Margaret DiGiorno
Culture Assignment 1
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So far, to me, the most shocking aspect of India so far has been exactly how unequal the society is. To me, it seems like this inequality is more widely accepted in Indian culture than what I am used to in the United States. For example, in Mumbai we saw Antilia, a 27 story building, built by the chairman of Reliance Industries for only 3 people to live in. Then, in the same day we visited Dharavi, which is the largest slum in Asia where nearly a million people live in less than a square mile. This inequality was also evident between parts of the city. We started our trip in Colaba, where we would see many people sleeping on the street or even kids begging for food when we were getting onto the bus. After Colaba, staying in Powai near IIT-Bombay was really strange because we saw many less people who were begging on the street and buildings that looked like they belonged in south Florida. It was like being in an entirely different city. Before coming to India I didn't realize the extent to which the inequality would bother me; but since being here, I think that it has shaped my views about a lot of the topics we are studying. Though we came here to study climate science and adaptation, the longer we are here the more I have realized that India will not be able to effectively adapt to climate change, or mitigate emissions without first addressing the basic needs such as clean water that a large portion of the population are lacking.

One of the guest speakers so far that made the biggest impression on me was Krishna from IIT-Bombay. During her discussion with Billy and Dr. Iacono she said that "India shouldn't compromise on its development", and this is something that I have been thinking about a lot ever since.   The root of the problem is really defining what exactly development means. Initially I took this statement to mean living more like people in the United States and western Europe do; having clean water, but also an electrical grid that covers the entire country and

things like cars and air conditioning. To me it seemed that because we use these things it would not be fair unless everyone is able to. However, through meeting a variety of guest speakers my views on this topic changed very quickly. At IIM-Bangalore we met with Professor Sourav Mukherji who talked about social entrepreneurship and corporate responsibility in India. First we read the case study of Diageo, which is a beer company that has found great success within the Indian market by providing poor people a cheap alternative to homemade alcohol which can be dangerous to their health sometimes. Diageo sees this beer as a positive solution to solve local health problems, but this does not tell the whole story. We discussed whether Diageo is really providing something the rural market needs, or whether they are creating a whole new market through advertising to sell vulnerable populations something that they may have even not known that they wanted or "needed" before. Another market where this issue is very applicable is the market for single serving portions of things like soap, shampoo, and even cooking oil. Companies like Proctor and Gamble are able to make a lot of money by advertising these products and selling them. Professor Mukherji brought up the point that people in these markets tend to be especially vulnerable to advertising products. He said "If a girl in a rural village was keeping her hair clean without shampoo all these years, why does she need to spend her rupees on it now".

Though Diageo, and the single serving system are largely harmful to the urban poor, and people in rural areas, we also discussed more positive examples of social entrepreneurship. In India, the medical field has found many solutions to utilize economies of scale to provide health care to all. One prime example of this is the Narayana Healthcare System which was founded by Dr. Devi Shetty with the goal to "to enable every man, woman and child to have access to high-tech health care within the next 10 to 15 years, including in the poorest regions of the world."

The Narayana system attracts extremely high quality doctors, especially surgeons, looking to hone their skills by treating many patients. A surgeon at Narayana will perform 3-4 major heart surgeries each day in comparison to US where a surgeon may perform only a handful of operations in one week. In addition, Narayana provides heart surgery for free to the poorest patients by charging more well-off patients for outpatient care in the clinics it owns. Personally I believe that access to medical care is a basic right, and medical systems like Narayana and Vaatsalya gave me a lot of hope that India is moving in the direction of being able to provide care to all who need it. However, as we learned from Diageo, economies of scale do not work in all fields, and the needs and vulnerability of local populations need to be taken into account.

I was surprised that many of the same principles which we saw when learning about social entrepreneurship and development also applied to the adaptation and mitigation of climate change within India. Due to the size of the population, and the diversity of the country (even within cities) localized solutions will need to be found which take the needs and knowledge of the people into account. In Mumbai we talked with Professor Monika Jain who teaches in the Center for Urban Science and Engineering (C-USE) at IIT-Bombay. We talked about how many traditional Indian homes are designed using Vastu Shastra which are design guidelines that significantly decrease the energy usage of a home by maximizing natural light and keeping living areas cooler during the day by using other rooms as a buffer. However, as the country develops more and more people are building western-style houses, which use significantly more energy and usually require air conditioning. Dr. Jain talked about how this design improved the efficiency of the solar house that they built at IIT-Bombay. I found it very interesting that the solar house competition required them to design the house with a dishwasher, washer and dry

which many Indian people do not use, this reminded me a lot of the issue with single serving packaging and convincing people that they need more things.

In rural areas, it is also important to rely on local knowledge and traditions when adapting for or mitigating climate change. During the first war game we discussed drip irrigation as a possible way for the agricultural sector to improve its productivity. However, when we visited the Natural Remedies farm, we learned that drip irrigation has been largely unsuccessful in India, not because of the cost, but because the farmers do not have the resources and knowledge to maintain it. When drip irrigation was installed, nearly fully subsidized by the government, most of it ended up being torn out within a few seasons.

Some of the most efficient solutions that we found for rural areas, in terms of development were at CTARA. I really liked that CTARA focuses on using engineering to help solve people's immediate problems. By training engineers to work in development, and having them do rural homestays CTARA was able to address two of the most pressing problems in India's development. Especially in rural areas in India there is a lack of educated people because of "aspiration dysfunction". Educated people do not want to stay and work in rural areas when they see a much larger pay check in the city, or in many cases in the United States. This means that often the people trying to help rural India do not completely understand the problems that it is facing. CTARA also trains engineers to create the sort of appropriate localized solutions by carefully studying the process which they are hoping to optimize, and creating simple machines which allow people to work more efficiently. One example was a dryer for rice, using a blower which drastically reduces spoilage, both allowing farmers to produce more, and increasing food availability.

In some ways, the interactions that we had made me more optimistic than I was before about India's future; we met many people who are committed to helping India develop, both efficiently and sustainably, such as the Professor Jain and Dr. Shetty. However, by meeting with these people, we realized that especially in India, the solutions, both for development, and adaptation and mitigation of climate change must be very localized. In some ways, this has made me more concerned about India's future. I think that for these solutions to be developed there will need to be a major shift in the way we think about development, and adapting to climate change. It seems that the most effective solutions for climate change will not be just scaled up to cover the globe, but will be developed in individual localities by people who understand the unique issues presented by the area. CTARA is a good first step in providing engineers to rural areas, but I highly doubt that India will be able to develop completely, or adapt well for climate change without a country-wide shift in aspirations to provide the research and development that are needed in all areas.