Climate Change and the Social Sciences and Humanities

This lecture was a real challenge: now I know how Dave felt doing the science! There was so much to talk about and not that much time, so I went with an overview of humanist concerns and issues related to climate change and then transitioned to more of a focus on the economics and domestic politics aspects. I think it worked out alright, but like Dave I would be interested in any feedback and suggestions.

I started off with something I felt was very important: the link or relationship between the scientific and social aspects of climate change. I wanted to stress that climate change is not just a physical and life sciences issue: it is a political, economic, and social issue. It is also a classic example of the clash between a concept grounded in science, and the context in which policy decisions are made and implemented. My bottom line in the introduction was that to understand climate change as a phenomenon, one must not only understand the physical and life sciences aspects of the issue, but the social sciences and humanities aspects as well.

I began by outlining the general fuzzy boundary between the physical and life sciences aspects of climate change and the impacts on ecosystems and human societies. Al Gore and the IPCC have done this better than I ever could, so I kept it brief. Basically, an increase in Green House Gas (GHG) emissions will lead to temperature increases, sea level rise, and precipitation pattern changes. These changes will in turn affect human health, agriculture, forest, water resources, coastal areas, and species and natural habitat. Make sure you check out the IPCC and UNFCCC readings listed on the course outline: they provide this information and so we did not cover it in detail in class.

Then I really got rolling…well, sort of.

Climate Change and Human Society

The point I was trying to make here is that climate change is a challenge for human society on many levels, and these are concerns and issues raised frequently in the social sciences and humanities. There is a vital humanistic component to climate the change issue, both in terms of its origins (how we got here) and mitigation and adaptation strategies (how do we get out of here). Basically, this overview touched on some of the more vital aspects of "being human" and "being collectives of humans".

1. Analytical and Policy Complexity

We know from Dave that the science of climate change is complex. The social aspects of climate change are at least as complex, if not more so. The "levels of analysis" tool really helps us grasp this: climate change is a classic example of the importance of being aware of how individuals, groups and states, and the international system all play a role in how we understand the origins of anthropogenic climate change and how we might respond to it. There are a lot of variables:

> Individual: standard of living; where individual lives; awareness; attitude; education; job/career; choices
>
> Group/state: governance (political systems); leadership; law and regulation; economic priorities; public opinion; role of interest groups

International: interests of states; governance and institutions; political will; negotiations; norms; bargaining; trust

The fact is, mitigation and adaptation efforts will engage a large number of variables and so we need to understand them as best we can. These are the subjects of the social sciences and humanities.

2. The Generation Gap

I just wanted to make an important point here about the timescale factor when dealing with climate change. The bottom line is that climate has a much longer timescale that makes it hard to perceive changes in one lifetime. This long timescale (a timescale which spans generations) creates a "Generation Gap" which affects our decision-making when it comes to mitigation and adaptation. How much are individuals and societies willing to do now for the sake of future generations? We will see little or no benefit for 30-40 years of the politically difficult and perhaps economically painful decisions we make now. So why make them?

This is the point behind the "precautionary principle" which can be defined as: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." (Wingspread Statement 1998). This is an important part of the thinking about climate change: we should do something about green house gas emissions even if we are not sure of the ultimate effects of climate change because the consequences are so great. To put it another way: to refuse to act because of uncertainty is either to deny that climate change exists, or to argue that doing nothing is a justifiable response to uncertainty.

3. Not just another environmental problem

Here I wanted to make the point that previous environmental issues did not have the same qualitative scope as climate change does. Chemical pollution was a big deal in the 1960's, focused largely on Dichloro-Diphenyl-Trichloroethane (DDT) which was used as a pesticide. Nasty stuff, but the effects were more (though not exclusively) localized, the problem could be addressed at level of national jurisdiction, and the chemical was not central to contemporary economies.

The same was true of acid rain, caused by sulphate aerosols and nitrates from fossil fuels reacting with water in the atmosphere and on the ground to produce sulphuric acid and nitric acid. Not good. The problem was addressed (although it took a while) but this was different from climate change because sulphate is a minor emission, it can be removed from emissions at low cost, and the effects were localized to areas of Europe and North America (for the most part.

The ozone layer hole was also different from climate change because CFCs were not central to economy and there were easy substitutes.

Climate change is different because it is truly global in scope and impact: the consequences of climate change for human well-being, economic growth, and social impact are enormous. Furthermore, the activities causing it are at the core of economic activity: 80% of world energy is generated from fossil fuels, and is intimately related to energy use, transportation, food production, housing, construction, land use, etc. As a result, the issue of climate change cannot be addressed by a simple technological corrective or a few small policy changes.

4. Science and Politics

I just wanted to point out the difference between the scientific world and the policy world here. Science, anchored in positive claims and arguments, is inherently cautious when introducing new claims, which are subject to careful peer review and replication of results. The emphasis is on the way the biophysical world is.

Policy debates, in contrast, tend to focus on the dramatic aspects of climate change, have fewer rules about acceptable arguments and tactics, and are dominated by normative thinking: what should we do, how do we want the world to be? Most scientists do not understand the policy environment (or hate it) and most policy makers do not understand the science, while the media frequently do not understand either. The result is exaggeration, dramatic claims, misleading debates, and rhetoric quite separate from science: what has come to be called "climate porn".

5. Ethics, Equity and Justice

Ethical issues are really important. The impact of climate change on human systems is global in scale, but will be unequal in its effects: different regions, countries, and areas will experience climate change impacts differently. At the same time these different regions and countries have different capacities and resources to meet the challenges of climate change for their populations. It is a sad fact that the hardest hit areas of the world will be areas that are already poor, and have very small or nonexistent capacities to absorb or mitigate against climate change impacts.

Then there is the issue of responsibility. A core ethical issue in climate change is how to allocate the costs of mitigation and adaptation. The general ethical consensus is that developed countries bear the main responsibility given their historical culpability for most emissions. But this can be challenged on two levels. One argument suggests that because most of these emissions were made in ignorance the developed countries cannot be held accountable for them. And then there is the practical matter that no agreed framework for measuring responsibility or accountability exists and this would be a monumental waste of time and effort while the planet slowly continues to warm up.

President Bush put it this way:

"I'll tell you one thing I'm not going to do is I'm not going to let the United States carry the burden for cleaning up the world's air. Like the Kyoto treaty would have done. China and India were exempted from that Treaty. I think we need to be more even handed."

Of course, with 4 percent of the world's population, the US emits 25% of all greenhouse gases.

6. Security

Climate change is considered a threat to world security because it might increase the risk of armed conflict and social instability. There is a big debate about this link in the social sciences, and so this is far from an uncontested argument. Essentially, the concern is that climate change will increase interstate (between states) and intrastate (within states) conflict because it will increase the scarcity of vital resources. The result will be:

1) an increase the threat of resource wars between states (water, land);

2) an increase in the threat of resource wars within states such as insurgencies, ethnic and religious conflict, civil wars, violent social unrest, and revolution;

3) an increase in failed states as more states will collapse into warlordism, ethnic and/or religious division; and

4) an increase in migratory conflicts, provoked when large groups of people migrate from environmentally devastated areas to less affected regions.

7. **Survival and Social Change (Doomsday Zeitgeist)**

I think this is a very cool part of the humanist discussion on climate change. Jared Diamond asks why some societies adapted to change while others have not (and thus disappeared). His basic argument is that societies need to be able to question and rethink the values and principles on which they are based and make changes if they are to overcome the challenges they face. Well, we face this challenge and that means rethinking our ideas about economic growth and wealth, our ideas about the cost of everything we do, and our relationship with the natural world.

The concern is that our societies (in the industrialized world at least) have become so consumer and individual-oriented that we are no longer capable as a collective of taking effective action on issues such as climate change. As Bill Mckibben has pointed out:

"…as the most fully realized consumer society in history, we've defined ourselves almost entirely as individuals, without any limits on what we should want. Any call to group action is dismissed as interfering with economic growth, with our personal quest for more."

And check out this quote from the philosopher Norman Care:

"Certain familiar sorts of motivation are not available to support policies demanding serious sacrifice for the sake of future generations, and we may well be discouraged by the further apparent fact that the cultivation of a form of motivation directly supportive of such policies might require something close to an overhaul of main elements in the makeup of society which influence the moral psychology of citizens."

Climate change therefore raises fundamental questions about us as humans, and highlights the relevance of understanding ethics and philosophy, politics, economics, human geography, sociology, journalism, international relations, and psychology among many other disciplines in the social sciences and humanities.

Then I got excited about economics.

Climate Change and Economics

Climate change is a challenge for economists, who usually analyze choices individuals or groups or states make based on their own preferences (based on analysis of costs and benefits). Economics is not particularly good at weighing the welfare of a current generation against the welfare of future generations; it is not particularly good at comparing the costs to rich peoples against the cost to poor peoples; it is downright lousy at predicting how much people are willing to sacrifice today for the sake of the future; and it stinks when it comes to measuring the costs

associated with damage or loss of ecosystems, plant and animal species, etc. Even Robert Watson, a former Chair of the IPCC, has weighed in with this statement:

"Markets recognize the value of food, biomass for energy, pharmaceuticals for health and ecotourism. However, they do not recognize the importance of ecological services that provide the very foundation for sustainable development and human welfare … Nor do markets recognize the option value, the undiscovered drug, the undiscovered wild relative of an agricultural product we may need in the future, the existence value of biological species, and the cultural, religious, and aesthetic value of biological resources." Robert Watson (Env. Dir. World Bank and Chair IPCC)

However, economists do have a very thought provoking explanation for how we got here. Individuals or states over-exploit the planet's atmosphere because they gain material advantages from the activities that contribute to global warming but suffer only a fraction of the environmental costs. Furthermore, individuals and states are typically unwilling to reduce GHG emissions unilaterally (on their own) because they would pay the full price of reducing their emissions, but gain only a fraction of the benefits (if any).

How depressing. But hey, it's economics!

The public good dilemma

Economics also contributes the concept of public goods (and the dilemmas of managing those public goods) to our discussion. Public goods possess two qualities: 1) they are nonexcludable, meaning they are goods that are readily available to all (even to those who do not contribute to their creation or maintenance) and they cannot be easily denied to others; and 2) they are nonrival, meaning that the use of the good by one actor does not seriously deplete the amount available to other actors. A piece of pie is not a public good, but air is a public good and so is common land, a sidewalk, and…the climate.

The issue (well, one issue) with public goods is how do you manage them? If no one manages a public good, it can deteriorate or run out, to the detriment of all. Basically, there are two ways of managing public goods: through hegemony (a dominant actor that manages the good on behalf of everyone else either because it has the coercive power to do so or because it is trusted); or multilateralism, whereby a consensus is reached on joint management of the good. Note the far reaching implications for the future: is the climate best managed by a dominant actor (fair or foul) or by efforts to achieve consensus (which may never happen?)

The economics of emissions

There were a lot of slides here, just to make the point about the dominance (talk about hegemony!) of fossil fuels in our global energy structure. Coal use is still alive and well. 25 percent of global energy demand is met by coal. The US has the equivalent of five hundred 500-megawatt coal fired power plants, while China is adding the equivalent of two such plants per week. The emissions bottom line is that each of these plants produces about 3 million tons of CO2 per year.

The economics (and politics) of energy conversion

This is really cool stuff, especially if you are interested in the future (which I expect most of us are). Reducing the emissions of GHG that cause global warming will require fundamental change

in the global energy system. The economics and politics of this transition is one of the biggest features of the climate change debate. Climate change skeptics are shifting their arguments away from scientific uncertainty to toward the argument that prevention is more expensive than mitigation, so this debate is just "heating up."

Macro-economic studies of the cost to the world economy of conversion range between a slight benefit (that is, world GDP might actually grow) to as much as five percent by some future date (usually 2030 or 2050). I did not want to bore everyone with lots of data and reviews of these studies; the best is the IPCC estimates and these are online.

Using GDP data to measure the cost of global warming and emission reductions does come with problems, because GDP data is calculated in certain ways. Expenditures by government, or capital investment by business, will generally add to GDP, while costs incurred by individuals or businesses will not add to GDP (and may even lower it). So, replacing a coal fired power plant with a wind farm will add to GDP. On the other hand, adding a carbon sequestration device to a coal fired power plant will not add to GDP (and may lower it) because it is an increase in the cost of running the power plant. The costs of doing these two things may be the same, and the emissions reductions may be the same, but the GDP calculations are different.

The economics of energy efficiency

Why does encouraging energy efficiency seem to be such a problem? Pursuing energy efficiency is not attractive from a large scale economic point of view because it involves many small decisions and changes that are hard to invest in collectively. Big investors are looking for big deals: it is easier to sign a big check for a new nuclear power plant or a solar power plant than it is to invest in lots of small changes in buildings or consumer products. As Warren Buffet once explained: "[i]t is easier to make one $10 billion deal than ten $1 billion deals." But in energy efficiency, you are talking about 10 million $1000 deals (windows, insulation, light bulbs). So, investors would rather invest in a solar power plant that produces energy at 12-40 cents per kilowatt hour, rather than into conservation at 4 cents per kilowatt hour.

Economic Strategies

We hear a lot about what we need to do from a regulatory perspective to reduce emissions and encourage an energy transition. These strategies are all grounded in economics, and the interface between politics and economics.

- Carbon taxes
- Subsidies to alternate energy sources (wind, solar costs dropping)
- Requiring utilities to provide a certain portion of their electricity from renewable sources
- Innovation incentives (research and development): tripling global investment in research and development for alternative energy would restore funding to 1970s levels
- Market systems (carbon trading and cap and trade systems)

And then I got interested in domestic politics.

Climate Change and Domestic Politics

There is just not time to go into detailed studies of domestic politics in this course, but I wanted to make two fundamental points. First, where does national climate change policy come from? The

answer is a complex set of variables that are often unique to the political environment within that state, influenced by external factors. Second, we can understand different national climate change policies by using the techniques of comparative politics: comparing different cases to isolate similarities and differences.

In terms of where national climate change policies come from, I suggested that the following influences were most important:

- The state and government: political system, attitude of leaders, partisan politics;
- Industry and the market: the role of industry and economic actors;
- Civil society: engaged actors; the media; public perceptions and opinion;
- Science: role of science in society and on decision makers.

I compared Japan, the Netherlands, and the US with a level of superficiality that would make any comparative politics scholar flush with outrage. But hey, they can teach their own course. It is the idea of differences and how they come about that is meaningful for us here.

The State and Government

Japan is an example of a top down approach: much of climate change policy driven by government, which reached the conclusion that economic growth and climate change mitigation are not mutually exclusive.

The **Netherlands** is known for collaborative and consensual politics at the government level. There is general support for collaboration between society, government and industry.

In the **US**, there is no government consensus on climate change, and in fact the government (at least at the level of the executive branch and the Bush Administration) is actively opposed to climate change as a concept and by extension mitigation and adaptation strategies. There is a lot of evidence of a systematic effort by the Bush Administration to silence government scientists, suppress or edit scientific warnings about climate change, and systematically challenge the science of climate change. A classic example of his is an internal memo written by Frank Luntz, a republican pollster (who has since repudiated his own views) which included the following statements (these and some other examples are from a BBC Panorama documentary):

> "The environment is probably the single issue on which the Republicans in general, and President Bush in particular, are most vulnerable."
>
> "Be even more active in recruiting experts who are sympathetic to your view, and much more active in making them part of your message."
>
> "Should the public come to believe that the scientific issues are settled, their views on global warming will change accordingly. Therefore, you need to continue to make the lack of scientific certainty a primary issue."

There was a lot more of this, including the suppression of the 2000 National Assessment, but you get the idea. Note that a lot of states in the US are pursuing climate change policies on their own, most notably California.

The Market and Industry

In **Japan**, industry was consulted and generally supportive of government position.

In the **Netherlands**, industry was very skeptical of climate change science and initially very resistant, but now most industries in the Netherlands are not fighting climate change. Instead, they are looking for economic opportunities in climate change mitigation.

In the **US**, industry and organized labour mobilized to prevent emissions reductions and the ratification of Kyoto. Business in particular undercut public and government support for climate change mitigation, using the same techniques as the tobacco industry: create uncertainty about the science because as long as there is uncertainty you can fight regulation and keep on doing what your doing (selling cigarettes or emitting GHGs). Of course, not all industries are culprits: companies in the automobile and energy sectors have adopted voluntary emissions programs, but these have had a small impact overall.

Civil society

In **Japan**, civil society actors were not big players in the shaping of climate change policy.

In the **Netherlands**, civil society actors played a notable role in raising awareness and engaging in the policy debate about how best to respond.

The intense debate in the **US** was fueled by large and well funded not-for profit conservative organizations, funded by industry, that have cast doubt on the science of climate change. There was little or no coordination or cooperation between US government and environmental groups: environmental groups opposed compromise, criticized the Clinton administration during the Kyoto process, and was an opponent, not an ally, of the US position in climate change negotiations. The debate over climate change has therefore become polarized and a battleground for partisan politics rather than social consensus.

Science

In **Japan**, skepticism about the science of climate change dissipated quite quickly and there were few challenges to the science.

In the **Netherlands**, skepticism of climate change science remains in industry, but is no longer publicly expressed because of fear of backlash from a public that is generally aware and acceptant of the problem.

In the **US**, skepticism is a powerful force and a part of the "debate". Check out this statement from Senator James M. Inhofe:

"With all of the hysteria, all of the fear, all of the phony science, could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it."

Hmmm.

International
Well, we will get to this next Thursday…