Institutional Values and Adaptive Capacity to Climate Change
Report by Bruce Morito
IACC Working Paper No. 85

December, 2008

Introductory Comments
　　　The IACC project is an ambitious project designed to integrate various disciplinary and sectoral contributions to the understanding of stakeholder vulnerabilities to climate change and the institutional adaptive capacity to aid stakeholders in their adaptive efforts.　The attempt to integrate the ethical/philosophical with the sociological, geographical, economic and other disciplines in the social sciences is reflected in two aspects of my participation on the team: as an ethicist conducting an ethical analysis on the data collected (the original function); as a data collector and contributor to the development of the ethnographic research on stakeholder vulnerabilities and institutional adaptive capacities research protocol, with a view to identifying and analysing stakeholder and institutional value profiles.　This second function has taken me beyond the original function I was to serve, by making me and my students responsible for helping design fieldwork tools and interview questions, conducting interviews and analyzing those interviews. This function is strange territory for a philosopher. Accepting it has been transformative.　Serving in this way stands in stark contrast to the usual functions philosophers serve on such research teams, because it has involved an "empirical turn."　Rather than determining the ethical framework *a priori* (determining what ought to matter and formulating relevant concepts and principles before research begins), I have committed first to learning what matters to stakeholders and institutions, before determining what the ethical framework should be.　As a consequence, my primary role has been to help ensure that the description of the ethical issues accurately represents stakeholder and institutional normative concerns.　It has not been to judge their rightness, wrongness, conformity to justice and the like on the basis of a pre-established theory.　This is not to say that no normative evaluation was envisaged or has been conducted.　This report, indeed, moves from explanation to evaluation, a move that is described and justified in my "Value and Ethical Analysis in Vulnerability to Climate Change: Establishing an Analytic Framework for Identifying, Classifying and Evaluating Vulnerability Issues" http://www.parc.ca/mcri/pdfs/Morito.pdf).　However, the first task is to determine to what extent institutional normative and valuational dispositions match.　The move to evaluation does not begin until after the data is gathered and interpreted.
　　　While this unusual approach is an attempt at integration with other disciplines, our team efforts to integrate have had limited success, as far as the relationship between philosophy and other disciplines is concerned.　I should note, however, that the degree of actual integration has been more intuitively satisfying than any other attempts I have witnessed or read about.　The first sense in which integration falls short has to do with the problem of cross purposes.　A thorough values analysis would require pursuing somewhat different lines of inquiry, especially during the interview process.　It would require directly identifying indicators of value and normative attitude, which would be followed by asking respondents to elaborate on these indicators in ways that would reveal how they connected and justified their values and norms, as well as how they placed them within worldviews.　To evoke such responses would require more specialized training of interviewers to appreciate and understand the array of normative issues

that can arise and how to follow lines of inquiry that enable respondents to describe implicit and normally hidden value /normative commitments.   Respondents would be asked to explain or more fully describe their responses in terms of their beliefs and the meanings they attribute to their values, norms and aspirations.

The second sense is that, despite all of the efforts to integrate ethics into the analysis of results, traditional biases (probably owing to my own training as a philosopher) have made it difficult to see how philosophical concerns can be fully integrated into the concerns of other disciplines.   There is a strong tendency for those trained in traditional western philosophical schools to think of philosophy as determining *a priori* what should be studied and how it should be studied.   As members of the most generalized of all the disciplines, philosophers are typically trained to think of their task as determining the conditions of truth, knowledge, right and wrong in a way that determines the way research should be carried out; we are not trained to take our lead from the data other disciplines gather.   It has been almost a matter of cultural expectation on my part to want first to establish a conceptual framework for understanding the stakeholder/institution relationship and how each discipline and its task is to be integrated ahead of time.   Attempts at integrating with the other disciplines has, as a consequence, been exploratory and experimental.

Conducting a thorough values analysis, as I conceive it, would detract from the intended outcomes of the ethnographic and institutional interviews.   The line of questioning would have departed from the focus of stakeholder and institutional interview questions about resources, information flows, management etc.   In retrospect, ideally, my assistants and myself would have re-interviewed respondents, using the results of the first interviews to ask more specific value-related questions.   Taking this route, however, would not have been practical or likely welcomed by respondents.   An important lesson can be taken from this experience.   Ironically, integration of philosophical analysis into a research project, such as the IACC's, may first require more separation of functions, along the lines of how the science and social science functions of the team were separated.   Another possibility would have been to have the philosophically trained field researchers work with the ethnographic field researchers *in situ,* living with one another and "hanging around" communities. Although this possibility was entertained for the stakeholder ethnographic research, its logistics turned out to be impossible to carry out and would have been even more difficult to arrange for the institutional interviews.[1]   In the end, it was not possible for both researcher groups to integrate at the informal level necessary to develop shared sensibilities about needed information and methodology.   Thus, it remained for the philosophy team to find some way to utilize the ethnographic approach to initiate a values analysis.

---

[1]First, I could find no candidates who were prepared to work as research fellows, because all qualified applicants had other research commitments.   Hence, I was only able to hire research assistants.   Second, none of my research assistants were willing or able to spend the required time in the field.   Third, the work I asked them to do on reviewing the literature, drafting annotations or doing preliminary research on institutions to be examined would have taken up all of their allotted time.   It turns out that the field work and examination of transcripts they were subsequently asked to do, in fact, detracted from their literature review work.   In the end, we neither managed to put a comprehensive literature review together, nor did we produce a thorough value analysis.

As it stands, the values analysis of institutional respondents, like that of stakeholders, remains preliminary.   It does not go to the level of developing a full value profile: describing background assumptions (e.g., world views), explaining what these value commitments imply and how they operate in various situations.   They go only to the point of suggesting how these commitments might influence stakeholders and how institutional values affect institutional purviews and capacities to respond to stakeholder values in general.   Notwithstanding the problems described above, the institutional interviews and documented sources did reveal interesting and important value commitments which speak to the underlying factors that either contribute to or undermine the capacity of institutions to help stakeholders adapt to climate change/variability.

Summary Statements

By providing summary statements of the value relevant data cited at the beginning, I hope to orient the reading of this report toward the distinct contribution a values/ethical analysis can bring to the research. The value foci common to federal and the two provincial governments that can be gleaned from official documents and statements with respect to water management are as follows:

1) Safety: safe drinking water, waste water treatment (generated by concern over disease and disasters such as North Battleford & Walkerton). This is a key concern in the Water for Life Strategy. Flooding could be placed under this category as well, because of the exacerbation of health problems flooding brings (e.g., disease, mold).

2) Economic well being and security: ensuring adequate supply and maintaining water quality are perhaps even more the focus of government concern, if one takes into account the comparative infrastructure costs incurred to address these concerns. Drought, however, remains the main concern, one which has resulted in dam and irrigation infrastructure investments.

3) Habitat protection: valuing of wetlands (AB more than SK and feds) for recreational, conservation and water quality seem to be a matter of considerably less concern for governments, although they are not irrelevant. Ecological health/integrity is to some extent recognized as of value.

The primary infrastructure-related responses of institutions in satisfying these values have been:

1) building dams,
2) building water treatment and monitoring systems for drinking water supplies,
3) building and helping to develop irrigation systems,
4) developing inter-basin water transfer systems (Alberta),
5) considering and planning for nuclear power generation to relieve stress on water supply.

Primary policy and programme responses have been:

1) adopting conservation measures,
2) devolving governance responsibilities to more regional and local groups (e.g., shared governance in water councils etc.),
3) investing in information dissemination and education.

The policy and programme responses 2) and 3) in particular are associated with shifts in governance structure and represent significant value shifts. Both provinces have engaged in what Alberta calls 'shared governance.' It would appear that Alberta is attempting a somewhat more radical shift in this respect than is Saskatchewan. Alberta's Water for Life Strategy (WFLS) is being advanced as a shared governance initiative, in which the multi-stakeholder approach is more systematically implemented in accordance with a comprehensive plan. Saskatchewan appears to have made similar shifts, but not in as extensive a manner, or as systematically as Alberta.

The WFLS is an attempt to involve stakeholders from a wide variety of backgrounds and interests in the task of establishing shared responsibility for water management in the province. It consists of a Water Council (province wide), Watershed Planning and Advisory Councils

(regional, watershed organizations) and Watershed Stewardship Groups (local) (details given in report by Johanna Wandel).   It also involves inter-ministerial coordination with Agriculture, Sustainable Resource Development, Transportation and Energy.   In Saskatchewan, re-structuring seems to have focussed on government-private industry relations in the building of water supply and wastewater facilities.   It too has established a central water authority (Saskatchewan Water Authority) and Watershed Advisory groups to "advise" government.   It has also attempted to bring multiple ministries together to coordinate responses to water related concerns.   The federal Prairie Farm Rehabilitation Administration, operating within Agriculture Canada, of course is a sub-department with a specific mandate, i.e., to respond to agricultural needs.   Summarizing policy and programme responses in this way is intended to point out how governments are responding to stakeholder demands for greater voice and to demands for more holistic approaches to water management.   At the same time, the values to which governments most closely attend are what can be "quantified" and clearly operationalized in terms of financial investment.   As will be noted, however, values not so readily quantified are now being viewed sometimes as critical, but are not being particularly effectively addressed.

I will focus this report on the Alberta context, primarily because I have had opportunities to study it closely as a participant observer.   Before proceeding, however, I will make several observations about the federal (PFRA) and Saskatchewan situations, in order to place the Alberta analysis into the context of the study parameters.   Jim Warren comments on the PFRA, "It surpasses other agencies operating in the province with respect to staff dedicated to climate monitoring activities related to water supplies and management. ... This is somewhat remarkable given that compared to other agencies which are active in water management on the prairies, PFRA is lacking in statutory authority over water." ("Prairie Farm Rehabilitation Administration: Organizational Overview," 10).   This characteristic of the PFRA indicates that its mandate is framed according to somewhat different values than those expressed in strictly legal and political terms.   That is, establishing and operating the PFRA seems to be a federal government response that is not entirely constrained by law or jurisdictional responsibility. This, in itself, is worth investigating further and relating to the culture of the institution, because the tendency of stakeholders in the areas of study is to hold the PFRA's approach up as a model of government-stakeholder relations   (e.g., praising the practice of having field agents live in the communities).   Many stakeholders cite PFRA practices when criticizing provincial approaches to stakeholder relations.   I will later use the contrast Warren and several stakeholders have made between the PFRA and the provincial governments to draw out the importance of certain kinds of values that tend to be overlooked or systematically eliminated from concern by governments.

Saskatchewan's main stressors (water safety and stakeholder conflict) and the focus of its motivations to shift its structure of governance can be contrasted to some extent with Alberta's concern, which seems to focus more on drought related (quantity) problems.   Having different historical routes can partially explain such differences.   The North Battleford water contamination case, as the Walkerton case on Ontario, forced the Saskatchewan government to direct attention at water quality issues, as it would have directed Alberta's attention had a similar incident occurred in Alberta.   Although conflict was not raised as the major concern for water management by Alberta respondents, it seems clearly the case that Alberta's history with rural/urban conflicts and conflicts over the Oldman River dam and the oil sands have had something to do with initiating its Water For Life Strategy.   SK has maintained a strong

regulatory role, whereas the language of the WFLS suggests that AB is devolving management responsibilities and is attempting to reduce its regulatory role.   It is not clear, however, to what this devolution will amount, as will be discussed later. The PFRA, like the provinces is focussed on stress due to drought (quantity).   It's agriculture mandate, however, makes its focus narrower than that of the provinces.

Context

Water Management Purview
      Alberta's concentration on water quantity and, to varying degrees, water quality (health) is an attempt to respond to a plurality of demands placed on water resources.   The move to recognize the plurality of stakeholders, the multiple values of water, the need for inter-ministerial and inter-governmental integration have put pressure on all governments of concern to recognize the importance of holistic approaches.   Interests in developing efficient policy and decision-making processes must now, more than in the past, be balanced against effectiveness in ensuring fair, appropriate and satisfactory input from all concerned.   With multi-agency, multi-levelled multi-sectoral and a plurality of perspectives pressing governments to develop mitigation and adaptation strategies to water related stressors, there is greater pressure on governments to develop research agendas and different modes of governance to integrate resources, mandates, approaches to conflict resolution, policies etcetera in ways that they may never have had to attempt in the past.   Further, many respondents indicate how their ministry attempts or has been instructed to coordinate with other ministries on the issue of climate change, while admitting that it is a struggle to do so.   Note, for instance, that the office in charge of climate change research for Alberta (Harry Archibald) has in fact a cross-ministerial function, but has a long way to go to integrate the ministries involved.
      Part of the reason for the struggle is that the structure and function of each province's water management ministries (with AB being slightly more comprehensive in its purview) do not integrate well.   The separation of functions, jurisdictions and responsibilities and inter-ministerial (and inter-governmental) competition leads to the construction of silos, which result in a lack of coordination and communication between agencies.   The PFRA, presumably because it is a sub-department of a federal department and has a long history of working with the provinces, does not seem have as great a problem in this area and appears much freer to work cooperatively with various provincial ministries and local governments.
      Of course, many silo-related problems can be traced to the fact that governments are structured to respond to different demands of their constituents and to serve different (sometimes competing) functions.   In Alberta, for instance, the ministries with a stake in water management are those related to energy, crop production, transportation, health and safety, all of which exist because different demands on government need to be satisfied.   Each ministry must, then, focus on different water uses and values. Different ministries will predictably come into conflict. Protecting jurisdiction can be a matter of responsibility in carrying out a ministry's mandate and performing its function.   So it must be recognized that larger systemic forces and values operate to frustrate the development of holistic approaches.   More generally, consider the fact that western democracies are based on a separation of powers, responsibilities and functions, which has roots in the separation of church and state.   The tendency to establish silos is particularly relevant in this regard.   One characteristic of the modern state is that it is closely related to

individualism as opposed to collectivism.   Isolating the interests of rights bearer, as in the isolating of separation of church and state, government and opposition, complainant and defendant, etc. is viewed as either good or necessary (or both), since it frees the bearers of those interest/rights from authoritarian and centralized rule.   Such separation and isolation has become part of the set of cultural expectations in the West, because it is seen as a guarantee of freedom and protection against interference.   It is very difficult or next to impossible to recognize and incorporate holistic modes of thought and related values, as a result, within the current political and cultural framework.

The difficulty of incorporating spiritual values into the value framework of governments illustrates how this framework conflicts with more holistic types of values. Spiritual values tend to be of a sort that inform all other values.   They require that holders of those values understand and judge other values they might hold as either legitimated or illegitimate.   It could be said that spiritual values are second order values used to judge first order values.   Hence, to understand how they operate and appropriately respond to them, governments must be able to adopt a perspective that allows them to understand how these spiritual values integrate and inform all other stakeholder values.   It requires what has been called a "synthetic" understanding, rather than an analytic one.   Such values tend to be ignored or acknowledged only in perfunctory ways. And when they are recognized, they are often conflated with religious values (see discussion between Widdowson, Stevenson, Berkes and Morito (Morito 1997)).   Typically, both government agencies and researchers treat spiritual values as one among many types of values, thereby misconstruing how they actually operate.

Structural constraints form a large part of the background which allows or disallows certain values to operate, or which allow some values to operate more forcefully than others. For instance, the short terms of political office makes it very difficult for politicians to consider values that require a long time to develop, e.g., certain community oriented values, such as trust, since for those values to operate effectively, time and more intimate contact with stakeholders is typically required.   A number of institutional respondents as well as stakeholders have drawn attention to this point. It is no easy task, therefore, for governments to value holistic approaches and act accordingly, when ministerial mandates and government structure demands separation and isolation of functions.

As institutional respondents indicate, efforts to integrate and develop holistic approaches are in their infancy.   And given that the need to respond to the impacts of climate change has only recently begun, the process of thinking about what an integrated, holistic government response to these impacts should look like has also just begun.   Alberta's WFLS may turn out to be a model for an integrated response, although that initiative, even at the time of this writing, is undergoing a renewal (revision?).   On the face of it, Alberta's three-pronged approach to water management and a devolved structure of governance seems to be an effort in the right direction toward an integrative and holistic approach.   Indeed, its WFLS is linked to the Cumulative Effects analysis, which is an attempt to understand water related problems more holistically.

Response to Climate Change
Neither the provinces nor the federal government manages or plans directly for the impacts of climate change and variability.   However, the provinces have divisions and/or individual people doing climate change research, or who are engaged in planning that addresses

some of the impacts of climate change.   Similarly, the PFRA has, in effect, been dealing with adaptation to climate change and variability since its inception, according to Jim Warren.   The provinces have no management or policy making function to deal with climate change in all of its complexity.   The PFRA, by definition and mandate (its focus on farming), cannot do so. Having said this, however, all agencies have a history of adapting to the complexity of water resource problems as indicated by the fact that they have moved from dealing with single issues to multiple issues (e.g., from focusing on drought and quantity alone to health/safety, flooding, habitat).   Both provinces do have an infrastructure that will enable them to manage for more than one impact of climate change, but they are not preparing for the full range of climate change impacts.

It should be noted that the Alberta government has announced a $4 billion climate change initiative to reduce greenhouse gas emission intensity by 20% below 1990 levels by 2010 and 50% by 2020. This policy could be viewed as a response to the complexity of the impacts, but the plan has come under considerable criticism.   The auditor general, Fred Dunn, for instance, concludes that no measurable standards have been established to determine whether the goals have been reached (Edmonton Journal, October 3, 2008, A5).   Moreover, the commitment is to reduce emission intensity, not to reduce overall emissions.   Hence, it seems more likely that the Alberta government is attempting to appear to respond to the wide range of likely climate change impacts, while in effect focussing exclusively on economic ones.   Further, it is yet to be determined what will count as an expenditure on climate change, how much will go to polluters who will use it in questionable ways and the like.   If commitments are this vague at the operational level, it is fairly certain that at the level of conceptualizing responses to climate change commitments are even more vague and uncertain.

In some respects, the lack of integration and a comprehensive, holistic approach is owing to a lack of political will, as several respondents have mentioned.   Another obvious factor is the force that economic interests play in the political arena.   Priority stakeholders are those who move the economy.   Hence, there is a great deal of pressure to deny that climate change is real; or, now that climate change is considered real, to claim that the impacts are not sufficiently severe to warrant drastic action; or, if the impacts are admitted to be drastic, that technological advances will enable the provinces and country to mitigate or adapt to these impacts.   But at another level, it is extremely difficult even to imagine making climate change a policy and planning focus, because the parameters of dealing with its impacts do not match those of the political arena.   Several respondents have mentioned how time frames are key.   Climate change scenarios are framed in terms of thirty year periods, whereas politically driven time frames are driven by electoral periods.   Even explicit stakeholder concerns tend to centre around short time frames.   The motivations to act on water issues come usually from crises, such as water contamination and flooding.   Even problems of droughts are treated as 1-4 year events.   Hence, political planning responses to water issues are typically limited to short temporal scales.   The structure and functioning of government, then, focus attention on immediacy, rather than on long range outcomes.   Value is placed more on being able to deliver publically identifiable outcomes within the short time-horizons of political life.   Moreover, given the party system and competitive nature of the political arena, politicians are focussed on producing outcomes that will be attributed to them.   Hence, values connected to self-interest play a major role in directing the value orientation of the ministries.

There are also spatial horizons and geo-political differences that are difficult to overcome when attempting to envisage a comprehensive climate change adaptation strategy.   In the SSRB, the impacts of climate change are fairly uniform, where the greatest impacts appear to be drought and flooding.   In other areas, e.g., the Athabasca River Basin, the impacts of climate change do not appear to be so severe and, depending on what model one uses to predict climate change impacts, the region may face a net benefit (e.g., more precipitation and a longer growing season).   Moreover, since the region houses the Athabasca oil sands, it benefits enormously from not investing energy and resources into climate change issues.   Most climate change research in relation to the oil sands to date suggests that oil sands development is a prime reason for having to be concerned about climate change in the first place.   Even if the oil sands were not such a dominant concern, it would be difficult for the Alberta government to manage over all regions according to a comprehensive plan, because of the different issues and stakeholder value profiles different regions represent.

At an even more general level, it is becoming increasingly evident that simplification is in fact a value that motivates us to seek understanding and deal with issues by reducing the number of parameters and variables (the complexity of an issue) that are to be addressed.   Such modes of thinking are amenable to making policy and decision-making efficient and clear.   In the face of the complexity of climate change, valuing simplification seems to limit the adaptive capacity of governments, perhaps in deeply serious ways. To illustrate the point, at the time of this writing, it so happens that the world economy is collapsing owing, at least in part, to the sub-prime mortgage phenomenon, which has the world's banking system in collapse and in desperate need of government aid. One of the central figures whom many consider central to this collapse is Alan Greenspan, former Chair of the United States Treasury Board.   His influence on U.S. economic policy was predicated on the belief that markets would self-regulate (see the "National" CBC television, Thursday, October 24, 2008).   He did not "see" the collapse coming, as a result.   Economists worldwide, according to most reports, failed to envisage the degree to which the collapse would occur.   Most agree that the causes are quite complex and that no one has an adequate understanding of how all factors (including derivatives) work.   The problem here is that Greenspan operated according to the assumption that simplification (e.g., reducing his understanding of the economic system as one that would self-regulate) was sufficient for thinking through the regulatory issues regarding monetary policy.   The point is that Greenspan and most government agencies thought and operated according to assumptions that simplified economic parameters and variables, or at least simplified them in the wrong way.   As a result, they failed to understand what was needed both to see the collapse coming and how to rectify the damage done by it.   In a like manner, simplification of complex climate change parameters could be courting extreme failure.   In the language of the IACC project, it exacerbates stakeholder vulnerability by hiding or masking the underlying and deeper threats to stakeholders.

We could call this problem an epistemological problem, because the process of simplification is intended to limit what it is we are responsible to know and understand. Simplification can, then, be seen as an epistemic value.   It is valued especially in Western European cultures, because it serves the analytic (as opposed to synthetic) way of thinking that has been fostered from the ancient Greeks onward.   This is a way of thinking that is also closely connected to scepticism.   The result is that we develop and use ideas that can be managed, given operational definitions and which are amenable to clear and distinct operations (e.g., analysis of critical factors, key indicators).   This analytic, sceptical mindset drives us to frame our

understanding of problems in terms of conditions that can be clearly identified, measured and controlled.   Our model of intellectual rigour is based on the ability unambiguously to trace a phenomenon (effect) to its cause (another phenomenon) in a linear fashion.   The way we identify and formulate problems and the way we handle these problems, as a result, is to determine clear cause-effect relations to the extent possible.   One epistemic problem of climate change, however, is that its "causes" and effects are multiple, multivariate and interconnected.   We may know many of the physical causes for the imbalance of CO_2 and other greenhouse gases in the atmosphere, but even in physical terms, we cannot be certain how much we as humans are contributing to the imbalance.

When it comes to identifying and understanding the economic, political and social "causes" of climate change, the matters are considerably more complex, because they involve such factors as consumerism, demands of national defence, greed, demand for convenience etc. Managing for these factors is more difficult to envisage, because the relationships between them are not only complex, but vague.   For instance, determining how to measure for the greenhouse gas effects of greed and fear seems an impossible task.   Moreover, insofar as many of these factors involve human volition (agency), the problem of climate change must involve human choice (see Rayner and Malone, 1998).   I suggest that the reason for governance institutions not including all of these factors and for not dealing with complexity directly is, in part, that our epistemic framework and the cultural norms that support it militate against doing so. Indeed, we find it difficult to consider anything other than the results of quantification and measurement as bases for knowledge claims.   Where the kind of knowledge needed to make informed decisions requires an understanding of complex relations and human action/agency, our epistemic value systems do not equip us well to acquire and use such knowledge.   If the claim that policy and decision-making fora are limited because of the epistemic values that undergird them is sound, then the epistemic problems we face have to do with how we view the world, making world view issues intrinsic to the policy and decision-making problems generated by climate change.

By introducing social and volitional factors into the mix, a further complexity arises. Human behaviour cannot be controlled in the same way as can physical factors (however much the likes of Aldous Huxley envisaged it would be).   Not only are economic and social variables interconnected in ways that make measuring and controlling them extremely complex, as Greenspan has admitted, attempting to control them raises normative issues in ways that controlling physical factors does not.   As will become evident later, governments are indeed aware of these social factors, but have barely begun to understand how to take them into account. Owing to the complexity of both physical and social factors, governments are becoming increasingly aware of the need to approach issues more comprehensively and integratively, using both quantitative and qualitative analyses in the process.

That's when you get a bunch of scientists into a room who are water scientists, they can come up with some really neat solutions for water management. That's why I keep on classifying water management as an entity unto its own. But they aren't doing very good in terms of social management. That's why [I'm] here talking to you guys and the work that you're doing with this research program was of interest to me. Because you're trying to blend the social sciences and the water management science. And up to date, I would say that the social sciences in Alberta, part of it was being done intuitively as opposed to

intellectually. (ALB10)

Some general observations on government initiatives to develop more holistic approaches to climate change can help further describe the underlying problem. The first thing researchers and decision-makers tend to do when attempting to develop a holistic understanding is identify distinct disciplines and sectors (e.g., stakeholder groups, experts), in order to gather expertise and the range of perspectives an issue involves. Representatives from these groups are brought together to conduct research or to advise on decision-making matters. Each brings their expertise and/or particular perspective to the forum.

The problem in the research arena is that researchers typically conduct their research separately and write reports which the others on the research team are either hard-pressed to understand or cannot understand. Just as seriously, experts from other disciplines cannot and dare not judge the significance and validity of their research partners' methods and conclusions, not having the qualifications to make such judgments. Hence, research results tend to be fragmented and, when taken as a whole, incoherent. By operating as distinct disciplines, without understanding how they are to be integrated from the beginning, courts later fragmentation and incoherence. Addressing this problem, if it is addressed at all, usually takes the form of attempting to reach consensus among participants; or it is left to those who requested the research to try to make sense of the results; or, a central person/persons are made responsible for making the research results cohere. Even if successful (whatever criteria might be used to determine success), the results are likely to be coherent only to those who have done the integrating, not the rest of the team, particularly when the rest of the team is constituted of specialists. This is a way of saying that most attempts at integration seem to fall significantly short of what our intuitions about integration suggest should be the result. But because there are no criteria according to which successful integration can be determined, we cannot know whether current approaches fall short of the mark or are the best we can do.

A central problem with integrating stakeholder needs and perspectives when attempting to develop policy is illustrated by the Alberta Water Council. Each stakeholder group – there are four general categories and, now, twenty-nine sub-categories – represents a stakeholder sector of the province. For deliberations to proceed, each member must agree to discuss the issue (reach consensus); any one member can refuse to discuss a certain issue. This right to refuse, of course, is instituted to ensure that no member is forced to comply with a majority, which is to say that the right to refuse is necessary to attract members from the wide range of stakeholder groups. This requirement of consensus enables any one party to eliminate any topic from discussion and, therefore, any factor or set of factors contributing to climate change from consideration by council. The first observation is that the council is not conceived holistically, despite the attempt to make it comprehensively representative and attempts to make it function holistically. The second is that, even if the council is on a path toward integration, the process could be undermined by any one member refusing to discuss an issue or accept certain terms of reference, however critical to the overall management of water that issue might be. Hypothetically, for instance, one sector could refuse to discuss health-related issues. Given that stakeholder values can be mutually exclusive (see the Rojas "Flower Diagram"), it is a certainty that some stakeholder values will not be incorporated into the council's decisions to advise the government. The holistic approach of the council, then, amounts to a reasoned/negotiated compromise between

council members.   Granted, council members are required to agree to a few conditions in order to sit on council, those being the aims of Water For Life.   But, these ordering principles do not overcome the problems generated by the structure of the council and its members' right to refuse.

In the final analysis, holistic understanding, inter-disciplinarity, integration are expressions of a need, rather than operative principles, as far as government attempts to implement them have demonstrated.   As such, they are better viewed as aspirations.   Attempting to respond to the need for integration, then, is fraught with difficulty.   At this point in the development of holistic approaches, it would appear that integration requires innovation and a willingness to experiment. If these conditions can be treated as criteria for establishing a holistic understanding, then the water governance systems have a long way to go before developing an appropriate framework for responding to climate change/variability.

The factionalizing of governance institutions (the silo problem) can be treated as a symptom of the more general problem of integration.   Indeed, this problem can be further traced to the inception of modernity (from at least the 1600s onward).   Western Europeans and all those peoples who have become modernized have viewed themselves first as individuals and then as members of communities who enter into community through establishing compacts or contracts and agreements with one another.   Factionalization is a further expression of this isolating force of individualism.   Further discussion of modernity would not be appropriate, here, except to say that its relevance implies that the problems of governance run more deeply than have been identified in this report.   I mention this issue more to indicate that the problems that arise due the complex nature of climate change are not only multi-variate, but multi-levelled.

A caveat is in order.   The mindset that leads to factionalization has its advantages.   As respondents in SK have noted, even if various ministries do not act to adapt to climate change, they are, nevertheless, adapting to particular aspects of climate change.   For example, governments have adapted to drought by building dams, shifting irrigation technologies.   By identifying a single factor of a complex problem, the way to resolve and act on the problem becomes clear and more obvious.   In this way, factionalization can empower people and institutions to act, whereas spending the time necessary to understand holistically may result in endless deliberation.   In many ways, then, governments are caught in a dilemma.   Sometimes to be effective, we need to think in terms of efficiencies.

Stakeholder Identification and Value Analysis

The analysis of institutional values and the relation they have to stakeholder vulnerability is informed by an examination of how the institutions under consideration categorize their stakeholders.   When a category is used to define a stakeholder group, some preference for identifying that group in one way rather than another is involved.   To illustrate, any farmer could also be categorized ethnically, politically, culturally.   Thus, categories used by policy and decision-makers to describe stakeholders are the consequences of holding some perspective, prior decisions, expressed purpose, or intentions.   They are not natural kinds in the sense that they describe some essence of the stakeholders being categorized.   In this context, the application of categories expresses certain value orientations.

I will address two arenas in which value judgments are made by institutions in the water management regimes of the SSRB: 1) the selection of stakeholder categories; 2) the way

stakeholder concerns and vulnerabilities are identified and acted on.   In the first instance, I will focus on the categories that Alberta Environment and Saskatchewan water management agencies in general use to identify stakeholders.   In the second instance, I will focus on the types of actions on which government agencies focus and compare them against certain stakeholder responses.

I begin by stating that all governments focus their attention on two main value categories on which all citizens in all countries would want them to focus: safety (of drinking water) and reliability (of supply).   Stakeholders are categorized first and foremost as citizens with rights to security of the person and as producers whose water needs are fundamental to ensuring their productivity.   In addition, Alberta appears to recognize habitat values (e.g., WFLS identifies habitat as deserving of protection), as if habitats could be counted as stakeholders.   Saskatchewan does not seem prepared to do so, possibly because its reasons for focussing on the first two value categories seems to have been overwhelming.   Of course, caveats are warranted.   The Alberta government, given its lack of action to curb oil sands development, in light of the many controversies that surround that development, invites sceptical responses to its commitment to treat wetland habitats as stakeholders.   But the gesture in the WFLS should at least be recognized as something relatively new.

1) Beside identifying stakeholders as citizens, we do expect governments to identify stakeholders as members of an economy and use economic criteria to sort them.   That is, those stakeholders who can be characterized as contributing or otherwise important to the economy in terms of commodity production, consumption and distribution are the stakeholders that are most immediately identified as key stakeholder groups.   In Alberta, the Water Council is constituted of four main stakeholder groups: government, other government, industry, NGOs).   The development of WPACs follows a similar course.   Initial stakeholder groups identified by AB ENV to participate in the establishing of WPACs or who are recognized as WPACs (e.g., the Bow River Council) are those whose stakes can be identified primarily in economic terms.   In the SSRB the primary categories for identifying stakeholders are urban dwellers, farmers, ranchers and members of the oil and gas industry.   In the north, far more emphasis is placed on the oil and gas stakeholders, because of the economic importance of the oil sands.   In Saskatchewan, the focus is not essentially different, although greater emphasis is placed on stakeholders whose health is at risk owing to contamination.   The North Battleford incident has ensured that this remain a focus for some time. There also seems to be more concern about flooding in areas inhabited by cottagers, whereas in Alberta, most respondents indicated that flooding could be handled under the category, "emergency response."   Clearly, then, the categories employed to identify stakeholders are those that prefer major contributors to the economy and those that have us focus on health concerns.

The presence of Ducks unlimited and programmes, such as Cows and Fish, demonstrate recognition of sports groups and other recreational stakeholders (categorizable as recreational value).   Falling under the more general category of NGO, these stakeholders are viewed as having a political value similar to others, such as environmental groups.   Also in Alberta, First Nation representation is a particularly poignant concern, since only two First Nation individuals participate in the WPACs and the one representative on the Water Council resigned.   The reason is that the politics of sovereignty and self government have moved First Nations to reject provincial political and legal authority over matters concerning resource management in their territories. The Alberta government has made considerable effort in trying to include First Nations and Métis in its WFLS, but is failing, because First Nations and Métis argue that they are not

being appropriately recognized (categorized) as nations.

The impact that categorization can have on stakeholders who feel that they are not properly categorized also indicates how political and institutional values are implicit in the way categories are formulated. The First Nation issue well illustrates how the very use of the stakeholder category itself can constitute an offence. If to be called a stakeholder means being considered a constituent of a government, accepting the label implies that First Nations accept the political and legal authority of that government. Even if governments are acting in good faith, given that First Nations have a long history with governments in Canada of having their rights extinguished by virtue of their lands and systems of governance being regulated by federal and provincial governments, they have reason to believe that any *de facto* acceptance of provincial or federal authority will be used to erode their rights even further. The intent to include First Nations by creating a separate category for them, therefore, has turned out to function in just the opposite way that was intended, because the use of that category is interpreted in fundamentally different ways. The category used by government to be inclusive of Aboriginal people has ironically been seen as a tool to extinguish their right to conduct nation-to-nation relations with Canada.

Similarly, other self-identifying stakeholder groups (e.g., farmer and ranchers) feel that the government is overlooking them, because they are lumped in with industry. They feel that being categorized as an industry stakeholder tends to mute their voices, because oil and gas has a far stronger voice. Hence, the way in which they are included as stakeholders actually frustrates their attempts to be heard by policy and decision-makers. Categorization, then, partly determines how various stakeholders are valued by institutions and how the values held by stakeholders will be allowed to affect decision and policy-making.

When considering how categorization leads to the suppression or perhaps even silencing of certain self-identified stakeholder groups, attention could be drawn to other possible groupings. The poor, for instance, are not identified as a distinct stakeholder group, even though it is arguable that there is such a group and that it is legitimate to recognize them as having a distinct stake in water management policy. Given power differentials, they will be the last in line to access water resources should supply become short and the least empowered to exercise their rights to security of the person should water quality be threatened. It is reasonable to assume that they are not included, because they exert no political/legal force. Taking the analysis of initial categories further makes it possible to see how value choices are embedded in every aspect of choosing stakeholder groupings and dealing with stakeholders.

This observation is connected to a further problem: suspicion and mistrust of government. Many stakeholders express mistrust of government and most institutional respondents recognize that it is a problem. The Athabasca WPAC development process provides considerable information on this matter. It is worth noting that, at the initial meetings held in Edmonton in April of 2008, as much attention was paid to social and qualitative research as was paid to science and quantitative research. A number of sessions were dedicated to First Nation and Métis perspectives and issues, as well as to social dimensions of water management. The fact that I was asked to speak on values and water management is in itself revealing of the organizers' hopes for the meeting. With this opportunity/opening, many stakeholders, including some industry representatives, emphasized the importance of building trust relationships between stakeholders and governments. Most emphasized this factor, because they felt that they have not been able to trust government, or one another in the past. This was so much emphasized that the subsequent

procedures for forming an initiator's group for the Athabasca WPAC have been predicated, in part, on a commitment to building trust.   During the introductory presentation by Alberta Environment (AB ENV) during follow-up meetings, agents used a slide "Facilitating the Development of and Athabasca WPAC - Progress," the last bullet of which states "The importance of trust was repeatedly emphasized and a careful approach to building and nurturing trust was advised."   Clearly, the organizers (AB ENV) have become attuned to the same matters of concern as many stakeholders groups who are typically marginalized in such proceedings.

Informal talks with stakeholders who were asked to participate in this follow-up process have also made it clear that trust remains and will remain at issue.   Some point out the apparent contradiction between the shared governance rhetoric of Water For Life and the actual policy framework under the Land Use Framework.   The Land Use Framework is perceived as having the potential to override the Water For Life Strategy and rightfully so – the Land Use Policy Framework is the overarching policy framework – since it is more of a top-down policy initiative and, therefore, seemingly at odds with the shared governance intent of the WFLS.   Owing to perceived lack of trustworthiness of governments, then, many stakeholder groups, beside First Nation and Métis, refuse to participate in the forming of the Athabasca WPAC.   In fact, for reasons yet to be determined, the oil and gas sector has not participated in the WPACs.   Several WPAC respondents were concerned about their absence.   Several stakeholder groups remain mistrustful and sceptical of the shared governance intent, because, without oil and gas participating and being accountable to the WPAC, it appears that the provincial government is not about to try to limit the activity of the industry.   It appears that business will continue as usual. This implies that the WPAC system would be nothing more than a means to coopt the resistance to the oil sands.   The Athabasca WPAC development may be an extreme example of how stakeholders focus on the building of trust, but as indicated in interviews regarding the SSRB, stakeholders there also emphasise the importance of trust and building community relationships.

Obviously, categorial schemes exacerbate mistrust when they turn out to guide the attention of decision-makers toward satisfying the values of dominant stakeholders over the less empowered who perceive government policies and practices as unfair and unjust.   One explanation for why this occurs is that categories are generated on the basis of background assumptions of what the world, not only is like, but what it should be like, who belongs in that world and who ought to be considered important.   These assumptions are, in turn, influenced by institutions' ideologies (e.g., moral stances, political commitments, religious beliefs, epistemological beliefs).   Since democratic governments are in the business of ensuring that all legitimate stakeholder values are represented in an unbiased manner, they are assigned the responsibility of categorizing stakeholders without bias.   When categorial schemes are applied in the development of policy and decision-making that are perceived as favouring some stakeholders over others, others inevitably will be offended.   So, depending on the stakes involved, some stakeholders will refuse to participate in governance initiatives that use that categorial scheme. Moreover, they will feel both justified and responsible for their refusal.   Putting aside the fact that democracy is itself ideologically based, it is extremely difficult for governments to avoid using ideological commitments in shaping stakeholder categories and responses to stakeholder values. After all, politicians are almost always elected on the basis of their ideological beliefs.   From a governance point of view, bureaucracies can come under considerable pressure to conform to political agendas, even when they know that those agendas will exacerbate poor relations with certain stakeholder groups.   To survive in most provinces, it seems, bureaucrats must adjust to

whatever political ideology happens to come into power.   At this general level, then, it is difficult for governments adequately to recognize the variety of stakeholder values and to formulate categorial schemes that will be accepted as legitimate by all stakeholders.

Accordingly, the institutional adaptive capacity to climate change in Alberta and Saskatchewan is limited and considerably frustrated by the lack of stakeholder trust and belief in their governments.   That being said, however, both provinces are moving in appropriate directions and, as a consequence, appear to be acting in a way that is decreasing the amount of resistance to their categorial schemes and, as a consequence, increasing their adaptive capacities to handle climate change/variability.

2) Examining how economic values dominate in the management scheme reveals how some values come to be misrepresented, suppressed or ignored in policy and decision-making schemes.   The economic focus of water management regimes in the two provinces determines how governments respond to stakeholder values/vulnerabilities, despite how stakeholders themselves expect their values to be recognized.   To illustrate, were we to be living in a country governed by religious fundamentalists, our government would act very differently to stakeholder demands for greater participation and voice.   Such government would be directed by the religious values of its leaders who would decide how demands for participation would be treated.   Those demands would likely be viewed as expressions of rebellion and as evils.   In the SSRB, the opposite is, in principle, the case.   The attempts at shared governance (e.g., the Alberta Water Council and WPACs) are based on the value assumptions of democracies, namely, that the decision and policy-making process should represent the values of the people.   Hence, the attempt is to have a wide cross section of stakeholders represented in government initiatives. Further, no group is identified for special funding or support.   While, most people living in democratic countries would likely accept this principle, it is, nevertheless, a bias that has consequences for some stakeholder groups.

For instance, as a stakeholder representative, belonging to a WPAC does not involve remuneration and most expenses are expected to be borne by the member's stakeholder associations.   The problem is that well-financed groups can send, not only representatives, but representatives trained to lobby and who would be paid by their organization to present their case, to stakeholder fora.   Less well-financed groups cannot as easily afford to pay for such representatives and some cannot afford even to pay their own expenses.   Some community action groups, certainly the poor (by definition) and some Aboriginal communities are examples of such groups.   It might be concluded that the economic purview of governance agencies supported by commitments to democratic principles creates this situation.   In effect, the way their value commitments operate disempowers less economically significant groups.   Further, insofar as economic values dominate, stakeholders representing values that are not principally economic in nature often must articulate their concerns in terms that resonate with those whose principal values are economic in nature, because that is the recognized language of the dominant stakeholder groups and governance agencies.   For some groups, as a consequence, it becomes difficult, if not impossible, to articulate just what is at stake for them, when their values cannot readily be articulated in the language of economics.   Again, the most graphic example of what can result from being frustrated in this way are the responses of some First Nations (e.g., at Oka, Williams Lake, Ipperwash and the like).   Less publically visible reactions by community groups should also be recognized.   For instance, some residents of Hinton, AB, were concerned over a

government initiative to develop the region for tourism.   They were consulted as to whether they preferred to develop small roadside picnic facilities, or larger scale recreational facilities.   They were not given an option to refuse development or to develop along lines that they thought suitable.   These community members were far more concerned about protecting their way of life, which included protecting the ecosystems that were vital to their way of life, than they were about further economic development.   To resist the government's initiative, which was obviously viewed as an imposition, they worked out their own community development plan and have submitted it to government, essentially to compete with the government's initiative.   This community response can, then, be viewed as an act of rejecting the government's value commitments (priority of economic values) and an assertion of a right to have their community autonomy values recognized.

Similar analyses could be given for environmental groups inventing the language of full cost-benefit analysis (to ensure that environmental costs are recognized).   'Social capital' is sometimes employed to indicate that other ("human") resources must be considered when considering community development and the like.   First Nations have had to go further in adopting the language of the courts in order to gain voice.   It has been argued that many, at least Iroquoian and Algonquian languages, do not have a word for 'right' yet they have adopted the term in order to have a voice in the legal system.   The point here is that, despite commitment to principles of democracy, the very language in which the democratic process is conceived and the concepts according to which it operates devalue perspectives other than those held by dominant stakeholder groups.

It could also be argued that governance institutions are lacking awareness of other types of values that happen to be important even to dominant stakeholders.   Indeed, these values can be far more important to dominant stakeholders than economic ones; its just that they are hidden from conscious awareness.   Some of our ethnographic research shows that stakeholders in rural, agricultural communities typically initially articulate their concerns and values in terms of economic well-being.   But given enough time and freedom to express all of their concerns, they will begin to communicate their commitment to what has been called the moral economy, particularly in relation to times of stress.   Building trust and cooperative relationships to help one another in times of duress, many have said, brought them through stressful times.   One of the key concerns some had in relation to the economic vulnerability they faced due to drought was the fact that their families could not continue the family business (heritage and family values) and their schools were closing (community values).   All of these values are viewed as critical to the governance of social relations by members of the community.   The moral economy, which makes use of social capital (personal trust relations, informal modes of accountability, cultural ties), is based on a value set that is understood by family, community and society in ways that are not readily formalized or articulated in standard economic terms, but which constitute a force governing human relations all the same.   This force can, in fact, be more powerful than any formal, legislated force (see E.P. Thompson, 1971; James Scott, 1976; Neil Adger, 2003).

Some institutional respondents are also clearly aware of this force and have operated within the moral economy to handle water management issues.   As noted, many respondents referred to the SSRB Irrigation District's adaptive response to the drought of 2001 as a model of how things could work.   They identified building community relations, trust and communication as essential to the success of the region's adaptation to drought. Several key respondents,

including the AB Environment manager who helped carry the district through the process (ALB10), described how, quite apart from the governance framework and despite the legislated system of water management (the FITFIR system), stakeholders of the region figured out a way to share the water resource.   They mentioned how priority licence holders volunteered to share their water rights by offering to accept only 60% of their allocation, if everyone else would do the same.   As an aside, 60% is a figure ALB10 used, which he insisted, for some reason, might not be the exact figure. What matters is that the allotment was insufficient to produce a crop.

> So, now, but just follow this through. Some of them were right thinking, bottom line is, on a, in a very, very low flow year, unless they got an amazing amount of rain by chance, 60% ain't going to give you a crop. And its probably going to cost you more in energy costs and whatever to put 60% onto your fields and get no return. So 60% is probably losing money. So those people just chose not to even play. Now the other 400, that idea of the 60% all started kicking in. Ok we're not going to get anything with 60%. Like 60% is equal to nothing. Does that make sense, in terms of crop production and that kind of thing? So then what happened was it went to the next level and they still did it within the trading, but it was venturing on the verge of transfer, because Pete and George who both decided to sign up for the 60% said, we aren't going to get crops, if we do this so lets use our 60% on your land Pete. I will share in helping you work your land and everything, we'll just fallow mine for a year and we'll put the two 60% on your property and we'll share what we get for a crop. That was huge. In terms of adaptation, and they did it. *No bureaucrat, no politician, nobody planned it.* The tools were put in place. (ALB10)

Among rights holders, then, informal negotiations took place and decisions were made to work cooperatively, based on something other than government regulation, legal rights, or even standard economic drivers (e.g. cost-benefit analysis).   Priority rights holders could have acted on self-interest, taken their full allotment and left lower priority holders to suffer.   But something of the moral economy was recognized and motivated these stakeholders to share their resources.
The moral economy is identified in various ways as crucial.   ALB9 says the following:

> We'd always do those things by ourselves, we'd never use Mounties. Peer pressure worked, these people they all rode the school bus together right. There were ways of dealing with it, you send an idiot into it, there will be a killing, but you work the community, the kids are in 4H, there are all kinds of different threads that put them together. The little creek guys in the early 80's basically invented water sharing, and from [inaudible] wasn't legal at the time, we made ways of making it work, and out friends in Edmonton basically said that if you make it work, that's fine, but if it hits the newspaper your fired. But if you can make it work, I don't want to hear about it. ...   . It's a trust issue more than anything else. ... But we did it in the Willow Creek area as long everyone agreed and no one was injured by it. No complaint, no problem. Anyway, by doing that, proved it could work. For some reason I ended up on the group that was re-writing the water act and there are certain things in there that I insisted on because we saw that they worked, we needed these tools. I remember the day that we crafted section 33-3.5 whatever it is now, for assignments and some of the lawyers looked at me and said, [inaudible] you had peer pressure amongst the community. It's not going to work if you have to do it over a broad

area where people don't know each other. I gotta admit, your probably right, peer pressure is what's making it work, maybe it won't work, but I need this in areas where it works why wouldn't we put it here.   And maybe people will take [it out] we gotta put it in anyway. And David Percy was actually sitting in on that group. You know David Percy? He's a he's a dean of law at the U of A now. In 2001, it worked – we shared water from Waterton Park to Medicine Hat, that's 300km stretched and they didn't know each other. But there were enough connection between the people who did know these guys, who know those guys, who know those guys, it did spread enough, it did work.

This lengthy quotation is meant to show how respondents will sometimes take the time to establish the context for talking about the moral economy in order to emphasise its importance. In ALB9's case, the reason seems to have something to do with the fact that we do not know how to incorporate the moral economy (captured as 'peer pressure') into decision-making, policy and law, even though we all know how forceful it is.   To make his point about the moral economy, then, required some preparation.   ALB9 recognizes that managerial success depends on being able to draw on the moral economy of a region, having lived in that region and being familiar with the stakeholders.

The importance of this management approach emerged in the ethnographic work on stakeholder vulnerability, as well.   Many stakeholders criticized governments for making decisions somewhere in the city, "sitting at their computers."   In contrast, they held the PFRA in high regard for having agents living in communities and getting to know the people they were serving.   PFRA agents, unlike provincial agents, could understand and make use of social capital in a way that distant decision-makers and managers could not.

The other institutional respondents who recognized the importance of social capital further emphasized the importance of communication networks.   These networks are not equivalent to information dissemination networks, although they can include them.   Communication networks are established by people talking with one another in more casual conversation, belonging to clubs, sharing their experiences and problems and making one another aware of their situations. In this process, people become aware of what matters to one another, what offends them and why they would act or resist calls to action.   They also become aware of how social capital can and cannot be used to effect outcomes, because they learn about what their interlocutors believe and value.   This is also the basis for the kind of trust needed to develop working social capital.

Or we need to better understand what the values are when we talk about values and water. Most people immediately associate that with price. We haven't been able to separate cost value and price. Because I live in Canmore, should I have a higher cost of living, because the river isn't polluted? Well, no, but you do know that, if you have a lot with no water and a lot with water, lot price is a whole lot different with the water well. Then you know there is a value. I don't think many of us are comfortable talking about what our values are with respect to water and I can almost use values and interests interchangeably. What I have found really interesting – and this is anecdotal only – is that these kinds of discussions between people who are, more often than not, hold opposing views. When they get to know each other and when they begin to have a relationship, then you can talk about the values. But you can't talk about them first, because then my values are a lot more important than yours. When you actually share ... (ATH7)

Respondents who made such comments also commented that the ability to work within the moral economy is critical for preventing what can become deeply conflictual situations or for taking optimal advantage of an opportunity. The problem with governance systems, by implication, as they see it, is that preparing/training their managers to be competent in recognizing and using the moral economy is nowhere in their purview. Professionals of all sorts are trained as specialists with well-defined functions. They are not trained to understand their place and functions in the wider society and how they are to view their value in the wider set of values that form the context in which they work. In effect, professionals are trained to function within professional silos, with little or no understanding of how they fit into the more comprehensive social context. By not incorporating an understanding of how the moral economy works as an aspect of professional practice, an undetermined number of social, communal and related values are either ignored or recognized only in an *ad hoc* manner. To date, whether and how they are recognized depends entirely on the personality and ability of individual managers.

This omission in professional training has a bearing on related problems of governance structures and culture. As mentioned previously, "the silo effect" is deeply problematic. This problem is explicitly recognized and so labelled by ALB2. Conflict and competition are built into the governance structure. Indeed, this idea is well expressed in a response from a Saskatchewan institutional respondent: "The feds never want to take a back seat position. That's why we don't have a national water strategy." (SWA3 Sec. 0, Para. 244) Under this structure, institutional values will continue to focus ministerial and departmental attention on maintaining jurisdictional authority and insularity from the influence of other ministries and governments. These values discourage inter-ministerial and inter-governmental communication and cooperation, frustrating or even contradicting attempts at integration. For this reason, it appears that any integration initiative depends on such things as decrees by premiers, cabinet, or *ad hoc* initiatives on the part of individuals within ministries. That is, integration depends on intentional and willed actions on the parts of individuals. It does not and cannot depend on institutional or professional culture. Again, this structure and its related values makes it extremely difficult for the government to respond appropriately and adequately to stakeholder vulnerabilities in their entirety. The silo effect results in problems of gridlock and deadlock: gridlock, because many ministries and departments might have jurisdiction in a water management region and require (see Nicol) permissions; deadlock, because the oppositional relationship can create an entrenchment of positions.

Recognizing and operating within the moral economies of stakeholders seems to be a critical ingredient in developing an adequate and appropriate institutional adaptive capacity with regard to climate change. At the same time, enabling the idea of a moral economy to affect the structure and operation of governance institutions seems to be necessary to enable these institutions to envisage how an appropriate and adequate adaptive response to stakeholder vulnerability should look. Emphasis needs to be placed, therefore, on understanding those factors that prevent governments and their agents from recognizing the importance of social capital and the moral economy. Further emphasis needs to be placed on understanding how the training of professionals (e.g., science and engineering cultures, indeed all of academia) helps entrench a professional culture in which the operation of the moral economy is denied relevance and even demonized (e.g., the problem of subjectivity in professional life). Part of what it means to be a

professional is to deny the personal, idiosyncratic and emotive, in order to enable the professional to function in accordance with standardized practices and rules.   This cultural characteristic of many of the professions is indirectly criticised by one respondent.

> There's a variety of systems now, some are managed better than others. There's a variety of personalities around, there's a variety of personalities who work for the government, some are more successful at making these things work than others. For some reason I've been relatively successful in working these things. I've taken over some basins for guys who made a hell of a mess out of them, trying to do the right thing and getting crossed up with peoples perceptions fair, who was or wasn't. What the guy was doing was fair, but it wasn't coming across wasn't working. It's a trust issue more than anything else. We drew in clean em up, straighten out, as you work with those basins. We used to say you only work with three people at a time, it's the guy who was just cutoff, the one who's about to be cutoff, and the guy that wants to get back on and is next on the list. And you work with those three people, then the number moves up in count, but on any given day, you're only working with that many people. Then you gotta fine tune the systems so that everyone knows what's going on, and then we can make it work. (ALB9)

Symptomatic of the problems institutions face is the legal perspective institutions take on addressing issues.   Most institutions today must run risk assessment procedures, which are becoming increasingly law-oriented.   Several institutional agents, even though they did not mention risk assessment procedures during formal interviews, did mention them during informal conversations, coffee breaks and the like.   The Saskatchewan report (SEInterviewsdrcmh.doc, 24) does, however, explicitly mention this aspect of the governance system as a hurdle that must be faced, whenever attempts are made to initiate a new practice. The more risk assessment procedures are required, the more the structuring and functioning of institutions are shaped by the mediating authority of the legal system and the assumption of an adversarial relationship with stakeholders and other governments.   Communicating and acting within such a mediated relationship de-values communicative actions aimed at mutual understanding, and in the process, undermines the efficacy of the moral economy.   Communication becomes strategic and relationships become defined in terms of their formal legal categories.   The forces that are allowed to operate are those that are external to the agents, not internal, i.e., those forces that arise as a consequence of face-to-face communications between people who believe that they are working together on the basis of a common ground.

A further observation helps illustrate the importance of recognizing the moral economy in the governance of water resources.   ATH7, in particular, emphasizes the importance of conducting research on the values of the stakeholders in the region.   Before proceeding, I wish to emphasise the fact that, in our interview with ATH7, no information about my area of research was mentioned.   Indeed, it was not until the end of the interview, after describing the more technical and economic factors of the irrigation districts' adaptive capacity, that ATH7 began telling us about how the moral economy (not in those words) was critical to the adaptive responses of the irrigation districts during the drought of 2001-02.   ATH7 pointed out to us how informal networks operated.   These networks enabled people to communicate, cooperate and settle differences.   Emphasis was placed on the importance of communication and community – the network of people who interact, have common concerns, work together, raise their children

together etc. – for without agents demonstrating an understanding of the forces that work in this context, people will tend to resent management plans and, in turn, ignore, resist, or even sabotage those plans.

As former executive director of the irrigation districts and now as executive director of the Alberta Water Research Institute, David Hill is responsible for managing Alberta's new funding initiative that focuses on water resources. The calls for research proposals have not focused at all on the social sciences, but as is usually the case, focus on gathering more scientific data. However, when Hill speaks (e.g. at the Athabasca WPAC meeting in April 2008), he emphasises the need to understand stakeholder values and to develop community. Some of his current work involves trying to understand and establish methods of incorporating these values and considerations of community into the research mandate of the institute. In many ways, the same can be said of Lorne Taylor, the chair of the institute and lead in the WFLS, when he was minister of the environment. He recognizes the need for including other forms of research. Perhaps because he is a retired psychology professor or because his interest in water management stems from his childhood in the Palliser Triangle, he views water management as a human, social issue, as much as he views it as a scientific/engineering issue. He clearly believes that water management is a response to human suffering and conflict.

Alberta respondents and other agents of AB ENV more than their SK counterparts tended to confirm the importance of the moral economy, especially in the area of building trust relations with and within stakeholder communities. This factor is becoming more explicitly recognized in the Water for Life Strategy. The idea of shared governance in many ways was developed, because the government had to face the problem of a lack of compliance with the regulatory system and the history of conflict among stakeholders (where the regulatory system was perceived as favouring some stakeholder groups and marginalizing others). Alberta is rife with conflict over water use and management. It has, in response, begun to shift away from its traditional regulatory role toward a more consultatory one. Alberta's ministries have not, however, envisaged establishing the same degree of community liaison as has the PFRA. Indeed, respondents (e.g., ALB10, ATH7, ALB6, RDWA) who told the stories of how government agents worked with communities during the 2001 drought to share rights to water also expressed some concern over the lack of government awareness of this factor. There remains much to be told about trust and community. Unpacking statements that refer to these factors would take considerably more time and space, but the following general implications can be drawn. Where the social capital of community and trust are seen as vital to the management of water resources, management schemes need to take people's sense of identity into account. When people draw on the moral economy and especially where they desire to protect/re-build that economy (as in cases of Cabri-Stewart Valley and the Blood Tribe), they are concerned to protect the conditions that enable them to identify and feel that they belong to a family, community, religion, a heritage group and the like. For some, this sense of identity is far more important than economic growth. To undermine or fail to protect it can be tantamount to undermining the ability to participate effectively in an economic system, period. For almost all of the communities studied, it plays a role to some degree.

One problem with the current system is that government agents who come to communities to advise, enforce or disseminate information are seen as strangers. As strangers, they are not perceived as rightfully belonging to the community and, therefore, do not have the social licence

to speak, advise or determine courses of action for the community.   Rather, they are viewed as imposing their legal licence to speak, etc. which appear as forced impositions from the community's perspective.   By building trusting communal relations, the PFRA has enjoyed a social licence to speak, advise etc., because in a way, its agents are recognized as speaking for the community, since their identities are intertwined with those of other community members.   Once agents live in community for an appropriate amount of time, they develop shared memories, a sense of heritage and culture (a way of doing things, perceiving, valuing).   As such, they begin to speak and act as insiders, with corresponding privileges and social rights.   This is what allows them to draw on social capital and utilize networks of communication.   When they speak, their speech has immediate currency, such that to reject what they say requires some justification by the community.   In contrast, strangers' voices have no immediate currency.   It is they who have the burden of demonstrating that they are worth hearing.

Conclusions: An Ethical Perspective on Water Management

Certain ethical issues arise from the above discussion.   The first is a matter of framing and purview.   The second can be captured as a matter of following or failing to follow the Harm Principle. Framing and purview issues have to do with the way governments are responding to stakeholder needs; they are responding principally to those stakeholders who have the ability and resources to ensure that their positions are heard and asserted.   They are also responding primarily to relatively narrowly defined economic and safety values.   As seen, the consequence of this narrowing is that offends some and violates what they perceive as the fundamental right (First Nations).   For others, the government's current purview overlooks critical community, cultural and identity values, which can serve to undermine their ability to work with others in attempts to adapt to the stressors climate change is bringing.

According to the IACC framework being used to identify ethical factors (Morito - "Value and Ethical Analysis in Vulnerability to Climate Change: Establishing an Analytic   Framework for Identifying, Classifying and Evaluating Vulnerability Issues"), the use of past and even current categorial schemes could be viewed as violating the second of three normative principles; giving what is owed.   From a First Nation perspective, what is owed and what is recognized in the Canadian Constitution are Aboriginal and treaty rights.   These rights, it is argued, guarantee First Nation recognition as sovereign nations.   As such, these First Nations are operating from the point of view that rights and recognition owed them are yet to be adequately realized. Accordingly, the third of the three principles (integrity and honesty) has also been violated.   As First Nations committed to re-establishing their historical sovereign identities, being treated as one among many stakeholder groups is viewed as a violation of the Crown's legal and moral obligation to recognize and protect their autonomy.   This then bears on the honour and integrity of the Crown (see R. Vs. Sparrow).   Once seen in this light, the resistance to provincial initiatives by First Nations and Métis is, in principle, an act of responding to a violation of core moral principles.

The fact that some of the most vulnerable groups (e.g., the poor) are not being recognized in current management systems or the revisioning process could also be seen as a violation of their fundamental rights, or, in moral terms, a violation of the second principle.

Despite the language of inclusion, neither Alberta nor Saskatchewan governments operate in ways that include all relevant stakeholder groups or value systems.   Since the categorial

scheme used to identify stakeholder groups narrows concern to those who are already empowered to assert their voices in the political/legal arena, it may now be impossible for economically and politically weaker stakeholder groups to have a significant voice.   An observation about the oil and gas industry helps indirectly to reinforce this conclusion.   Although we were not able to discover the reasons for the lack of participation of the oil and gas industry on WPACs, several respondents in the stakeholder and institutional groups jokingly remarked that they were not participating, because they did not have to participate.   There was no reason to participate, because there was nothing to gain and possibly much to lose by participating.   To participate in the WFLS could undermine or at least limit the industry's dominance, because, at this point, they constitute the *de facto* priority stakeholder group.   As many respondents said, the industry basically does as it pleases.   This comment amounts to saying that the oil and gas industry operates according to different rules than the rest of the stakeholder communities and, at that, those rules are enforced in a relaxed manner.   If true, then a further problem arises, not only for marginalized stakeholder groups, but for those who are participating in the WPACs.   All of their participation and effort may, in the end, be for naught.   Unless something is done to ensure that those who are gaining the most from activity connected to climate change participate in the shared governance initiative, those who are participating will feel coopted.   The consequences of this result could be disastrous for the WFLS.

Along similar lines, a seemingly minor dilemma is emerging.   One possible yet controversial step some stakeholders have mentioned would be to assign watershed groups the responsibility of developing policy, or to make it difficult for government to ignore their policy directives.   Such a move would almost certainly motivate absentee stakeholders, e.g., the oil and gas industry, to participate.

> That's what we want a few of us in our work books we have specified we want to have teeth in our management plan. We don't want this to be shelf art just gets put up there document sets there and collects dust people may or may not take it down. We want this to have teeth because we've gone through a lot of time and effort and money to put this thing together. We've done the research; we're going to know it better than anybody else out there. So we're hoping that this document is received by the government with some level of respect that it well be used to enforce policy, we're hoping.   (ATH4)

However, not all stakeholders agree with this view.

> ... which is something as WPAC we don't [want] to be, but it just seems to be evolving that way; we're struggling now [with] how do we maintain our own entity [identity]. We don't want to get involved with enforcement we don't feel that's our jurisdiction.   We want to continue an attitude of good will and in a consensus around the table we don't want to be going out and attacking certain groups that just not who we are we feel that is the responsibly of the province not us.

Obviously, the devolution of legislative and executive power is a tricky issue.   On the one hand, categorial schemes are seen as vehicles for giving voice and empowering those who are given voice.   On the other hand, depending on what powers are associated with those schemes, stakeholders accept that it is possible to go too far in assigning stakeholder groups power.   Badly

thought out assignments of power might be good for no one and possibly self-defeating. In the end, except for Aboriginal and a few stakeholder groups, it would seem that the actual concern stakeholders have is not to be given direct power, but to have fairer and more balanced representation vis-á-vis the currently dominant stakeholder groups.

Recasting the above concerns in relation to the Harm Principle can shed further light on the ethical dimension of these concerns. It should be said from the start that the categorial scheme that the WFLS now employs is a move in the right direction, since it is an attempt to widen government purview to be more inclusive of the many types of vulnerabilities (potential harms) that climate change will bring to the SSRB. However, not only do the initiatives thus far fail to include certain stakeholder groups, they fail to establish a framework for identifying many of the vulnerabilities of even the dominant stakeholders.

Now, much of the reason for excluding the wider array of vulnerabilities and values from the government purview, as explained by some respondents, is that governments do not know how to do the type of research and consultation needed to understand the wider set of vulnerabilities (including those studied by social scientists and humanities researchers), let alone developing a policy and decision-making system that could integrate such findings with science-based research. The implied danger of attempting such integration is confusion, incoherence and arbitrariness in policy and decision-making arenas. In part, the reason for not conducting the type of research needed to ensure inclusion of all stakeholders and all relevant values is the need to avoid chaos, impasse and indecision. Having recognized the pressure to reduce complex problems to simpler more manageable ones, it must, nevertheless, be said that the failures described above imply that governments need to find some way to respond more adequately to stakeholder vulnerabilities. If they do not, they may actually contribute to the array of vulnerabilities stakeholders must face, because failing to respond to the array of values stakeholders actually hold can undermine the social capital and moral economy on which stakeholder adaptive capacity depends. Governments need to be cognizant of the play of forces that cause the left hand to take back what the right hand has given.

One promising observation can be included in this discussion. Notably absent in the discussions about inclusion are arguments that appeal to the trickle-down effect. The argument in brief is that all stakeholders, including the poor, will be better off than they would otherwise be, when the dominant stakeholders of a society and their values are the focus of resource policy and decision-making. This argument seems to be losing its force, possibly because we see little evidence of it happening; the rich-poor disparity is increasing and the poor remain the most vulnerable to climate change. Moreover, increasing numbers of politicians and bureaucrats are recognizing the connection between the causes of climate change (increasing human-caused greenhouse gas emissions) which are caused more by the behaviour of the well-to-do than the poor. My analysis here may be faulty, but it does seem from the set of interviews that institutional respondents were aware of this Adam Smith argument (although perhaps not in name), but chose to focus on precisely those factors (the moral economy) that Smith argued should not be the focus of governments. Granted, our set of respondents does not include politicians (except one former cabinet minister) who might be more likely to use trickle-down arguments. Nevertheless, given that the Alberta government has long been conservative and the Saskatchewan government has recently become so, the absence of this argument is significant and can be interpreted as evidence that a more inclusive and comprehensive way of thinking is

genuinely emerging, inchoate as it might be at present.

Examining institutional adaptive capacity in light of the harm principle has helped to identify the parameters of harm.   It brings into relief the many kinds of vulnerabilities stakeholders face.   Not only physical and economic (financial) vulnerabilities have been identified, but social, psychological, political and perhaps even spiritual vulnerabilities have been identified.   In times of distress, it becomes evident that all of these parameters are connected. Situations have arisen where environmental and economic stressors lead to (cause) abusive behaviour, say, spousal and child abuse [see Greg's information on the Great Depression].   It has been noted that the social capital of communities is threatened by the effects of climate change. Some of this social capital, such as the building of trust relations and strong family ties, can become perverted as stressors precipitate abusive behaviour.   Once abused, people who once trusted their abuser, become mistrustful, angry and possibly retaliatory.   This, as in family conflicts, can invert the moral economy, such that the moral values of the community are turned against making and sustaining a supportive network.   The stronger the link between climate change stressors and the undermining of social capital the more moral constraint governments face for attending to the relationship between these factors and, therefore, for valuing holistic, integrative approaches.

References

Primary Source materials:
interviews (Alberta government, Water Council, WPACs, etc.), "Water for Life Strategy,"
Irrigation Report (Sara Bagg), SE reports (overview and interviews, Jim Warren), SWA report
(overview and interviews, Jim Warren), PFRA reports (Overview and interviews, Jim Warren),
SSRB report (Silvia Lac), SSRB report (Dave Eaton), observations from WPAC meetings
(Athabasca River Basin, Sherwood Park, April 15-16, 2008 and Athabasca, October 1, 2008).

Other References

Neil Adger, "Social Capital, Collective Action, and Adaptation to Climate Change," Economic
Geography, 2003, 70, 4, 387-404.

Bruce Morito, "Value Generated Policy: Regard for Traditional Knowledge," *Policy Options*,
December, 1997, 43-45.

Steve Rayner and Elizabeth L. Malone, *Human Choice and Climate Change* in four volumes
(Columbus Ohio: Batelle Press, 1998).

James Scott, *The Moral Economy of the Peasant*, New Haven: Yale University Press, 1976.

Supreme Court of Canada, "Ronald Edward Sparrow Appellant v. Her Majesty The Queen" SCR
file No.: 20311, 1990, 1075

E.P. Thompson, "The Moral Economy of the English Crowd in the Eighteenth Century," *Past and
Present,* 1971, 76-136.