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June 2nd, 2014

War Game 1: Cultural Assignment

Perceptions of Climate Change and Climate Action in the US and India

In the US there is still a "climate change debate." Even though many people believe that climate change is a real issue, there are still powerful influences that dispute it as a phenomena or its importance. The national view of climate change is very different in the US and India in this respect, making the discussions centered around *if*, and to what degree, the US will mitigate and adapt, and *how* India will. While the stage in the process of fully addressing climate change is different in the US and India, many of the barriers to significant change seem to be the same.

There is a disconnection between scientific and public understanding of climate change in the US (the Yale Project, 2013). Decisions are generally influenced by affective and associative processes more than analytical processes (Weber and Stern, 2011), meaning that people often base their decisions on personal experience and feelings more strongly than on reason. Associative and affective processes are fast and automatic (Weber and Stern, 2011), so it seems natural that this is the case. Making emotional decisions based on personal experience was probably highly adaptive for humans at some point, but right now it is creating biased views on climate change.

One reason that associative and affective processes of learning can be misleading in regards to climate change is that it is a long-term trend that is hard to detect from any one event. Climate change science has been called a "post-normal science" (Etkin and Ho, 2007). This term is used because in the field there is a strong link between society and science, the problem addressed requires holistic

consideration of feedback between the climate system, human activity, and ecosystems, risk is uncertain and flexible, and modeling is difficult due to all of this complexity (Etkin and Ho, 2007). The complex nature of climate change science makes it a subject about which emotional decisions based on experience, previously called affective and associative processes, are especially misleading and potentially harmful because climate change cannot be detected from personal experience (Weber and Stern). The unreliability of intuitive processes when dealing with climate change makes understanding how and where they work all the more necessary.

Cultural models determine how people think climate change should be addressed (Weber and Stern). These models, also called mental models, are the way in which people turn concepts into a simplified representation according to their world view. Mental models can be helpful in quickly processing information and transforming it into useful information. This is not always beneficial, especially in longer term, complex, or unintuitive problems, as a culturally modeled view may lead to action that doesn't address the real problem, as is often the case with mental models around climate change. For example, the cultural model of ozone-depletion is often confused with climate change even among educated people (Etkin and Ho, 2007). While the chlorofluorocarbons (CFCs) that contribute to the ozone hole are greenhouse gases (GHGs), they are not nearly as significant of an anthropogenic cause of climate change as CO_2 (Etkin and Ho, 2007). Both ozone-depletion and CFCs are potentially misleading mental models regarding the causes of climate change and could therefore cause confusion about the best ways to decrease its anthropogenic exacerbation. Additionally, cultural models and affective or associative processes shape perception of risk, increasing perceived risk when extreme climate events are personally experienced and decreasing perceived risk when the effects of climate change seem distant. This slanted risk perception adds an element of how much or how little an individual thinks should be done about climate change on top of the question of what to do.

Adjusting cultural models so that they more accurately represent climate change is necessary, but difficult. In the US, efforts to shape pubic perception and interests in this area are mostly driven by groups with an "ideological opposition to federal regulation," (Weber and Stern, 2011) contributing to this difficulty. A conceptual change, not increased literacy, is needed to increase the utility of mental models relevant to Climate Change, which must be achieved through informing, not persuading, argues Weber and Stern (2011). The idea is that a cultural and conceptual shift would increase individual action to mitigate climate change. In a democracy the action of many individuals can become the policy of the nation, so the hope is that national action will follow this cultural shift as well.

In India, the effects of climate change are real and the struggle is in adapting to these changes in culturally appropriate ways. Some, at least one IISc professor that we visited who has influence in the government, see a negative correlation between rigor and the influence of practical need in academic research. This view can cause generation of impractical knowledge, which arguably defeats the purpose of research. Even when the goal is to improve the lives of the farmers as Dr. Rao's agro-forestry was meant to, for example, the system created can still miss the mark because, as Dr. Rao explained, many factors from scaling to mind sets can make practices developed on test farms fail on actual farms. The agro-forestry project is getting close to making the transition to widespread practical use, largely due to being developed with consideration of the feedback from the group of farmers who have begun to use it. However, even with workshops and forums for answering farmers questions, Dr. Rao still faces difficulty in getting the farmers to implement the system properly. One of the main barriers to implementation seems to be cognitive perspective.

Cultural models can confuse the causes of the variable Monsoon season and other probable effects of climate change and therefore confuse what might be the most appropriate methods to mitigate and adapt to these changes similarly to the US examples. Indian farmers, for example, have always seen a varying Monsoon season and, because of the "post-normal" nature of climate change,

have no way to detect the increased variability that is associated with climate change. Mitigation efforts would likely not cross their mind because this is the way it has always been. “Adaptation” in a rural farmer’s perspective is a question of how to maximize crop yield and minimize cost when faced with unfavorable weather conditions. Cost includes crop losses, water and energy costs, all of which go up from a late or poor Monsoon. Indian agricultural adaptation measures will probably not consider the scientific or engineering principles that might make something counter-intuitive to the farmer be effective, so it would take a lot of cognitive effort or a cultural shift to implement such measures. There are also barriers that arise from cultural models in the areas of urban adaptation and governmental policy. Cognitive effort, external context, and inertia are major barriers to environmentally significant behavior in households and organizations in the US (Stern, Paul C.), and are likely at play in India as well.

In the context of adopting meaningfully sustainable practices in the US, cognitive effort can be minimized by researching the type of household or business to be able to present a “short-list” of high-impact actions (Stern, Paul C.). Shifting external context can be done through dialogues within communities and nations (Stern, Paul C.). These solutions to barriers of perception are similar to a theme of a need for locally focused action in India, although India faces the additional challenge of providing electrification to the large rural and slum areas that currently have limited or no form of power.

Locally focused action may not necessarily be in opposition to widespread or national action, as Stern (2011) shows with the example of up-scaling automated technology from smart sensors in appliances to a “smart grid.” A smart grid would employ similar principles of smart appliances that adjust the amount of power used based on past use and the timing of use during peak or off-peak energy demand. A smart grid could be implemented on a national level with high long-term payoff, but would be very costly due to infrastructure replacement, but could also be implemented on a community-based level (Stern 2011).

With India's current priority of development and increased reach of electricity that goes along with it, investing in a national smart grid might save time and resources later on. Additionally, India is known for its ability to make anything at about one tenth the cost that it would be made for anywhere else, the concept of "Jugaar," so if the smart grid is presented in the Indian context, some interesting innovations might arise. Implementation in the US in the near future might be best done in multiple communities first, then expanded to the national level, as policy and the public in the US are often require thoroughly demonstrated return on investment for such large scale changes and there is already a working, although aging, grid in place (Stern 2011).

The adoption of automated technology, such as the smart grid, is not only a way to increase energy efficiency, but an example of how to reduce the cognitive effort and behavioral changes needed to do so. A smart grid system minimizes the time the consumer spends setting and maintaining the system, which is very important as the maximum time an average household consumer in the US is willing to spend on this is two hours per year (Stern 2011). The technology saves energy on its own, without the continued attention of the consumer, but for a chance at full implementation in the US the financial and environmental benefits still need to be clearly stated (Stern 2011). This indicates the need for a continued relationship between behavioral research and technological innovation, customization, and adoption.

On first coming to India on the Climate Change Science and Policy Dialogue of Civilizations I thought the connection between Behavioral Neuroscience and climate change mostly extended to the principles of basic science at work in both. Throughout the trip I have become more and more convinced that the two fields are integrally connected, with behavioral research informing adaptation and mitigation efforts, and mitigation and adaptation being essential for the future of a society strong enough to support high level science. It is encouraging to see consideration of the first point, at least, in literature and our interactions here, but it is clear to me that an even stronger relationship between

successful climate action and scientific and technological developments needs to be formed. If societies everywhere, including the US and India, are to maintain and increase their strength and quality of live for their citizens, there is a need for a concerted push towards reciprocal feedback between societal need and scientific knowledge. In short, a comprehensive world view needs to be combined with an innovative disposition.

References

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