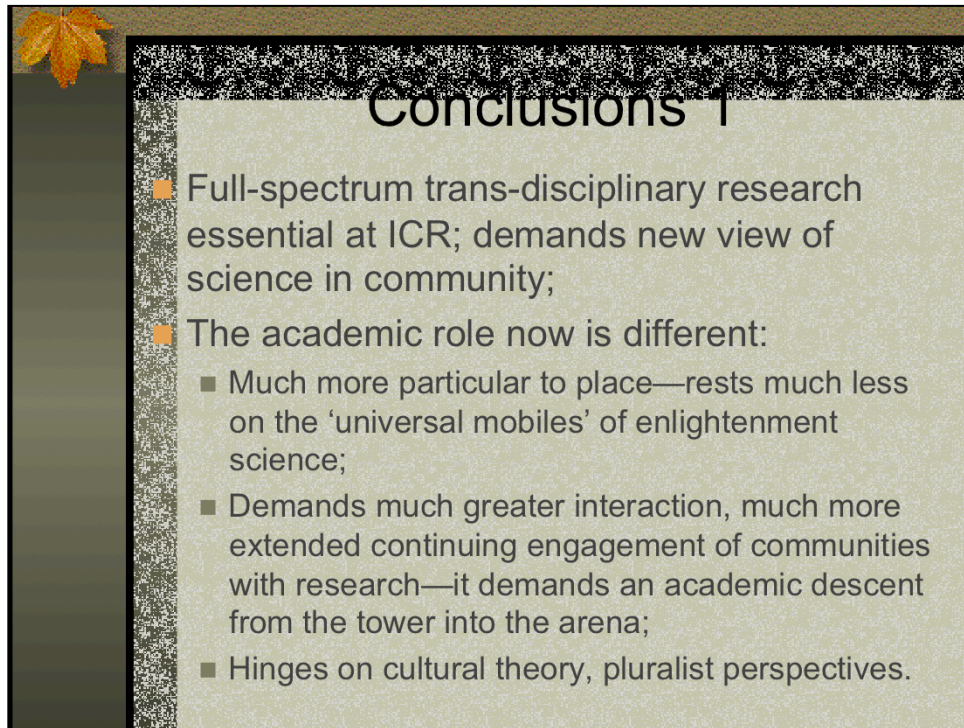
- Truly interactive;
- Truly respectful, inclusive (taking protocols seriously, for example);
- Truly tolerant across language barriers;
- Truly tolerant across epistemological gulfs—truly trans-disciplinary;
- Patient—willing to wait for cultural evolution and “the slow spread of new ideas”.



## Lessons part 2

- The academic community must, institutionally:
  - Rethink criteria of research merit, rigour, quality;
  - Amend university decision processes (ARPT and all) in line with this rethinking;
  - Somehow assure continuity in funding and support of community initiatives; bridging provisions if not;
  - Reform SSHRC process for adjudication of trans-disciplinary work intended to be of policy relevance with practical consequence;
  - Remain genuinely committed to community engagement, not just when a grant application requires 'partners'.

There is an extensive body of rhetoric urging the relevance of academic research initiatives, particularly as they relate to community-based research and potential contributions to community-based resource management. But neither the institutional structure of universities nor the administrative processes of granting agencies nor the understandings of the nature of 'quality research' and 'sound science' in principle have properly come to grips with all the commitments implied by this rhetoric. A lot of institutional reform has yet to be negotiated before community engagement becomes an operational reality in the research setting.



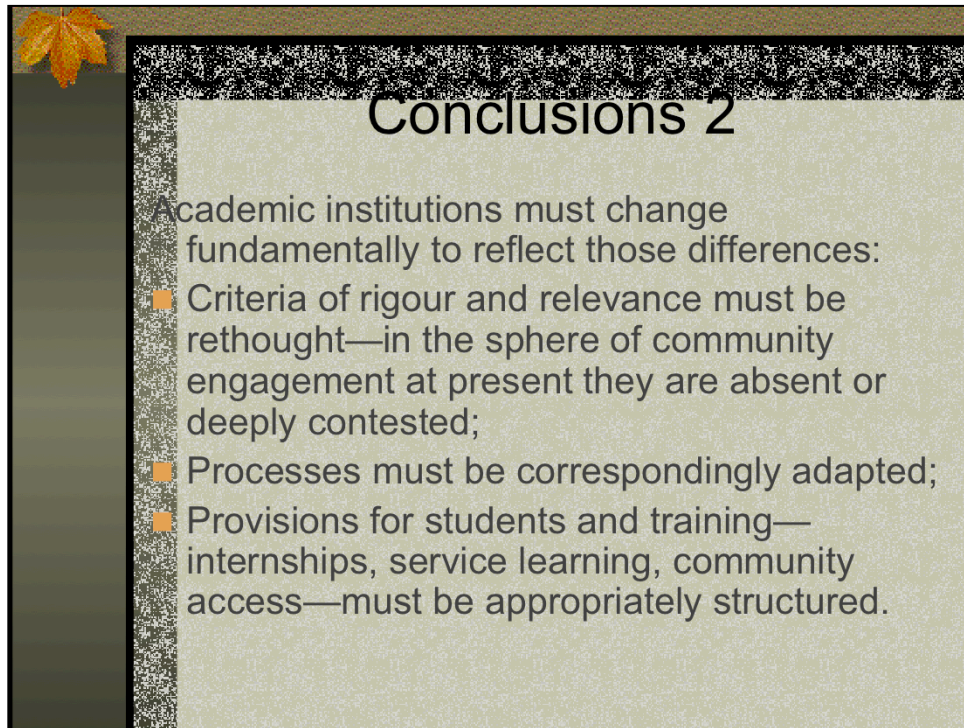
## Conclusions 1

- Full-spectrum trans-disciplinary research essential at ICR; demands new view of science in community;
- The academic role now is different:
  - Much more particular to place—rests much less on the ‘universal mobiles’ of enlightenment science;
  - Demands much greater interaction, much more extended continuing engagement of communities with research—it demands an academic descent from the tower into the arena;
  - Hinges on cultural theory, pluralist perspectives.

At the inaugural ICR symposium I argued that to carry on research relevant to coastal communities, ICR must try to pursue an integrated, interactive, full-spectrum trans-disciplinary approach. This may emerge naturally from the practical research initiated within individual resource sectors to address specific problems, but it does not flow naturally from the academic setting. In particular a dramatically different approach to community engagement is needed.

Now, being asked to speak specifically about the role of the academic community as a cross-sectoral presence in processes of community engagement, I’ve tried to suggest three main points with respect to the nature of the intellectual enterprise.

1. For the most part, understandings of academic research have not yet caught up with the new and more outward-oriented ideas of the 2<sup>nd</sup> Copernican revolution and Mode II science (or even the less sweeping ideas of grounded theory). Both research and governance must be seen as more substantially place-based and contextualized.
2. Specifically, research practices must evolve to engage communities in the significantly more extended fashion required by these new ideas.
3. Implementing these changes demands recognition, in the design and conduct of research, of a much more pluralist world.




As an institution, the academy is remarkably ill-suited to this evolution in concept and practice, and ill-suited to support the necessary evolution of ideas, practices and institutional culture. The prevailing culture within the academy, and perhaps more particularly its surrounding envelope of granting agencies, financing practices, evaluation criteria and accountability structures needs some fundamental change.

So, to conclude. In this workshop, we've looked at community engagement in research related to resource management through the lenses specifically of the mining, fisheries, and forestry sectors and from the cross-sector perspective of First Nations. From another cross-cutting perspective, that of the academic sector, it seems clear that there is also a lot of work to do. And it may entail abandoning not just a claim for the unquestioned authority of objective science, but perhaps also the privileged position of a secure institutional setting.

I hope all that proves more encouraging than it might seem at first glance. It does suggest to me that one could look to a future in which the academic community brings analytical resources to bear in addressing specific community concerns and gives generalizable form to the local knowledge and the learning about values, belief systems and institutional evolution derived from addressing those concerns; the local community gives concrete expression to abstract theory and general community intentions, exploring iteratively the chain from intention to act to consequences; while within the borderlands spanning these distinct communities one sees the move from covenant to text, from intention to action, through evolving social/institutional systems, across cultural groups 'edging' each other in a





Clark W. C., Schellnhuber, H-J., Crutzen P. J., (2004). "Science for Global Sustainability: Towards a New Paradigm". In H. J. Schellnhuber, P. J. Crutzen, W. C. Clark, M. Claussen & H. Held (Eds.), *Earth System Analysis for Sustainability*. Cambridge, MA, London

Daly, Herman E. 2005. "Economics in a Full World", *Scientific American*, September 2005, Vol. 293, Issue 3. See also <http://www.whirledbank.org/ourwords/daly.html>

Douglas, Mary. 1992. *Risk and Blame: Essays in Cultural Theory*. London: Routledge

Douglas, Mary and Aaron Wildavsky. 1983. *Risk and Culture*. University of California Press

Latowicz S, and Ravetz JR 1993; "Science for the Post-Normal Age", *Futures*, 25:735-755.

Gibbons, Michael. 1999. "Science's new social contract with society" *Nature*, 402 Sup 2<sup>nd</sup> December, pp C81-C84

McNeill, Jim, Pieter Winsemius and Taizo Yakushiji. 1991. *Beyond Interdependence: The Meshing of the World's Economy and the Earth's Ecology*. A Trilateral Commission Book. Oxford: Oxford University Press.

Mowotny, H., P. Scott and M. Gibbons. 2001. *Re-thinking Science: Knowledge Production in an Age of Uncertainty*. Cambridge: Polity Press.

Olson, Elinor, Roy Gardner and James Walker. 1994. *Rules, Games and Common-Pool Resources*. Ann Arbor: University of Michigan Press.

Proscio, Tony. 2005. *When Words Fail*. Accessed 24/5/2008 at [http://www.comnetwork.org/downloads/tony\\_proscio\\_when\\_words\\_fail.pdf](http://www.comnetwork.org/downloads/tony_proscio_when_words_fail.pdf).

Schellnhuber, H. J. 1999. "Earth system analysis and the second Copernican revolution". *Nature*, 402 Sup 2<sup>nd</sup> December, pp C19-C23

Sitt, James C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. The Yale ISPS Series. New Haven: Yale University Press.

Urry, James and Tim O'Riordan. 1999. "Cultural Theory and Risk: A Review", *Health, Risk and Society*, 1, 1.

Young, Osherenko et al., "Solving the Crisis in Ocean Governance: Place-Based Management of Marine Ecosystems", 49 *Environment* 4 (May 2007).