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Note from the Editor

Richard L. Wolfel, Ph.D.
Executive Editor

The papers included in this volume represent examples of Cadet term papers from the upper division courses in the Geography program at the United States Military Academy (USMA). Each instructor submitted the top paper in their class and then that paper was put through an editorial process similar to the review process of a journal. The result is a set of papers that represents the quality of faculty instruction at USMA, and more importantly, the exceptional quality of cadet scholarship. Each of the cadets, whose work is displayed here, has my sincere congratulations. They completed the revision process outside of their regular coursework, in the semester after they completed the course. It is my hope you will enjoy reading these papers as much as I enjoyed working with the cadets and mentoring them through the review process.

Completing such a monumental task was not possible without a great amount of support from the faculty of the Department of Geography and Environmental Engineering. First, the course directors for the Geography Program provided a vast amount of support. They selected the papers and provided additional editorial comments beyond the requirements of the course. Their work has resulted in the outstanding volume that is being produced here. Also, COL Laurel Hummel, Geography Program Director has been the driving force behind the production of the Occasional Papers series. Her vision has been a major influence on the completion of this volume.

EV 371: Geography of Russia

Course Director: Dr. Richard Wolfel



This course examines the political, economic, and cultural geography of Russia and its adjacent neighbors; the Baltic States, East Central European region, Transcaucasus, and Central Asia. Topics covered include: the Commonwealth of Independent States; ecocide in the former Soviet Union; disposition of the former Soviet military; and ethnic rivalries. The objective of the course is to provide the student with an understanding of the recent past of the traditional Soviet system in order to understand, as well as geographically evaluate, Russia's and the other former republics' situation today.

Selected papers from Fall, 2008:

“The Last Teddy Bears: The Decline of the Brown Bear Population in the Russian Far East” by Megan McIntosh.

“Why Organized Crime is Persistent in the Former Soviet Union” by Greg Rueth.

The Last Teddy Bears: The Decline of the Brown Bear Population in the Russian Far East

Megan McIntosh

A. INTRODUCTION

A large part of the study of human geography is the study of human impact on the natural environment. Russia today is a vastly growing geopolitical organism. It requires immense amounts of sustenance to continue its healthy growth. A portion of that nourishment must come from consumable natural resources, particularly oil and natural gas. Russia gained and maintains its position on the global political stage, in part, from its ability to offer the world extensive amounts of natural resources. In the days of the Soviet Union, the environment played victim to growth of the state. Today, we again see the environment falling prey to the needs of the state. As the Russian state attempts to maintain its role in the global economy and political environment, it allows the natural environment to fall by the wayside.

There are immeasurable resources frozen in the Russian tundra. Oil, coal, gold, diamonds, natural gas, and many more precious commodities lay beneath the surface of the ice and stone, ready to be reaped and sold for profit for the state economy.¹ As the

¹ Newell, Josh. *The Russian Far East: A Reference Guide for Conservation and Development*. Daniel & Daniel. 2004. Author Josh Newell states of the Russian Far East, "The region is a vital

need of the Russian people and economy increases, the need to explore these untapped regions of Russia increases. One of these previously untapped regions is the Kamchatka Peninsula of Russia's Far East. Today, mining of natural resources, combined with poaching and human encroachment leading to habitat loss, is drastically affecting the Russian brown bear population, leading to a drastic decline in the symbolic animal of the Russian state.

B. BACKGROUND ON BROWN BEARS

In order to understand the impact that the human population is having on the bears in Kamchatka, it is imperative to understand the needs of bears in their natural environment. Bears require huge amounts of land to exist in the wild as well as particular dietary requirements that humans threaten by invading previously wild territory. Without a background of knowledge about the physical needs of bears in the wild, it is difficult to understand how the changes in human behavior in Kamchatka puts a strain on their population. Additionally, it is culturally important to understand the role of the brown bear as Russia's national animal. Much like the threatened bald eagle in North America, it will require a national movement to protect this symbolic animal in Russia.

Brown bears of Russia are of the same species as those found in North America, also commonly referred to as grizzlies. These bears can weigh upwards of 1,000 pounds and stand over 10 feet on their hind legs.² Running at speeds of up to 30 miles per hours, adult male bears can range between 500 to 1000 square kilometers in their lifetime.³ This huge bear requires a huge area to ensure they have enough resources to sustain

storehouse of oil and gas, timber, fish, and precious metals that will inevitably be tapped as Pacific Rim economies seek to secure the natural resources necessary for long-term economic growth.”

² Busch, Robert H. *The Grizzly Almanac*. Lyons Press: New York. 2000. pp. 22-23.

³ *Ibid.*, 48-49.

themselves through six months of hibernation. When not hibernating, bears have a diet of salmon and other fish, small game such as rabbits, pine nuts, and berries. While preparing for hibernation, bears spend the majority of their time eating to build fat stores, sometimes upwards of 40,000 calories a day.⁴ The problem then comes when food is not plentiful enough in the fall months, bears will come out of hibernation in the winter to look for food. They will often find themselves in human settlements, looking for discarded food in dumpsters and trashcans.

The largest brown bear population on any continent is concentrated in Russia with over 100,000 brown bears living in Russia.⁵ In fact, there are more brown bears in Russian than the rest of the world combined.⁶ The formerly plentiful bear population made the brown bear the national symbol for the Russian state. The bear is an extremely powerful and resilient animal. For decades, the Russian Federation has been portrayed in political cartoons as a large and imposing bear. The bear stands as the symbol for several political parties in modern Russia and holds a particular place in the hearts of the people of Russia. Much like the bald eagle in the United States, the threatened nature of the brown bear, will tug at the heartstrings of the Russian population and, hopefully, incite policy change towards the protection of this national treasure and symbol.

C. HISTORY OF BEARS IN KAMCHATKA

Of all the Russian state, brown bears find the conditions of the Kamchatka peninsula particularly appealing. The wet cool summers and cold dry winters allow for

⁴ Ibid., 51.

⁵ Servheen, Christopher, et. al. *Bears: Status Survey and Conservation Action Plan*. IUCN/SSC Bear Specialist Group. 1999.

⁶ Russell, Charlie and Maureen Enns. *Grizzly Heart: Living Without Fear Among the Brown Bears of Kamchatka*. Vintage Canada: Toronto. 2002.

the growth of a variety of plants: grasses, flowers, and berry bushes; and animals: small game and fish. The cold winters are survivable due to the six-month hibernation period from about November to April. The huge amount of uninhabited land allowed for the uninhibited growth of the bear population prior to the increased human encroachment in the area. In 1960, a government survey of wildlife in Russia, recorded around 20,000 bears living on the Kamchatka peninsula.⁷ The last survey taken in 1990 by the State Department for Game Management recorded 9,000 bears in Kamchatka.⁸

The 750 mile-long peninsula of Kamchatka was formerly a closed area used only by the Soviet military. Because of the isolated nature of the peninsula and the lack of need for the resources of the area, the bears flourished despite the lack of concern given by the Soviet government to the environment. However, with the collapse of the Soviet Union in 1991 the Kamchatka peninsula opened to trophy hunters, oil and natural gas exploration, gold mining, and fish and wildlife poaching.⁹ The weak central Russian government, thousands of miles away in Moscow, had little to no control over the environmental degradation that was occurring in Kamchatka.

The Russian government, however, made attempts to control the degradation of the bear population through various means throughout the years. Bears have always been considered a game animal and, much like the United States, there are particular hunting seasons for game hunting. Since the introduction of hunting regulations in the 1960s, the regulations have only become more restrictive on the hunter. Today, it is common for

⁷ Voropanov, Vsevolod and Konstantin Kudzin. *Kamchatka Brown Bear Population Management System*. Kamchatka Regional Hunting Resource Management Department.

⁸ Servheen, Christopher, et. al. *Bears: Status Survey and Conservation Action Plan*. IUCN/SSC Bear Specialist Group. 1999.

⁹ Raygorodetsky, Gleb. "Giants Under Siege." *National Geographic Magazine*. February 2006.

regions of Russia to allow hunting for only three months of the year, prohibit the killing of female bears with cubs, and require the purchase of a license for a price between \$100 and \$200 US.¹⁰ Several western Russian regions have listed the brown bear as a protected species. With the still relatively high population in Kamchatka, bears are still unregistered as endangered, yet more bears are killed in Kamchatka, both legally and illegally, than anywhere else in the country. Currently, the Russian government is financially backing the expansion of a scientific program to survey and study the animals native to Kamchatka. They have secured 16,000 additional hectares of protected land to allow the growth of the native environment on the peninsula.¹¹ Although Russia is slowly beginning to recognize the need to protect and defend the natural environment throughout Russia, and particularly the relatively untouched Kamchatka Peninsula, if it does not begin to monitor and regulate the human interaction with the environment in Kamchatka, it will continue to decline to a irreconcilable point, much like many parts of Russia are experiencing today.

D. HOW HUMANS ARE THREATENING THE BEAR POPULATION

The threats to the brown bear population in Kamchatka today can be reduced to one thing: human encroachment leading to poaching and habitat loss. Since the end of its strategic military imperative, the Kamchatka Peninsula has been open to human infiltration from all sides of the ocean. The three major threats facing the bears of Kamchatka due to this human encroachment are pollution, hunting, and reaping natural resources.

¹⁰ Servheen, Christopher, et. al. *Bears: Status Survey and Conservation Action Plan*. IUCN/SSC Bear Specialist Group. 1999.

¹¹ Webster, Paul. "Bid to Save Kamchatka's Wildlife." *Science Magazine*. Vol. 297. September 2002. p. 1787-1788.

Pollution of the Kamchatka Peninsula was not a problem during the Soviet era. The land supported its military uses mainly as an occupation force, not one reaping the resources of the land. The military occupation was for strategic positioning in the Far East and Pacific Rim, not to harvest the vast resources available in the region. Today, however, the influx of humans in the Kamchatka Oblast and with them the increased industry, mining, dredging for roads and other human engineering needs, had significantly increased the amount of pollution in the area. Pollution that affects the bears of Kamchatka is mainly water pollution and forest fires. The staple of the brown bear diet, particularly in the days before hibernation begins, is salmon, char, sockeye, and other fish. These fish can provide three-times the amount of needed calories in one sitting than a bush full of berries or diet of pine nuts.¹² However, pollution from mining runoff and human waste in the main water supplies running through Kamchatka is threatening the fish populations. The depletion of the fish populations could mean a substantial portion of the brown bear diet is now missing, resulting in starvation, or the need to come out of hibernation early in search of food. In the dead of winter, bears often wander into human settlements to find discarded or unattended food. Forest fire pollution is a result of logging and human exposure to the environment. The fires are causing decreasing habitats, decreasing food stores, and water pollution.¹³

“Poaching bears for their gallbladders and salmon for their caviar are common black market activities in which hunters are involved. Learning the legal and illegal practices of the licensed hunters was important in understanding why bears are poached, in what numbers and for what price.”¹⁴

¹² Chadwick, Douglas H. “Grizzly Survival: Their Fate is in our Hands.” *National Geographic Magazine*. July 2001. p.2-25.

¹³ Servheen, Christopher, et. al. *Bears: Status Survey and Conservation Action Plan*. IUCN/SSC Bear Specialist Group. 1999.

¹⁴ Russell, Charlie and Maureen Enns. *Grizzly Heart: Living Without Fear Among the*

Hunting and poaching are two of the most common and deadliest problems currently facing the bear population. Poaching of fish is just as devastating to the bears as poaching of the bears themselves. Although sport hunting and fishing are legal in Kamchatka, highly specialized licenses must be issued to the individuals desiring to hunt the area. The Russian government allows only a certain number of bears and fish to be caught or killed each year, as part of legislation enacted to protect the native species.¹⁵ Although this legislation was passed in the late 1980's the steady decline of the Russian economy forced the government to turn towards larger economic problems and overlook the needs of the environment. The majority of the approximately 10,000 bears that disappeared between 1960 and 1990 are a result of poaching and starvation from fish poaching for salmon caviar. The fate of the salmon population and the fate of the brown bear population are inseparably intertwined. As the population of fish decreases, the bears begin to starve in the early spring and come out of hibernation early in search of food. This only leads to further encroachment upon human settlements and more killings as "nuisance" bears search for food. An average of 1,500 to 2,000 bears are killed by poachers in Kamchatka annually.¹⁶ Poachers are generally harvesting bear paws and gall bladders sold in Asia as portions of ancient medical treatments, furs sold in Europe and the United States, and skulls or heads taxidermied for tourists.¹⁷ The introduction of poaching to the Kamchatka Peninsula aided in cutting the brown bear population almost

Brown Bears of Kamchatka. Vintage Canada: Toronto. 2002.

¹⁵ Revenko, Igor. "Status of Brown Bears in Kamchatka, Russian Far East." *Ursus*, Vol. 10, September 1995, pp. 11-16.

¹⁶ Servheen, Christopher, et. al. *Bears: Status Survey and Conservation Action Plan*. IUCN/SSC Bear Specialist Group. 1999.

¹⁷ Meier, Andrew. "A Message in Blood." *Outside Magazine*. December 2004.

in half in approximately 40 years both by poaching of the bears themselves and the fish which are the lifeblood of the bear's diet.

Finally, the need for natural resources by the Russian state brought them to previously untapped areas of the country. The Kamchatka Peninsula is rich in natural resources such as oil, natural gas, coal, gold, and diamonds, not to mention timber, land, and natural flora and fauna. Not until this need truly became unable to be contained in the west and Kamchatka lost its strategic military importance did people begin to infiltrate this untouched resource, but when they did, they came in force. Mining in Kamchatka has increased 79% in the last 40 years.¹⁸ With an increase in mining comes an increase in people in the area, and increase in roads and transportation networks, an increase in habitat degradation caused by dredging for areas to mine and establish settlements, and an increase in human interaction with the natural environment. In Kamchatka, where bears are not used to avoiding the human population, the bears are naturally curious and do not realize human command control of the environment. In July of 2008 two men were killed by a bear at a mine while guarding it over night. The spokesman for the Kamchatka emergencies ministry said of the mining workers in Kamchatka, "In the interest of safety they didn't come out to work—the people are scared by the invasion of bears... These predators have to be destroyed. Once they kill a human, they will do it again."¹⁹ The irony of this government spokesman's statement is that it is not the bears that should be considered the invaders. On the contrary, the bear population lived and thrived in Kamchatka years before the Russian population began to

¹⁸ Kirichenko, V.Y. "An Integrated Anthropogenic Impact Map for the Natural Systems of Kamchatka." Pacific Institute of Geography.

¹⁹ Meier, Andrew. "A Message in Blood." *Outside Magazine*. December 2004.

move into the area and it is through their use of the landscape that is destroying the bear's habitat and food supply and forcing them into human populated areas, seeking food and a normal life. The discovery of gold in Kamchatka only exacerbated the problems. In southern Kamchatka alone, the two primary gold mining locations are located in or on the periphery of two major protected areas. This encroachment for mining a natural resources is taking those few protected lands, further decreasing the natural habitat, and increasing the occurrence of direct human and bear interaction.

E. CONCLUSION

As the dominant species on the planet, human beings command control of the environment. However, without proper regard for the requirements of the flora and fauna that are native to a particular place, we run the risk for irreparably damaging the natural landscape. Russia needs to improve their environmental mitigation techniques to ensure the survival of the unique brown bear population of Kamchatka. The Russian government needs to investigate expanding their 17,400 km² of protected land to guarantee a healthy habitat for the bears and the plants and animals they feed on. The government needs to implement environmental protection programs that include GIS mapping of habitats, improved data management, collections, and monitoring, and a free trade of information with other states experiencing similar declines in the environment. Additionally, Russia must monitor their pollution output and enforce environmental standards on their human settlements, industrial complexes, and mining ventures.

It is possible for humans and bears to live in a symbiotic relationship in Kamchatka. The climate is not one that a large number of humans find advantageous. The small number of people that do decide to settle in Kamchatka need only to recognize

how their living conditions impact the natural world around them. It is unrealistic to assume that the Russian government will give up on their desire to harvest the resources available in the Kamchatka Peninsula. It is necessary for the Russian economy to remain a global economic power. However, with environmental regulations and stricter enforcement of anti-poaching regulations, the Russian government can curtail the degradation of the brown bear population in Kamchatka and save the national symbol of the Russian state.

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Why Organized Crime is Persistent in the Former Soviet Union

Greg Rueth

The Former Soviet Union has become a bastion for an increasingly globalized organized crime network. Within Russia alone it is estimated that there are at least 350 genuine organized criminal groupings.²⁰ As Boris Yeltsin said in 1996 “Organized Crime is a cancer eating away at the heart of Russia...It must and will be destroyed before it destroys us.”²¹ With these concerns in mind it is necessary to ask why organized crime has been able to operate in the Former Soviet Union so unopposed. The answer lies in a combination of historical ties, transitional governments, enforcement, an increasingly legitimate structure, and public perception.

ENFORCEMENT:

Historically the rule of law in Russia has never been a strong point. As Pushkin said “There is no law in Russia: the law is nailed to a stake, and that stake wears a crown.”²² This statement may also be extended to government of the USSR and its Stalinist structures. Within these structures, the police were primarily used as a means of controlling political opponents more so than protecting the populace.²³

²⁰ Galeotti, Mark. “The Mafiya and the New Russia.” *Australian Journal of Politics and History* 44, no. 3 (1998): 415. <http://www.ebsohost.com> (accessed September 10, 2008).

²¹ Ibid.

²² Quoted in Galeotti, 417.

²³ Shaw, Mark. “Crime Police and Public in Transitional Societies.” *Transformation: Critical Perspectives on Southern Africa* 49, (2002): 10. <http://muse.jhu.edu> (accessed September 10, 2008).

In response to their feelings of insecurity, the people began to turn to their own structures protect themselves from the government and each other. Organized crime groups are quite adept at filling niches left by the government. So, organized crime began to fill the role of protecting the people in return for nominal fees. Thus two structures began to develop independently, the enforcement and protection arm of the government (state police) and the enforcement and protection arm of the populace (organized criminal groupings). Rationally, the police had a severe lack of legitimacy in the eyes of the people.

As the government and police structures began to reform in the Post-Soviet era, they inherited this lack of legitimacy. Further complicating this issue is the effectiveness of the police force itself. As Shaw states transitional police forces are “bogged down by the difficulties of reforming essentially authoritarian instruments of control in the context of often acute skills and resource shortages.”²⁴ The reforms he is discussing are in relation to the rule of law and investigation. The state police are not used to the demands which an impartial court requires for due process; as a result police forces were not accustomed to the necessary skills of investigation and evidence presentation.²⁵ Additionally due to a lack of resources, especially compared to their luxury car driving opponents with deep pockets, any progress by government enforcement is impeded.²⁶ With a lack of results stemming from an underfunded and under experienced police force, came a lack of trust important for corporations and industries operating within the Former Soviet Union.

²⁴ Ibid., 2.

²⁵ Ibid., 12.

²⁶ Williams, Phil. “Organized Crime in Russia and the Commonwealth of Independent States.” *Eastern Europe, Russia, and Central Asia 2004* (Routledge: Taylor Francis Group) 52.

Large industries began to create their own private security firms which they could trust. The source of labor for these firms was twofold, it was either the high performing members of the state police and government, or mafiya enforcers who now operated under the guise of private security. The later is evident by Galeotti's statistic that 8% of enterprises pay protection money directly to the mafiya at a rate of ten to twenty percent of profits.²⁷ The former can be seen in his statistic regarding the 800,000 individuals employed by 6500 private security firms, who "employ 75% of all the ex-KGB officers who left the service before retirement age."²⁸ Hereby protected, the corporate firms, who hold a strong political lobby, resist increases in funding for the police as they do not wish to pay twice for their security (It is estimated that business are forced to spend 30-40% of their profits on security).²⁹ Thus a cyclical relationship is established. The police due to inexperience were ineffective, companies then turned to private security firms which pull the top performs due to higher wages, the high wages the companies pay limit their willingness to pay for the state police, the state police then are manned by poor performers, who are underfunded and therefore ineffective. The result is an undermanned police force. In 1992 alone Russia lost 19% of its police officers.

While the private security firm structure protects companies and the wealthy, the average citizen on the street who would be reliant on an effective police force is unprotected. In fact according to a poll, "86% of Russians think that the Ministry of Internal Affairs cannot fight crime effectively."³⁰ They in turn follow the example established by the companies. They turn to organized crime groups for protection as they

²⁷ Galeotti, 418

²⁸ Galeotti, 422

²⁹ Galeotti, 426

³⁰ Galeotti, 421

have in the past. It is better to pay one group to protect you from the rest than to be subject to violence from all of them. Thus, once again the police have lost legitimacy and are replaced by the structure of organized crime groups.

As a result of the process previously mentioned the state is unable to pursue organized crime and shut it down. The police force is inefficient, and unable to operate in the new system due to a lack of experience. Additionally, many are protected by the organized crime structure and therefore do not want to see it removed. If the police force starts to remove organized crime groups and prosecute these individuals, the corporations may lose their private security, a situation that these corporations fear as the state can then begin to legislate and control their industries more effectively. While this paper does not intend to provide solutions to the problems, any potential solution involves getting the police force out amongst the people, and ensuring they are protected to gain legitimacy, as well as an incorporation of the major industries by allaying fears of government dominance.

INCREASING LEGITAMACY OF ORGANIZED CRIME GROUPS:

Under the Soviet system where trade with the outside world was virtually cut off, the organized criminal groupings were again able to expand their influence. The black market became a means of procuring goods otherwise unavailable, not only foreign goods but also domestic ones. As such it became a common perception as Rosner stated, that to “be honest and truthful means to die of hunger.”³¹ Even today it is acknowledged that “unemployment and hyperinflation encourage extra-legal means of meeting basic needs.”³² With growing wealth accumulated from the black market, and relatively little

³¹ Galeotti 426

³² Williams, 52

public resistance due to the services they offered, organized crime groups influence expanded. With a bureaucracy increasingly run by a necessity of bribes and red tape, organized criminal groups provided a method of expediting business ventures.³³ The necessity of bribes can be seen in the statistics of a 1993 study wherein 80% of all US firms operating in Russia had violated the 1977 Foreign Corrupt Practices Act.³⁴ Thus organized became quite familiar with how to operate within the system, who held power, and was able to forge ties with both politicians and key businessmen. This experience would serve them well under the collapse of the soviet system and increased privatization.

As Shaw states, organized crime group's "cohesiveness and wealth enabled them to survive the collapse of the old state, and to profit from the disarray of the new one."³⁵ The organized crime groups were able to use their experience and their ill gotten gains to procure enterprises and resources under privatization.³⁶ The efforts of organized crime groups can be seen in relation to a 1994 study where there were 104 industries privatized everyday and 107 privatization crimes.³⁷ Turning the money gained from their illegitimate businesses into legitimate interests they have also turned their mafiya enforcers into private security guards.³⁸ So pervasive is the connection between crime and successful business that 40% of the businessmen in Russia admitted to criminal pasts.³⁹ Undistinguished boundaries between the criminal and business world were

³³ Galeotti 418

³⁴ Galeotti, 426

³⁵ Shaw, 4.

³⁶ Handelman, Stephen. "The Russian 'Mafiya'." *Foreign Affairs* 73, no. 2 (1994): 87 <http://www.ebscohost.com> (accessed December 1, 2008).

³⁷ Galeotti, 426

³⁸ Galeoitt 428

³⁹ Galeotti 428-429.

exploited by the mafia which has given them disproportionate influence in Russia.⁴⁰

They have become more and more entrenched in the legitimate structures of government and business. The leaders are mostly middle aged, newly rich, and are sending their kids to schools such as Oxford and Harvard. They are now nearly indistinguishable from the new businessmen and the politicians. The leaders of organized crime can now more aptly be associated with the Robber Barons of 1870's America than the Gangsters of its 1920's. Like the Robber Barons, a large portion of the economy flows through their hands. It was estimated by the Russian Ministry of Internal affairs that "40% of the turnover in goods and services" was controlled by organized crime groups.⁴¹

The ramification of this increasingly legitimate structure is that it is much harder to root out the criminals. "Any successful businessman who displays evidence of wealth is immediately regarded with suspicion and assumed to be mafia."⁴² The impact on the economy was severe. Any entrepreneurs who tried to play by the rules were crushed by official and criminal competition leaving the corrupt to succeed. Additionally, the otherwise legitimate organized crime groups retain parts of their illegitimate structures.⁴³ Many of the criminal organizations that these "licit" business men originated from continue to be used with new methods. An increasing trend of assassination to clear political and economic barriers, has replaced other more stereotypical organized crime practices of prostitution and drug distribution.⁴⁴ Additionally, the mafia's enforcers are now used as strike breakers, middlemen, and creditors.⁴⁵ Furthermore, the illegitimate

⁴⁰ Handelman 83

⁴¹ Handelman 84

⁴² Williams 52.

⁴³ Handelman 87.

⁴⁴ Galeotti 428

⁴⁵ Galeotti 423

sources are still working under the cover of the larger industries in order to support the business structure. “Corporate security directors report increases in industrial espionage and product counterfeiting.”⁴⁶ With the strong political and economic leverage that organized crime leaders now possess it is nearly impossible to fight against their organized crime groups. Instead any enforcement against organized crime will likely come as a result of the well established organized crime groups efforts to snuff out their competition from new younger groups. The efforts here to break up smaller groups appear as an effort to fight crime, leading to a further complication in the arena of public perception.

PUBLIC PERCEPTION:

There has become amongst the populace a view of the “good bad guys”. That is to say the established organized crime groups help to keep the streets clear of less legitimate organized criminals. There is also a Robin Hood like ideal of the mafia distributing the wealth amongst the populace.⁴⁷ This is an interesting conclusion to arrive at, given the continued disparity amongst the wealthy crime bosses and the average citizen. Additionally many gain assistance and protection from these organized crime groups so they do not desire to see them leave any time soon, especially they know that someone else will eventually replace them. Besides, “even after the destruction of organized crime in an area, it can take more than a generation before normalcy prevails.”⁴⁸ Additionally many feel that organized crime is necessary in the capitalist system, the price to be

⁴⁶ Carter, David. *International Organized Crime: Based on Background Survey*. (East Lansing: Michigan State University) 3.

⁴⁷ Galeotti, 425

⁴⁸ Skaperdas 189

paid.⁴⁹ The former Soviets began to see organized crime not as being outside of the legitimate economy but instead as an “integral part of the capitalist enterprise.”⁵⁰ This opinion was justifiable considering the lack of experience with capitalism and the observed marked successes of the criminals in a market economy. Furthermore, a lack of trust in the government to fight crime prevents people from voicing concerns, as you never know who has ties to whom. The media’s role in shaping public perception cannot be overemphasized.

The extent of the mafia or organized crime was not truly realized until it came to the forefront in the 1980’s under Glasnost.⁵¹ While the media occasionally takes interest in organized crime, particularly following a gruesome crime, their interest fades as organized crime returns to normal operations.⁵² This has the affect of creating a swell in support amongst the populace for efforts against organized crime which may be followed up by a few arrests, but support dies with lack of political coverage. Additionally, the media plays an important role in its portrayal of organized crime. The concept that individuals join criminal groups only because they are bad people is not always the case. Many join for economic reasons such as a lack of alternatives. It complicates efforts to combat crime, as the populace may tend to see the problem as more simple than it really is. Before a solution to the problem is created it is necessary to find the reality of the problem, and the media makes this exceedingly hard to do.

GOVERNMENT:

⁴⁹ Handelman 90

⁵⁰Rawlinson, Patricia. “Mafia, Media and Myth: Representations of Russian Organized Crime.” *Howard Journal* 37, no. 4 (1998): 349. <http://www.ebscohost.com> (accessed September 10, 2008).

⁵¹ Rawlinson, 348.

⁵² Skaperdas, Stergios. “The political economy of organized crime: providing protection when the state does not.” *Economics of Governance* no 2 (1991): 190.

As Rawlinson said “the state of organized crime in any country depends in large part on the state of the state.”⁵³ Providing an interesting foundation and a good rationale for the flourishing of organized crime is the historical ties between the government and organized crime itself. The Bolshevik revolutionaries incorporated organized crime groups into their organizations due to their anti-establishment leanings. They were particularly helpful in securing funds for the revolution through bank robberies and kidnappings.⁵⁴ In fact, Joseph Stalin is rumored to have had strong ties to organized crime groups and many of these associates would come to serve in his secret police forces.⁵⁵ With these ties in place corruption was natural given that many officials had “monopoly power plus discretion about how to use this power, minus accountability.”⁵⁶ With this relationship established the political elites, referred to as the “nomenklatura,” had a vested interest in ensuring the survival of organized crime. This particularly came true when the black market increased in usage. The black market was viewed as a parallel economy in which goods could be procured, that were otherwise unavailable. Thus, the government not only allowed the market to operate but actually encouraged a relationship between the government and the operators of the black market.⁵⁷ Naturally the elite benefited from this relationship and it established a growing disparity in living conditions between the populace which had little access to goods that weren’t produced by the state, and the elite which lived lives of relative luxury.⁵⁸

⁵³ Williams, 53.

⁵⁴ Handelman 86

⁵⁵ Handelman 86

⁵⁶ These are the classic conditions that encourage corruption as given by Robert Klitgaard. Quoted in Williams, 53.

⁵⁷ Williams, 53.

⁵⁸ Ibid.

With this relationship established it is no wonder that corruption continued after the fall of the Soviet Union. When privatization became an inevitability member of the political elite began to funnel their gains into trading companies. Thus, those who truly benefited from the system were the political elite and the organized crime groups to whom they were tied. The transitional government, due to desires to grow economically placed economic development through the free market as the foremost objective before creating constraints within which the free market could operate. This allowed the organized crime groups and the politicians to snap up key industries, as mentioned previously. Thus those who had influence under the Soviet system retained influence under the new transitional government, and reaffirmed their ties to organized crime groups. Corruption was wide spread, with the former mayor of Moscow Luzhkov claiming that “800 deputies’ aides were under investigation for Mafia links.”⁵⁹ Further complicating this issue was the assassination of many high ranking individuals which the government police could not stop. Thus, the assumption of the Russian people became that anyone who was “not entirely corrupt [was] instead mortally stupid.”⁶⁰

Corruption was not just a problem in itself, it became a weapon in the ongoing debate regarding whether a return to authoritarian government was preferable to continuing democratic rule. “The burlesque of charge and countercharge politicized even the slender efforts the state was making to halt corruption and further reduced the government’s credibility.”⁶¹ This competition delegitimizes both forms of the government and erodes any chance of public confidence in the state’s ability to protect them. Furthermore, the results of the charges are not to place one camp as preferable to

⁵⁹ Galeotti 420

⁶⁰ Galeotti 421

⁶¹ Handleman 91

another, but instead as one Moscow journalist stated, “If someone staged a new coup tomorrow, I would not know what or whom to defend.”⁶² The confusion and distrust of the people borders on the edge of a lack of regard for the government as actually performing any function for them.

The debate itself is focused on the issue of organized crime and security. The Authoritarians argue primarily that it is only through authoritarian rule and a return to the old methods of fighting crime that organized crime can be stopped. The democratic government on the other hand is trying to protect hard won civil liberties against encroachments in the name of protection. Worrying statements like Segei Stephashins, that he was, “all for the violation of human rights if the person is a bandit or a criminal,” is a worrying development.⁶³ Besides, there is no proof that authoritarian rule can knock out organized crime as under Soviet rule organized crime survived and arguably flourished. The real strength of the democratic government is not truly effective yet. The rule of law and establishment of a functioning independent judiciary is an objective that has not been fully realized. As Handleman states, “Having failed to develop a society guided by the rule of law, the first post-Soviet government is reverting to the habits of its predecessors.”⁶⁴ Yes, the government’s system of enforcement has not truly become effective yet, but it takes time for new systems to come into common practice, more so when there is resistance from those with strong lobbying power. The Duma has been reluctant and slow to respond to the demands of a fight against organized crime, and it has been argued that this may be due to the ties to organized crime itself.⁶⁵ In, total the

⁶² Ibid.

⁶³ Galeotti 424

⁶⁴ Handleman 92.

⁶⁵ Williams, 54.

government is bogged down by trying to balance civil liberties against the need for increased enforcement, while defending itself from authoritarian attacks, and rooting out corruption amongst its ranks. It is in precarious situation but with help it can hopefully establish a democracy where rule of law reigns and is enforced by state police.

CONCLUSION:

A government trying to find itself and crippled by corruption cannot hope to create the legislation and establish the legitimacy necessary to fight organized crime. This is further complicated by a weak enforcement arm, made weaker by the unwillingness of corporations to assist in its reformation. Additionally, public perception against organized crime is not enough to demand that something be done about it. Meanwhile the organized criminal groupings become more deeply entrenched in legitimate industries and organizations making the groups harder to root out and fight. This leads to a situation where unless there are drastic improvements aided by foreign influences organized crime will continue to flourish and have a safe haven for its international operations.

EV 398B: Climatology

Course Director: LTC Luis Rios



This course provides a comprehensive introduction to weather processes resulting in distinctive climates. Beginning with an examination of the basic physical and chemical principles of the atmosphere, stressing the heat budget of the earth and atmospheric motion, the course leads to an examination of global climates. Additionally, students will examine climate anomalies and climate oscillations such as El Nino-Southern Oscillation (ENSO) events. The theory of global warming is examined from an objective standpoint considering a variety of climate feedback mechanisms. The course culminates by examining Pleistocene climate change in terms of the structure and operation of the atmosphere-earth-ocean system.

Selected Papers from Fall, 2008:

“Climate Changes effect on Australia” by Nicholas Vandam

“Chesapeake Bay” by Joe Muldoon

Climate Changes effect on Australia

Nicholas Vandam

Introduction:

There has been a significant drought in Australia for the past decade. There have been past droughts in the region, but none have lasted as long or have been as detrimental. This drought has strained the agricultural industry and especially the country's water supply. It has been marked as the first climate change driven disaster to hit a developed nation. The cause of the drought has been attributed to changing weather patterns as a result of global warming, natural variability and a government that is too slow to respond to the disaster. I believe that, because of predominately greenhouse gas emissions Australia's climate will continue to change, which will have a major effect on the country as a whole. Specifically, I examine climate change and its effects on agriculture, health, and water security in Australia.

Background:

The Australian government has been working hard to mitigate the effects of climate change on its population. Climate change has become such a major issue that the government has created its own Department of Climate Change along with a Climate Change Minister. The primary concern in the past election for Prime Minister in December 2007 was, in fact, climate change (Herald Tribune). The government has also been funding countless studies on the climate change in Australia and trying to predict the effects on the country. The Australian climate varies greatly throughout the continent.

It has climates such as desert, tropical wet and dry, humid subtropical, subtropical dry, humid oceanic, and semiarid. All of these climates have been affected by this overall climate change. Since 1910 all the areas have experienced an increase in the average maximum temperature of 0.6° C and a minimum temperature increase of 1.2° C (Nicholls and Collins, 2006). The monsoonal rains have increased in the north western and central parts of Australia with the south-east, south-west and central east coast having a decrease in monsoonal rains (Smith, 2004). Throughout the country there has been a recorded increase in intense systems that move through the continent (Kuleshov, 2003), larger variability in pan evaporation since 1970 (Roderick and Farquhar, 2004), and a relative sea level rise since 1920 (Church et al., 2004). These changes to the continent have affected all the different climates of Australia in various ways. The main contributors to the change in climate have been attributed to natural variability and greenhouse gases produced by humans (Karoly and Braganza, 2005). The natural variability comes from the El Niño -Southern Oscillation (ENSO) which reduces the amount of rainfall and increases average temperature to eastern and south-western regions and the contrast during La Nina. It is predicated that the Australian climate will move to a more El Niño average state greenhouse gases have caused shifts in temperatures and rainfall throughout the Australian continent. Since the Industrial Revolution, carbon dioxide concentrations have increased to a staggering amount. The increase in GHG's (Greenhouse gases) has led to an overall global warming effect. The Australian environment is finely tuned and susceptible to this warming especially in the areas of the coral reef, arid and semi arid habitats, Australian alpine system and freshwater wetlands in coastal zones. The bread basket of Australia is also highly susceptible to drought from global warming because of

its location on the southern and eastern side of the country, which is the area most affected by the ENSO.

Data Sources:

The data presented support that greenhouse gas emissions have led to the global warming effect. The data also supports that there is a climate change occurring in Australia and it is a result of global warming. Global warming's effects will be examined in respect to agriculture, health, and water security.

The carbon dioxide in the global atmosphere has increased dramatically since the Industrial Revolution. Atmospheric conditions have increased over 30% (280ppm to 380ppm) since the Industrial Revolution. Along with the concentration of carbon dioxide increasing, the other major greenhouse gases have also increased- nitrous oxide by 17%, methane at 151% (annex 5). "The Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES) projected a range of CO₂ emissions of 3.3 to 36.8 GtC/year by 2100 relative to 1990 levels of 7.1 GtC/year" (IPCC 2000).

Since 1900 the earth's overall average temperature has increased by 0.6°C while Australia's average temperature has increased by 0.7°C since 1910 (Mann and Jones, 2003). The IPCC projects that global mean temperatures will increase by 1.4°C –5.8°C above 1990 levels by 2100. Even if greenhouse gases were stopped now, this warming would continue to a 0.2°C - 1.2°C rise by the end of the century (Wigley, 2005). Along with a global-wide temperature increase, Australia predicts it will continue to increase in temperature as well. It is predicted that temperatures will rise 0.2°C to 1.3°C by the 2030s and 0.5°C to 3.5°C by the 2080s (Ministry for the Environment, 2004). The inland areas are expected to warm faster than the coastal regions, which will most likely follow the global trend. The number of days over 35°C is expected to rise dramatically and the

average number of days below 0°C will fall throughout the continent. The rainfall is expected to decrease in the southwest and southeast, but increase in the northwest and parts of the east. The wet years are expected to have more extremes while the dry areas are expected to have more droughts.

The sea level has risen 20cm in the past century. The sea level has risen a large amount in the latter half of this century; the rate has been over 3mm a year averaged out around the world (Church and White, 2006). In Australia the sea level rise since 1920 has averaged about 1.2mm per year. (Climate Change in Australia. Gov). “Relative to the year 2000, global-mean projection of sea level rise by 2100 is 0.18m to .59m, excluding uncertainties in carbon cycle feedbacks and the possibility of faster ice loss from Greenland and Antarctica” (Meehl et al., 2007). Along with rising sea levels, the temperatures around Australia have risen. Over the past century temperatures in the tropical region have risen an average of 1°C. It is expected that temperatures will continue to increase at a rate of ~1–2°C per century (Hoegh-Guldberg, 1999). The temperatures around the Great Barrier Reef have increased 0.46°C, which has contributed to a bleaching and destruction of coral reefs in the region.

Water security has already become a major issue in Australia. With every 1°C increase in average temperature the inflow to reservoirs will decrease up to 15% (CSIRO). There is a projected 20% more droughts by 2030 and 80% more by 2070 in southwestern Australia (Mpelasoka et al., 2007). Severe droughts are predicted to occur every 7 to 15 years by 2030, and every 5 to 10 years in 2080 in the east and other parts of the continent susceptible to drought (Mullan et al., 2005). The Murray- Darling accounts “for about 70% of irrigated crops and pastures” (MDBC, 2006). In this region the stream

flow is predicted to fall by 10-25% in 2050 and 16-48% by 2100. Along with a loss of water quantity the quality will also fall. There is a 50% chance that by 2020 the salinity of the lower Murray River will exceed the 800 electrical conductivity limit for drinking water and irrigation uses (MDBMC, 1999). The eutrophication of water is very important for irrigation and drinking water purposes (Davis, 1997). As the average yearly temperatures the projected impact on the environment also increases in severity.

Agricultural effects directly relate to the amount and quality of the water in the region. One of the major crops grown in Australia has been wheat. Since 1952, the average annual yield of wheat has roughly increased 45% along with the average temperature increasing 0.58°C. The warming of the climate and decrease in severe frosts some say is 30-50 % of the reason why yield has increased (Nicholls, 1997). The decrease in rainfall will make it harder to crop agriculture at the dry margins, while the elevated carbon dioxide will help offset this effect (Sinclair et al., 2000). Production from agriculture along with forestry has been predicted to drastically decline as a result of drought and fires by 2030 in much of the southern and eastern portions of the country. Global warming will make the growing season longer for many crops, which in some regions will provide a higher yield. The agriculture industry is at risk in Australia because the maximum potential increase in crop value is limited to 10% (\$0.3 billion/yr), but the maximum loss is substantially larger at about 50% (\$1.4 billion/yr). It is estimated that by changing planting dates and increasing crop variety agriculture will increase yield and compensate for the loss from drought. The median benefit is estimated to be \$158 million/yr with a range of \$70 million to \$350 million/yr (Howden and Jones, 2004) .

Health concerns as a result of an increase in temperatures is a major concern . Presently the death rate due to heat related incidents in Adelaide, Melbourne, Perth, Sydney and Brisbane is 1,115/yr. It is likely to increase with the average temperature increase to “2,300 to 2,500/yr by 2020, and 4,300 to 6,300/yr by 2050” (McMichael et al., 2003). Extreme weather events such as storms, wind, and flooding will contribute to an increase number of fatalities. Temperature increase has been linked with increase in tropospheric ozone around urban areas. Increase in ozone can lead to respiratory distress and cardiovascular illness and possible death (IPCC 2001). The increase in precipitation and temperatures will lead to an increase in food and water-borne illnesses. The higher vector breeding will spread diseases such as Ross River disease and the dengue fever (Woodruff et al., 2006). The indigenous people are most at risk because of remote living communities, poor access to medical facilities, and limited financial means. As seen in recent years from drought, mental illness has dramatically increased in rural communities. There has been a stark increase in suicides and severe mental health degradation and as drought is foreseen to become more common mental health will continue to be a problem (Nicholls et al., 2006).

Data Analysis:

The increase in temperatures around the globe and on the continent of Australia will have a drastic effect on the life of everyone in the country. There is a significant amount of data on the climate change in Australia and the predications for future effects and change in the climate. The data provided in the previous section must be analyzed in every aspect to examine future impacts on the country. This section will look at agriculture, water resources, and health and welfare of the people. The climate change is evident with the increase in temperatures throughout the continent pushing many animals

to shift regions. For example bats and birds have moved south, alpine mammals have moved to higher elevation, semiarid reptiles and some birds have migrated from drought affected areas to areas of higher rainfall (Hughes, 2003). This shift in species distribution is one of the many affects of climate change and further reinforces that climate change is occurring in Australia and it is not purely meteorological variance.

Droughts are likely to continue to greatly reduce agricultural productivity as in the most recent drought, which has been rated as the worst drought on record.. As a result of a stronger and more frequent predicted ENSO, drought will become more common which will lead to a shift in agriculture. Along with a predicted increase in temperatures and dryness, the carbon dioxide emissions are predicted to increase. In the dry margins, particularly in southern cropping, it will become non-viable to farm even with the increase in carbon dioxide (Sinclair et al., 2000). The northern regions of Australia are predicted to still have substantial rainfall which will attract farming. The increase in carbon dioxide will reduce crop evapotranspiration, which has the potential to exacerbate “Australia’s most severe land degradation problems across agricultural zones: water logging, soil acidification and dry land salinity” (IPCC, 2007). The Australian climate change will force cropping farmers, horticultural farmers, and pastoral and rangeland farmers to adapt to higher temperatures and shifts in rainfall. Farmers will most likely react by changing their farming periods during the year, move to more suitable regions of the country, and start using genetically engineered crops. The water resources of the nation have an effect on almost everything within the nation, and are extremely important issues to monitor. The increased drought frequency from ENSO, global warming, and general predictions for population increase globally, has and will put a stress on

irrigation, urban use, home use, and the environmental water supply. The climate change causes an increased demand for water and at the same time decreases the water supply. This problem forces Australia to supplement their supply or reduce demand. This water supply issue becomes a political issue that the country must address in the very near future. The water supply changes will also affect the ecosystems in the region, with wetlands, bird breeding, endangered species habitats, and other wildlife. The projections of substantial decrease in rainfall are focused in the Victoria, Southern Australia, and Western Australian regions. These areas are also the most heavily populated, which will create a substantial water supply problem for the country.

Health related problems in the country stem from an increase in average temperatures, and specifically the predicted increase in temperature extremes. The effect of a larger number of heat waves in the country can be seen in the recent European heat wave of 2003, which is estimated to have claimed 35,000 lives (Schär et al., 2004). The vulnerability of the Australian public health sector is low as a result of climate change, but without adaptation to the changes there could be a steep death toll. With the sea level rise we may see an immigration increase from the Pacific Islands. These effects on the Australian health system are speculated to cause a strain on the health system if there is a massive immigration into the country, which reduce the readiness of the health system if a disaster occurred. The overall affect on the health system is dependent upon several key events- the migration of vector passed diseases, increase in heat waves, severity of drought, and rate at which the population increases.

Conclusion:

In conclusion, this report reviews the substantial effect global warming is having on the climate change in Australia, and every facet of the nation. Specifically, climate change was examined with respect to water security, agriculture, and health of the population in this report. The change is not a meteorological variance and climate change will continue due to the greenhouse gases emitted from the country itself and around the world. Australia will have to adapt its policies within and outside its borders if it is going to survive.

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Chesapeake Bay

Joe Muldoon

INTRODUCTION

The Chesapeake Bay has been a point of pride for every Marylander since their birth. Most Marylanders know how to crack open a crab before they can walk; and fishing and crabbing are almost instinctive to Bay locals. Besides recreational fishing, the Bay supports commercial fishing as well. But as climate changes adversely affect the Bay and its wildlife, could the Bay's traditional role of playground and provider be coming to an end? The Bay is already beginning to feel the effects of global warming with temperatures in the Bay area rising two degrees since the 1960s (Blankenship, 2007). As the air temperatures rise, the water temperatures rise; and as the water temperatures rise, the water oxygen levels decrease. The Bay's indigenous fish which depend on the high level of oxygen present in cold water could disappear. Additionally, the Bay's water levels have been rising claiming dozens of small islands and eroded the surrounding saltwater marshes. These tidal marshes are home to finfish and shellfish and serve to curtail erosion and filter pollution. The warmer climate also brings more rain that produces more runoffs contributing to algal blooms and "dead zones." The water in these dead zones becomes hypoxic and cannot support the Bay's fish. As a result, climate changes in the Chesapeake Bay are harmful to its indigenous fish because it alters the temperature and water levels and levels of salinity and dissolved oxygen.

BACKGROUND

The Chesapeake Bay is the largest estuary in the United States. The USGS estimates it covers 206 miles from Virginia Beach, VA, to Havre de Grace, MD, at the mouth of the Susquehanna River (Fig 1a) with an average depth of 27 feet and a watershed that encompasses six states to drain a region of 64,000 square miles (Fig 2). Rain water from the expansive watershed carries soil, excess nutrients, fertilizers and pollutants from agricultural operations, streets, and industries to the Bay causing complex environmental issues that alter the Bay's makeup (USGS, 1998).

The Bay started forming about 10,000 years ago when melting glaciers flooded the valley of the Susquehanna River (USGS, 1998). At the peak of the last ice age 18,000 years ago, sea level was much lower as glaciers expanded and ice sheets covered most of the Midwest and eastern United State (USGS, 1998). At that time, the Susquehanna River extended past what is now Cape Charles and flowed across the continental shelf to empty into what was then the Atlantic Ocean shoreline (Fig 1b). The ice age was followed by a warming period which continues today. For the past 5,000 years, the Bay's average rate of sea level rise was about one inch every 30 years. By the end of the 21st century, sea level may be rising one inch every three years (EPA, 2001).

The Bay's tidal marshes and wetlands provide food and habitat for indigenous finfish and shellfish and protection from flooding and shore erosion. These marshes are usually restricted to shallow water depths and need the time afforded by moderate sea-level rise and the room afforded by an uninhibited shoreline to expand landward with sediment and peat build up (EPA, 2001). The Bay's deeper waters grow submersed aquatic vegetation (SAV) that also sustains the Bay's fish. The health of SAV depends on light for photosynthesis. The more light that can penetrate the water, the deeper the

SAV can grow. Rain runoff causes influxes of nutrients that can lead to algae blooms that block sunlight for SAV and to turbidity that can deplete the water of oxygen needed by other organisms (Cronin and Willard, 2000). USGS studies show that since the 1970's, grasses tolerant of reduced oxygen levels have become the dominant species in the middle bay where oxygen depletion occurs.

CLIMATE CHANGE EFFECTS ON THE CHESAPEAKE BAY

Global warming causes water at the surface of the ocean to expand also adds sizable quantities of freshwater runoff from melting glaciers. In the Bay area, scientists believe global warming accounts for about 2-6 inches in the sea level rise that occurred during the past 100 years (EPA, 2001). The EPA suggests that sea level rise would be faster during the second half of the 21st century than the first half because glaciers would be melting more rapidly due to the warmer temperatures. Future projections call for a continued sea level rise of 1.2 to 4.5 feet in this century (Blankenship, 2007).

Blankenship states of particular concern are the amount, timing, and intensity of rainfall in the future, which directly affects the amount of nutrients and sediment entering the Bay. Scientists have identified nutrient-saturated water as the prime factor promoting toxic algae blooms (Ernst, 2003). Ernst tells us that the Bay's most widely reported toxic bloom occurred in 1997. That year *Pfiesteria*, which outbreaks are associated with nutrient overenrichment or eutrophication, was the primary cause of fish kill that led to the death of an estimated 50,000 Bay fish (Ernst, 2003).

Howarth et. al. states that eutrophication driven primarily by nitrogen inputs, leads to hypoxic conditions and increases in certain harmful algal blooms that can change ecological food webs reducing fish and shellfish production. In his study of northeastern

United States watersheds, those with greater precipitation and higher discharge have higher nitrogen deliveries. The Susquehanna River is the largest watershed in the northeast and is the major source of nitrogen flow to the Chesapeake Bay (Howarth et. al., 2006). When compared to 15 years ago, estimates for future changes in precipitation and discharge for the Susquehanna River into the Chesapeake Bay suggest an increased flow of eutrophic nitrogen of 3-17% by 2030 and 16-65% by 2095 (Howarth et. al., 2006). Blankenship states that strong flows down river from precipitation would contribute to strong stratification between bottom and surface waters in the Bay preventing the two layers from mixing. When bottom areas become depleted of oxygen, they cannot easily get oxygen from the surface layer leading to larger “dead zones” (Blankenship, 2007). Fish stressed by higher surface temperatures move lower for cooler water, but the decomposition of algae blooms consume bottom-layer oxygen the fish need. (Blankenship, 2007).

DATA ANALYSIS

Climate variability affects the amount of rainfall in the mid-Atlantic region, which in turn affects the amount of freshwater entering the Bay (Cronin and Willard, 2000). Cronin and Willard state that freshwater inflow influences bay salinity, nutrient loads, oxygen depletion, and water clarity. They measured wet-dry cycles over the past 500 years and found that megadroughts caused higher salinity in the bay while shorter wet periods lowered salinity and had a mean annual rainfall of 25-30% greater and a freshwater discharge of 40-50% greater than during droughts. Shorter term climatic cycles lasting 3 to 15 years showed links to both the El Nino Southern Oscillation (ENSO) and the North Atlantic Oscillation (NAO) (Cronin and Willard, 2000).

The NAO is defined as a north-to-south oscillation of atmospheric mass centered on the Azores high pressure and Icelandic low-pressure systems. Hurrell states that a positive NAO index produces higher-than-normal surface pressures south of the 55°N latitude that combine with lower-than-normal pressure over the Icelandic region to produce a stronger-than-average westerly flow across the mid-latitudes. The air in the Northern Hemisphere flows clockwise around high pressure resulting in warmer and wetter mean conditions in the eastern U.S. (Hurrell).

According to Hurrell, the pattern of strongly positive NAO index values and anomalously low sea level pressure (SLP) over the past 30 years deserves partial credit for the documented higher temperatures in the Northern Hemisphere. He explains that the NAO and sea surface temperatures (SST) are related. He suggests that the SST winter pattern of a warm anomaly in the mid-latitudes centered off Cape Hatteras are driven by wind and air-sea heat exchanges associated with the positive NAO winter index from December to March (boreal winter). The Chesapeake Bay is subjected to this warm anomaly because it is positioned in the same mid-latitude (Fig 4). In addition to warmer temperatures, the NAO effects precipitation in the Bay.

Hurrell illustrates that higher precipitation in the Chesapeake Bay area occurred during high NAO index years (Fig. 3). Similar research determined that the positive NAO phase produced greater precipitation, more fresh water flow, and less salinity in the Bay (Cronin et.al., 2005). The Susquehanna River discharges over 50% of the fresh water into the Bay (Cronin et. al., 2005). This flow and its resultant increase in river discharge leads to a decrease in salinity and establishes relationships between Bay

salinity, freshwater discharge, precipitation, and the NAO and ENSO (Cronin et. al., 2005).

ENSO influences extreme weather and climate events by affecting the paths, frequency, and severity of winter and tropical storms (Nicholls et. al., 2007). Cronin suggests an ENSO influence in the mid-Atlantic region with at least a small teleconnection between the Southern Oscillation Index (SOI) and east coast precipitation (Cronin et. al., 2005). Using sediment cores as proxies, he found that increased salinity in the Chesapeake Bay corresponded with the negative phase of the SOI in the past. This may indicate that while the positive phase of the NAO decreases salinity in the Bay with its warmer, wetter climate; the negative phase of the SOI increased salinity in the Bay which may correspond to colder, dryer climate cycles.

Howarth offers that for any given river, nitrogen fluxes are greater in years with higher discharge caused by storage of nitrogen in the landscape during the dry years and flushing of this stored nitrogen during the wet years. He explains that those watersheds that have higher precipitation and higher discharge/flow export a greater fraction of the net man-made inputs of nitrogen that cause deadly algae blooms. The occurrence of multi-decadal salinity and temperature oscillations (20-40 years) during the entire history of the Bay indicates that climate variability is an inherent component of the North Atlantic climate system and shows the long-term effect on the Bay of multi-decadal processes such as the NAO (Cronin et. al., 2005).

The effects on the Bay's fish vary. The Atlantic croaker population in the Bay increases with warm winters. A study by Hare and Able revealed that overwinter

survival of juvenile croaker and abundance in adult Croaker catches were linked to the positive phase of the NAO which delivered warmer winters. They found that decadal variability of the positive NAO index from the 1930's to 2000 coincided with high adult croaker catches as well as high juvenile survival over the same timeframe.

Winter temperatures in the Bay range from 34° to 36°F and from 77°-79°F in the summer with a spring/summer thermocline that is 36°-37°F higher in the surface layer (Cronin and Willard, 2000). Chesapeake Bay bottom-water mean winter temperature warmed 33°-42°F from the 1970s to the 1990s (Halvorson). Climate change causes earlier spring warming which traditionally produces food for spawning Bay fish; but the fish arrive later and the food is already gone (Blankenship, 2000). As temperatures warm, Striped bass, Atlantic sturgeon, soft-shelled clam, blue crab, and oysters that need cooler water to survive are at risk. Oysters help clean the Bay and can filter two gallons of algae out of the water every hour (Ernst, 2003). Warmer water is more conducive to oyster diseases as well as bacteria that attack Stripped bass so these species could disappear (Blankenship, 2007). Blankenship says, both bass and sturgeon are stressed by water over 76°F and seek cooler deeper water at the expense of hypoxic conditions.

Changes in the Bay's climate can also bring changes to the Bay's fish. Halvorson notes that three species of southern or oceanic/continental shelf fish were collected in the Chesapeake Bay in the 2004-2006 timeframe in 61°-77°F temperature water. No previous records of these fish, Snakefish, Red Goatfish, and Spotted Whiff, were recorded before this find, and their historic habitats are more south from Brazil to North Carolina (Halvorson). Halvorson predicts that climate change will warm the Bay enough

to change the composition of fish species reducing traditional Bay species in favor of more warm temperature species now found in North and South Carolina and southward.

CONCLUSION

Climate changes in the Chesapeake Bay are harmful to its indigenous fish because it alters the temperature and water levels and levels of salinity and dissolved oxygen that sustain their lives. Scientists have linked ENSO and the NAO to the Bay's climate. The NAO produces its biggest effect on the atmosphere during boreal winter (Dec –Mar) – a time that the Chesapeake Bay water quality is most affected by warmer temperatures and precipitation levels (Hurrell). Warmer temperatures melt glaciers, raise sea level, and flow fresh water into the Bay. Increased precipitation causes excess nutrients to flow into the Bay producing toxic algae blooms that decrease water clarity and quality, increase salinity and dissolved-oxygen levels, and kill SAV and Bay wildlife. Although this paper highlights climate changes affecting the Bay, it does not address many anthropogenic causes that alter the Bay's make up. That is a subject for another paper.

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EV 391A: Principles of Land Use Planning and Management

Course Director: MAJ Benefsheh Verell



An introduction to land use planning and management with focus on the land-law interfaces between the physical, cultural, and legal realms. The course surveys the policies and legislative basis for land use controls at the federal and regional levels to include national parks and forests, agricultural lands, rangelands, and military training areas. The environmental and economic impacts of these controls are explored. Urban and suburban planning and zoning are also addressed. The importance of geographic concepts is emphasized in the conduct of applied case studies addressing land use conflicts and environmental strategies.

Selected Papers from Fall, 2008:

“THE VIETNAM VETERANS MEMORIAL CENTER” by NICHOLAS G. LEWIS-WALLS

“GREENSBURG, KANSAS: A MODEL FOR GREEN LIVING” by RACHAEL

BREINLING

The Vietnam Veterans Memorial Center

Nicholas G. Lewis-Walls

INTRODUCTION

There is a great deal to be learned from a society's imprint upon the natural landscape. Many times, even marks made without intention can be of great importance in discerning the secrets and identities of various social groups. However, intended marks, such as monuments and tributes can also be of great use in identifying a culture's values and socially accepted norms. The National Mall, located in Washington, D.C., contains many of the United States' best known tributes. From the Washington Memorial to Lincoln, to the new World War II memorial to the long, still reflecting pool, many U.S. citizens across the country know and even identify with the meanings behind each while others still view the memorials with their own beliefs and values. All, however, may view the National Mall as a source of American identity. Far from being a static piece of American history, the plan of the National Mall is constantly being evaluated and reviewed to more accurately reflect American values and identity. Thus, the National Parks Service's National Mall Planning division has tentative plans for new memorials, centers, and monuments in the works.

One of those future projects is the addition of a Vietnam Veterans Memorial Center, just to the west of the current Vietnam Veterans Memorial – *The Wall*. This project receives its main support from the Vietnam Veterans Memorial Fund, and this organization has a specific end state for the Memorial Center. Will the new Vietnam

Veterans center enhance visitor experience and contribute to the legacy of meaning and place of the National Mall, or will construction result in a blight upon the physical landscape and a misallocation of resources? Can the Memorial Center accurately reflect the changing values of society in regards to the military, closing the gap between civilians and military personnel by spreading knowledge and awareness? Will this project be indicative of the change of public opinion towards the Vietnam War in general, and Vietnam veterans, specifically? The Vietnam Veterans Memorial Center, when fully completed, will preserve and enhance the existing Vietnam Veterans Memorial and National Mall areas, enhance park visitor experience, consider its impacts from a functional and construction standpoint, and comply with local legislation and zoning criteria.

BACKGROUND

The Vietnam Veterans Memorial Center is intended to enhance the experience granted by the existing Vietnam Veterans Memorial, known simply as *The Wall*. *The Wall* was first introduced by Senators Charles Mathias, Jr. (R-MD) and John W. Warner (R-VA) in November of 1979 in the form of legislation authorizing a specific allotment of land for the memorial (*VVMF 2008*). By 1980, over \$8,000,000 was raised to support the project, and a three acre site on the National Mall was selected near the Lincoln Memorial for development. In keeping with the national sense of project ownership, a design competition was held, and in the late summer of 1981, Maya Ying Lin's design was chosen unanimously for construction (*VVMF 2008*). The design itself is relatively simple, with two walls meeting at an origin and extending outwards, pointing at the Washington and Lincoln monuments, slowly angling descending into the surrounding

earth. Names of every serviceman killed or missing in the Vietnam War are inscribed on panels of the wall by date, the first death just to the right of the origin, and the last just to the left, creating a feeling of closure – of beginning and end (VVMF 2008). *The Wall* was officially dedicated November 13th, 1982, with various additions, such as *The Three Servicemen* statue, occurring years later. Currently, the Vietnam Veterans Memorial is one of the most highly visited of its kind, receiving over four million guests annually (VVMF 2008).

The proposed Vietnam Veterans Memorial Center will be centered in an area of land just northwest of *The Wal*. The site encompasses 5.2 acres of the National Mall, also bordering the Lincoln Memorial and Constitution Avenue (Cummings 2005). In order to preserve existing visual sightlines, the center’s design is to be almost completely underground, or below grade. Inside the memorial center, visitors will experience displays that represent the Vietnam Veterans Memorial’s history, a “Wall of Faces” of every service member listed on *The Wall*, collections of items left in tribute at *The Wall*, a Vietnam War timeline, a tribute to service members who gave their lives in any past or present war in American history, and many more unique displays that encourage reflection and remembrance (VVMF 2008). Groundbreaking is intended to be underway tentatively in the year 2010 with an expected 18 month construction time frame (VVMF 2008).

METHOD

In order to analyze the impact of the Vietnam Veterans Memorial Center, I had to determine which areas I needed to focus on in my research. The first area that I decided to focus on was the physical effect of the development upon the National Mall,

particularly with respect to the current Vietnam Veterans Memorial and the surrounding Washington, D.C. area. This development, as an 18 month project, will drastically and visibly impact this historic area during the course of the construction and, of course, afterwards. In order to determine how the memorial center would physically impact the landscape, I compared the construction and design processes of the Vietnam Veterans memorial center to that of the World War II Memorial, the most recent, significant development on the National Mall, having achieved completion in just 2004. I also looked at how existing Washington, D.C. legislation and federal legislation would affect development, viewing the relevant legal code included in the *Vietnam Veterans Memorial Center: Site Selection Study Environment Analysis*.

Next, I wanted to analyze the project according to its social impact upon actual visitors to the memorial center itself. Again, I researched some of the social effects of visitation to the original Vietnam Veterans Memorial, looking not only at the measureable affects, but also into personal, anecdotal accounts of the memorial, comparing those effects to the goals of the new memorial center. I attempted to identify what gaps the current war memorials leave on the National Mall and then analyze how well the new memorial center's displays and tributes can augment or supplement the existing memorials, filling any gaps or shortcomings.

Lastly, I wanted to identify the social impact of the new memorial center on the country. As a symbol of progress and narrowing the gap between the civilian understanding of the military, the Vietnam Veterans Memorial Center has potential to impact those that don't even step foot on the National Mall. National opinion towards the Vietnam War and Vietnam-era service members was drastically different than that of the

World War II generation, and the evolution of that national opinion and feeling over time is quite unique. Although the World War II memorial may provide a more recent, contemporary comparison, it represents a different era of conflict, with little deviation in support and opinion over the years. I determined that the most effective measure of the national impact from the memorial center would best be viewed through comparison to the relative national impact of just *The Wall*. Specifically through viewing *Wall* related national programs and the Vietnam Veterans Memorial Fund, the sponsor of these programs, I was able to objectively measure a potential national impact.

ANALYSIS

The Actual Site

The Vietnam Veterans Memorial Fund stipulated main goals for the development of the memorial center. These goals include preserving the existing Vietnam Veterans Memorial, enhancing park visitor experiences, complying with local legislation, preserving the national mall, and considering the impacts of the center's usage and construction (Cummings 2005). In the site selection process for the existing plan of the memorial center, these goals and overarching vision were taken into consideration in order to achieve the best design possible. The actual 5.2 acre site, noted as Site A in the *Vietnam Veterans Memorial Center: Site Selection Study Environment Analysis*, has the ability to allow for the construction of a large underground structure without affecting existing mature tree growth or overstepping boundaries into areas designated for other memorials (Cummings 2005). The site, situated towards a corner of the National Mall, and of largely underground construction itself, is out of the dominant sightlines of the park. This area, with its proximity to the existing memorial, would easily allow for

circulation between the two sites with no more than a six minute walk from the memorial center to the formal entrance of *The Wall* (Cummings 2005). Although Henry Bacon Drive bisects the site of the memorial center and that of the memorial, traffic on this road amounts to only a maximum of 300 vehicles per hour during the middle of the day, driving at reduced speeds in the park area (Cummings 2005).

The memorial center itself is not intended to be just a somber area, but an area of learning and experience, and the fear that noise generated from the memorial center would affect a visitor's experience at the existing memorial is real. To combat this fear, the design team oriented the entrance to the underground center away from the existing Vietnam Veterans Memorial. In addition, the design team hypothesized that re-grading the site to exist four to five feet taller than current levels, while keeping the rest of the structure underground, will actually benefit the National Mall by blocking out additional traffic noise from Constitution Avenue specifically, while not taking away from the existing views (Cummings 2005). Also, this site is advantageous during construction, as its corner location allows construction crews and equipment relatively easy access without much impact on the National Mall (Cummings 2005).

Like the Vietnam Veterans Memorial Center, the most recent large-scale construction project on the National Mall, the World War II Memorial, began with goals of "creating a meaningful memorial that would be integrated and respectful without obstructing the view...to design a memorial that was strong and inspiring...that respected the Mall, and would not compete with the great central vista" (Grooms 2004, 16). The site selection itself had similar goals as that of the Vietnam Veterans Memorial Center. The American Battle Monuments Commission stipulated three main factors in

determining site selection. First, determine if an existing site elsewhere could be refitted to provide the World War II memorial so as to preserve open space. Second, determine whether the site should be isolated or removed as opposed to centrally located in a major city. Third, do not allow for development that impacts existing memorials (Grooms 2004). The World War II Memorial, after debate over the site selection, eventually became a central piece of the National Mall, visible and whole, placed on a 7.4 acre parcel of land at the eastern end of the Lincoln Memorial's reflecting pool. The original design for what would become known across the United States as *The Wall* was determined through a national competition, beating hundreds of other designs. Still, virtually every aspect of the chosen design was scrutinized, debated, and questioned during every phase of construction (Grooms 2004).

However, the construction for the World War II memorial was delayed for over six years, as legal battles over the actual site's usage ensued (Grooms 2004). Although the Vietnam Veterans Memorial Center is to be located in a corner of the National Mall, it is likely that the project will run into similar legal troubles as the World War II Memorial, as various advocacy groups and lobbyists attempt to preserve the National Mall. The World War II Memorial also was completely artificial in surface material, filling in open green space in the National Mall. The Vietnam Veterans Memorial Center, however, should be able to overcome that design flaw by incorporating an underground structure with a cover of grass and also developing manners to preserve the existing mature tree growth.

Additionally, the memorial center has to fit in with the overall goals of the National Capital Planning Commission, responsible for development in both Washington,

D.C. and the National Mall. The NCPC works to “preserve some of the country’s most iconic buildings and public places...inspiring but livable, grand but practical” (NCPC 2008). The memorial center does find itself in line with these goals, allowing for a more streamlined push to completion. Its below grade construction and unique design principles of preservation lend itself to acceptance by the NCPC. In addition, the NCPC has a memorial master plan that even pushes for the creation of more monuments and memorials to preserve historic areas within Washington, D.C. (NCPC 2008). The memorial center does allow for added significance and preservation of an otherwise unused corner of the National Mall.

The Direct Impact upon Visitors

The new Vietnam Veterans Memorial Center is designed to create a great impact upon its visitors, from both an educational and emotional perspective. The actual mission of the center, according to the Vietnam Veterans Memorial Fund website, is to “*provide faces to go with the names of the people on the Vietnam Veterans Memorial, and it will help Americans commemorate the values of all those who have sacrificed their lives for America, from Bunker Hill to Baghdad*” (VVMF 2008). *In order to accomplish this goal, the center must be able to have profound social impacts upon its visitors by complementing and supplementing the existing Vietnam Veterans Memorial.*

The Wall itself has historically been a place of great reflection and a source of great personal impact to its visitors. Almost ten percent of all Americans have visited the Vietnam Veterans Memorial, many leaving tokens of old uniforms, photographs, letters, medals, and many more items at the base of the memorial in remembrance of a fallen loved one or comrade (Hass 1998). Indeed, the Wall’s original intent was to enable a

generation of Vietnam veterans to find acceptance in a society that had once treated them with less than honorable words and actions (Hass 1998). The memorial center is intended to build upon this emotional aspect of The Wall, additionally providing a more rounded experience to its visitors through a variety of displays, including a Wall of Faces a military values display and a Legacy of Service exhibit (VVMF 2008).

The Wall of Faces will encompass either service or submitted pictures of every service member listed on the wall, intended to be displayed on the individual's particular birthday. Additionally, the Wall of Faces will provide common military service values, centered upon leadership, duty, respect, service, honor, integrity, and courage (VVMF 2008). These words will be represented emphatically in the actual display, with primary source information in the form of quotes and letters from Vietnam-era service members that represent these values (VVMF 2008). This touch to the memorial center is representative of the existing memorial's personal feel and individual attention and attachment to artifacts of the fallen. One of the complaints of The Wall is the impersonal nature of just a list of names. Just a list of proper names is not conducive to actual association with a real person, leaving the memorial disconnected from the world (Ochsner 1997). The memorial center will bring a more personal side to the Vietnam Veterans Memorial.

Also, the center will showcase many of the hundreds of thousands of items left at The Wall by visitors over the years (VVMF 2008). This tie to the original memorial really complements the current experience, augmenting the impact visitors will feel. In a tie to the comprehensive nature of the center and in spreading awareness to visitors of military service members in general, the center will also have a Legacy of Service

exhibit. This will encompass a database, complete with photographs and biographical information, of U.S. service members with service in wars from the Revolution to Afghanistan and Iraq (VVMF 2008). The memorial center effectively complements and even augments the visitor experience to the National Mall.

The Impact upon the Nation

Lastly, the Vietnam Veterans Memorial Center has the potential to create a major national impact, even to those who are not able to physically visit the site. Just like The Wall represented a turning point towards a more positive public outlook concerning the Vietnam War and veterans in general, the memorial center can keep the tide moving in this direction. The Wall, according to President Gerald Ford, “has created a constructive sentiment of reconciliation about...diverse views” (Hass 1998, 108). The memorial represented part of America’s healing process regarding the war, as “Vietnam divided American society...even when the war came to an end...Veterans returned home with little fanfare, and there was initially little recognition of their sacrifices; they were even reviled...the construction of the Vietnam Veterans Memorial...seemed to change all this” (Ochsner 1997, 159). The construction of an augmenting memorial center further recognizes the change in American sentiment regarding wars and warriors in the past thirty years. With the focus of the center on Vietnam while simultaneously incorporating a timeless aspect of tribute to all of the country’s veterans, the center is able to inspire a nation-wide impact.

Additionally, the center may lead to programs that provide education and awareness throughout the country. The Wall combined with oversight from the Vietnam Veterans Memorial Fund led to “The Traveling Wall” and speakers and mobile displays

that travel the country spreading the original message of the Vietnam Veterans Memorial (VVMF 2008). The memorial center could lead to the sponsorship of similar traveling programs that impact the nation outside of just the physical site development. Rarely does a site selection, design, and land use project have such an opportunity to create a felt impact across an entire nation, but the Vietnam Veterans Memorial Center certainly has that potential.

CONCLUSION

The design of the proposed Vietnam Veterans Memorial Center does accomplish the goals of my thesis. Its contributions to the field of land use planning are extensive and unique. From its location and role as a supplement and complement to many of the most valued memorials and features of the National Mall, the center does a great service in linking patterns of development and incorporating contemporary construction with an existing landscape, much in the same way as the World War II memorial. Additionally, this project provides a better understanding of high visibility construction areas and the impacts of war memorials specifically upon societal norms and cognitive structures regarding the U.S. military. The Vietnam Veterans Memorial Center has the ability to preserve and enhance the existing Vietnam Veterans Memorial and National Mall, enhance park visitor experience, and impact the fabric of social identity at a national scale.

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Greensburg, Kansas: A Model For Green Living

RACHAEL BREINLING

Introduction

In May 2007, a class five tornado leveled 95% of Greensburg, Kansas, a small rural town in the southwest corner of the state. Besides destroying virtually all buildings and infrastructure, the tornado temporarily devastated the morale of Greensburg's citizens after the death of 11 tornado victims and the total destruction of their homes. The inhabitants, however, did not allow the disaster to destroy their sense of community; instead, they embarked on a path of green reconstruction techniques, transforming tragedy into opportunity. With input and hard work on the residents' behalf, the city administration chose to rebuild Greensburg to meet the latest green standards and generated long-term objectives and a comprehensive master plan for thorough guidance. As a result of these measures, the city of Greensburg is on the road to becoming a revolutionary model of green development and an archetype of 21st-century green living ideals.

Background

According to John M. Levy (2009), sustainable development is a relatively new concept on the world stage, only first referenced in a 1987 report by the World

Commission on Environment and Development. The commission defines sustainable development as follows (p. 282):

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

This definition can be interpreted quite broadly, and perhaps that is one of its strengths. Accordingly, general agreement has emerged on three overall goals of sustainable development: environmental quality, social equity, and economic development (p. 282). Although widely accepted, the latter two elements do not generally play as strong of a role in the concept of *green* development, which is my primary focus of study. In this specific sector, environmental sustainability trumps economic and cultural considerations. Under its newly formulated plan, Greensburg attempts to accommodate social and economic components, but I will be concentrating predominantly on its environmental planning principles in this report.

Based on my study of Greensburg, I have noticed that builders and researchers tend to agree on the tenets and resulting benefits of green development. The basic definition includes consideration of community-wide or regional environmental implications of development, as well as site-specific green building concepts. This incorporates city planning, environmental planning, architecture, and community building. Most planners originally derive green strategies from the wide-ranging volume released by The Rocky Mountain Institute, entitled *Green Development: Integrating Ecology and Real Estate* (<http://www.rmi.org>, 1998). Greensburg is in the midst of launching a green reconstruction agenda, and I will be analyzing how well it is adhering to green guidelines and producing an environment sustainable for future generations.

Method

To prove that Greensburg is an archetype of 21st-century green living ideals, I heavily relied on Greensburg's comprehensive master plan and long-term community recovery plan. The master plan addresses downtown layout and circulation, walkability, energy efficiency and renewability, the carbon footprint, natural corridors, and green building. These documents are important because they reflect the values of the community and were composed by individuals genuinely concerned about their city. In conjunction with what I have learned in class, I evaluated the plans under Levy's criteria for "good" urban design and components of smart growth principles (which include creating walkable neighborhoods, fostering an attractive community, preserving natural beauty and open space, and taking advantage of compact building design).

To supplement these firsthand sources, I also gathered reports delivered by leading city officials and organizations with a significant role in Greensburg's reconstruction. For example, the Select Committee on Energy Independence and Global Warming interviewed Steve Hewitt, the Greensburg city administrator, in regards to the city's motives. He, like many fellow residents, is focused on transforming Greensburg under the pretense that they owe their children the concepts of green design. It is an extremely forward-thinking mindset, one which garnered the support of Daniel Wallach, the director of Greensburg Greentown. In his radio interview on GreenTalk, Mr. Wallach reports on the status of the actual building process and the structures that are currently being assembled, many of them to meet specific certification standards.

In addition to these dedicated men who give a strong voice to Greensburg, BNIM (Berkebile Nelson Immenschuh McDowell) Architects is the organization directing the

style efforts to rebuild Greensburg as a model green community. The group initially became involved in May 2007 and has contributed in writing the Comprehensive Master Plan Phases I and II, the city's LEED (Leadership in Energy and Environmental Design) Platinum Resolution, and the layout for Greensburg City Hall. It holds an integral responsibility in the progress of the built environment.

Analysis

To best understand and monitor Greensburg's adherence to green development, it is most ideal to approach its progress in a piecemeal fashion. The following subsections address Greensburg's energy-use plans, green building designs, and various smart growth principles as named above.

Energy

*There is definitely a future here for my family. I know I'll always come back here because...this is my home.*⁶⁶

- Kendra Friesen, Greensburg resident and high school senior

Greensburg is on track to becoming an energy-conscious town in terms of energy efficiency and renewable resources. It has partnered with the National Renewable Energy Laboratory (NREL) to explore a means of power that does not threaten the stability and natural balance of the ecosystem. With NREL's fervent assistance, Greensburg adopted a comprehensive energy strategy that focuses first on energy efficiency to reduce demand and then on energy generation. At some point in the near future, the town will be powered by 100 percent renewable sources, and public projects will be established to the U.S. Green Building Council's LEED Platinum standards, the highest achievable certification (Master Plan, 2008, p. 81). Furthermore, all structures will attain 42 percent energy efficiency above code, a level not yet implemented by any

⁶⁶ All quotes from video of Steve Hewitt interview.

other city in the United States (p. 81). Regarding the area's renewable electricity strategy, wind power installed near town and owned by the city will provide between 3MW and 4MW of energy, and 1.5MW of bio-diesel power will back up these supplies (p. 86). In order to encourage private electricity generation via individual wind turbines (or other means), the city must undergo alterations in codes and zoning policies to allow greater freedom in constructing power-generating devices.

Greensburg is also largely concerned about reducing its carbon footprint, or the amount of carbon dioxide released into the atmosphere. It is the most abundant greenhouse gas emission and tends to receive the most attention; emitting more than the environment can absorb is linked to increasing global temperatures. The city produces the most carbon dioxide via energy generation, natural gas use, and transportation. By targeting these elements, the city hopes to dramatically lower its carbon footprint (p. 97). As previously discussed, Greensburg is already on course to renewable electricity, with carbon-free power replacing coal-based sources. If electricity is 100 percent renewable, converting natural gas heaters to electric systems becomes an excellent method to decrease natural gas use in Greensburg. Since the burning of gasoline is responsible for the majority of transportation carbon emissions, incorporating high efficiency flex fuel or alternative fuel vehicles will stem emissions in this realm.

Green Building

Greensburg has the opportunity to be the first model green community in the world.

- Daniel Wallach

In 1994, the United States Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design rating system. Maturity of the system

took four years and culminated in a 1998 test version which was enormously successful (Kibert, 2005, p. 64). Since this time, USGBC has introduced several new versions and variants of the original LEED layout, and the ratings continue to adapt for existing buildings, homes, and new construction (p. 69). LEED-NC (New Construction) utilizes a point system to award a Platinum, Gold, Silver, or Certified rating based on how many preset criteria in several categories the building successfully addresses. This building assessment technique is highly recognized throughout the country, and with Greensburg adopting a LEED Platinum resolution, the city is leading its residents, business owners, and the entirety of rural America in sustainable design.

Buildings designed within Greensburg's limits fall under the guidelines of a sustainable master plan. Each structure, to include its internal systems and materials, reflects an architectural style that is built to last 100 years or more (p. 55). Most often, building material has its roots in locally harvested and/or manufactured goods, and projects maintain functionality while minimizing land area and resources. To promote healthy indoor environments, buildings feature special daylighting attributes to diminish reliance on electricity and to invite the positive aspects of the outdoors. Flooring, paints, sealers, and furniture, among other interior items, contain low toxicity levels, and numerous windows allow superior fresh air circulation (p. 56). The city's various projects are located in an area that fosters a walkable community centered on a civic core. These types of characteristics coupled with Greensburg's sustainable layout all contribute to its goals of being a model community.

Green Sites and Landscaping

*We're building a better town. We're building a better future.
- Mary Merhoff, Greensburg resident*

Land is a valuable and essential resource, so its appropriate allocation is of prime consideration in the development of a high-performance sector such as Greensburg. The city is rebuilding on land that was previously utilized instead of an untouched region that is especially pertinent from an ecological point of view. Tree replacement on this land cover is a critical component of Greensburg's master plan because healthy tree coverage improves the quality of human life, expands energy efficiency, and negates many environmental pollutants. In fact, Tim McDonnell, Kansas State Arborist, has written grants to replace the trees lost to the tornado, and it is his goal to restore the appropriate types to their proper places (p. 111). The community also enjoys a variety of outdoor recreational opportunities, and conserving the natural landscape is the first step in ensuring plots for walking trails and other leisurely activities.

One last important element of the city's design entails effective stormwater management. According to Kibert, one of the functions of green building is to address the issue of stormwater by protecting ecosystems and the permeable character of the landscape (p. 160). Greensburg is employing an integrated natural-systems control method to facilitate the remediation, filtration, and infiltration of stormwater back into the environment (Master Plan, p. 137). The system's responsibility is to ensure that runoff is as pure as possible before returning to the natural aquifer. To manage rainwater in an urban setting, Greensburg's downtown streetscape uses decorative planter zones to capture runoff (p. 137). With the smart growth principle of preserving green space achieved, the small town is strengthening its bond to green living.

Urban Design

How well does Greensburg meet Levy's criteria for good urban design? I examined its master plan for evidence under each component:

1. Unity and coherence
 - The uniting factor in Greensburg's development is its resolution to build according to the latest green standards and become an energy independent community. All residents share environmental concerns and the desire to diminish their ecological impact.
2. Minimum conflict between pedestrians and vehicles
 - Neighborhoods boast a pedestrian-centric layout rather than focus on vehicles. Paths connect houses in an aesthetically pleasing way. It is safe for children to walk to and from school, and all major downtown sites are within close walking distance of one another.
3. Protection from rain, noise, wind, and so on
 - Little can be done to stop a major tornado from ravaging the countryside. Greensburg is challenged by virtue of its location in the most tornado-prone region of the country. However, the city is becoming a storm-ready town through advance planning education and awareness. Designers are improving the wind resistance of structures as well as erecting storm shelters to save lives in the event of a future major storm.
4. Easy orientation for users
 - Greensburg is easy to navigate simply because of its size. One is able to walk the entire distance of the city at a leisurely pace in about 20 minutes. Only three major streets dissect the area. Business and commercial districts are highly visible and will attract the most visitors.
5. Compatibility of land uses
 - In Greensburg one notices a rich spectrum of commercial, industrial, and residential land uses. The two former zones are found largely within the very nucleus of the environs while most people reside along the periphery. It is the decision of the planning commission to enhance land use compatibility, but generally planners agree on the richness and walkability that results from a successful fusion of the three sectors.
6. Availability of places to rest, observe, and meet

- The city's streetscape contains generous sidewalks, attractive lighting, street trees and other plants, and a variety of street furniture to provide a welcome atmosphere. Its numerous parks also enhance the number of gathering places.
7. Creation of a sense of security and pleasantness
- I am hopeful that after the town is reconstructed everyone will be able to share in a pleasant community. With as much attention as Greensburg is receiving from the media and external organizations, it will likely experience new waves of tourism once the infrastructure is revitalized. There has never been a past problem with major crime. The only obstacle I foresee is the creation of housing for people of all income levels.

Conclusion

Greensburg highlights green living as an attainable and realistic standard for smart and sustainable built environments. In the past, lack of direction, energy, and optimism have prevented communities from attempting such a course of action, but Greensburg's techniques will aid in convincing other cities that many obstacles associated with green values can be overcome. It took advantage of a unique opportunity to design in an unconventional and progressive manner by adhering to smart growth principles. Developers are in the process of preserving open space with a special restorative design, building compact structures under the highest LEED standards, addressing issues of renewable energy, and giving the city a strong sense of place. Greensburg is *our* model of 21st-century green living ideals, and one can only hope that the passion of its residents will spark an even greater trend throughout the world.

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EV 485: Special Topics in Geography and the Environment: Population Geography Minicourse

Course Director: COL Laurel Hummel



This course explores an advanced topic in Human and Regional Geography, Environmental Geography, Environmental Science, Environmental Engineering, or Geospatial Information Science. Specific subject matter will vary with the expertise of the visiting professor or senior faculty member conducting the course.

Selected Papers from Spring, 2009

“Indian Immigration: How is it Different?” by Nate Stratton

“Fertility and Major Religions” by Nicholas Lewis-Walls

“Will Bare Branches Float Best?” by Thomas Comer

Indian Immigration: How is it Different?

Nate Stratton

When an average American thinks about immigration, he or she usually pictures Mexicans sneaking across the southern border looking for low end jobs in the construction or agriculture industries. While the reality of this stereotype constitutes nearly three-fifths of undocumented immigration into the United States, a lesser known but potentially more relevant form of movement is occurring from more developed and educated states like India and Vietnam.⁶⁷ While there are fewer of these immigrants than their Central American counterparts, their arrival in the United States is having a more direct influence on the jobs that are typically reserved for “native” Americans. While these new Americans are typically attempting to obtain goals traditionally held by immigrants, such as the ability to earn a better salary, their education allows them to compete for jobs usually held by more established Americans citizens in the health care and information technology sectors.⁶⁸ Foreign students are also coming to America to participate in graduate programs traditionally held by American students.⁶⁹ Demographers and economists alike are baffled by this immigration phenomenon: why are these immigrants leaving developed homelands to work in the United States? What draws them to the American job market? In order to examine this trend, analysis of the

⁶⁷ Jeffrey Passel, *Mexican Immigration to the US: The Latest Estimates*, <http://www.migrationinformation.org/feature/display.cfm?id=208> (accessed April 9, 2009).

⁶⁸ Ruben Martinez, *The New Americans* (New York: The New Press, 2004), 187.

⁶⁹ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 17.

immigrants' ages, marital and family status, education, and occupations as compared to those of traditional immigrants is needed. I believe that further study of this phenomenon will reveal that these well qualified immigrants are coming to the U.S. for basically the same reason as Mexican immigrants: to improve their quality of life through higher salaries, but in fields more suited to their abilities.

In their study of international migration, the writers of *The New Immigration* claim that most immigrants, namely ones from Mexico, move because their quality of life can be vastly improved in a new country. They also claim that what pulls migrants to new territories is the inequality in demand for labor which is present between the home state and the new state.⁷⁰ While both of these assertions are particularly true of Mexican migrants, the motivations that drive more qualified immigrants such as Indians are slightly different. While it is true that Indian skilled laborers can improve their standard of living by moving to the U.S., Bhatia argues that many Indian workers came “determined to go back to India to ‘serve’ the needs of their country” but wound up staying because of opportunities in the American workforce.⁷¹ This opportunistic attitude that drives Indians to stay in the U.S. is what differentiates them from migrants of lower skill levels. Instead of immigrating out of necessity, they move because their superior education compared to other immigrants allows them to excel abroad, and they stay not because they have nothing to go back to but because of the tremendous opportunities available to them in the U.S. Well established Indian enclaves, such as the neighborhood of Jackson Heights in New York City, also provide Indians with a place to start and be

⁷⁰ Marcelo Suarez-Orozco and others, ed., *The New Immigration* (New York: Routledge, 2005), 21.

⁷¹ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 16.

welcomed in a foreign land.⁷² This can encourage otherwise reluctant Indians to leave the comfort zone of their native land to seek out better opportunities abroad and mitigates the intimidating task of being a stranger in a strange land. As a rule, Indian migrants meet many prerequisites that enable successful immigration, one of them being the ability to find and hold a steady and well paying job.

An examination of recent Indian immigrants' occupations reveals that as a group they are, indeed, highly educated with many higher level occupational specialties. According to the Migration Information Source, three-quarters of Indian immigrants have at least a bachelor's degree.⁷³ This seems to be the key facet of Indian immigrants that makes them different from Mexican migrants. Their high education level allows modern Indian immigrants to belong to "exclusive professions such as medicine and engineering" that put them in the "company of some of the most elite members of American society" according to Sunil Bhatia, a scholar of Indian human development.⁷⁴ Even female immigrants who did not work were still likely to have advanced degrees, including those who had elected to take care of their children full time. This trend of occupation in higher skilled jobs suggests that Indian immigrants are not coming to the U.S. as destitute, opportunistic laborers and implies that they gained advanced education in India, which I will discuss later. The Indians' ability to hold jobs in these generally high salaried sectors which have accelerated opportunities for promotion for the educated and motivated Indian workforce tends to make immigration and eventually permanent assimilation into the American culture attractive for educated, underpaid workers in India. The necessary

⁷² Sandhya Shukla, *India Abroad* (Princeton: Princeton University Press, 2003), 78.

⁷³ Aaron Terrazas, *Indian Immigrants in the United States*, <http://www.migrationinformation.org/USfocus/display.cfm?id=687> (accessed February 16, 2009).

⁷⁴ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 15.

ingredient for employment in these skilled fields, of course, is education, which Indians tend to have in spades before they immigrate to the United States.

Unlike their Central American counterparts, Indian immigrants tend to hold degrees in advanced fields before they ever leave their home country. This higher education affords them the success they typically achieve in America through their ability to hold large numbers of jobs in the engineering and medical fields. Many of the thirty-eight Indian employees at an information technology firm interviewed by Sunil Bhatia reported that they had received a “good science and engineering education” at places like the Indian Institute of Technology (IIT), which sends two-thirds of its graduates to jobs abroad. One IT graduate admitted that after his training in India, “graduate school in America was easy for him”.⁷⁵ Not only are engineers and technology protégés emerging from India, many medical professionals are also leaving India to flourish in the U.S. Bhatia notes that huge numbers of Indian doctors immigrated with degrees in hand and take the Educational Council for Foreign Medical Graduates exam which allows them to work in American hospitals, with as many as 2,000 Indian doctors each year preparing to take the exam.⁷⁶ Even Indian women, who typically do not immigrate unless they already have husbands with steady jobs in the U.S., tend to hold “educational skills that could be used to obtain a good job in the United States”.⁷⁷ The Indian migrants’ education at all levels signifies the attitude of economic betterment that drives Indian motivation to immigrate. This evidence of Indian immigrants’ advanced education indicates that Indians are not coming to America because of abject lack of opportunity in the homeland,

⁷⁵ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 16, 17.

⁷⁶ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 15.

⁷⁷ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 16.

but rather because of the chance to earn top dollar as professionals in a well established economy. However, in order for movement to take place, immigrants must be in an appropriate window of age, marital, and family status, which I will examine next.

As all demographers and scholars of migration well know, certain populations of people are more likely to migrate than others. For instance, a single, unemployed male in his prime earning years is much more likely to migrate than an older married woman with two children. According to the Migration Information Source, the majority of Indian immigrants fit the former description. Three-quarters of Indian immigrants are in fact of working age, more than half are men, and the population as a whole is more likely to hold down a job than other foreign populations.⁷⁸ As for marital status, Indian men typically move to the U.S. and find a steady job before being “set up” with a wife at home by their families. These men typically return to India for marriage and then take their new wife back with them to the U.S., where they start a family.⁷⁹ This trend of “move now, marry later” encourages migration because it allows prime candidates for immigration to move to America without feeling the pressure of finding a wife. They believe that marriage will come later and thus are free to migrate during their prime economic opportunity. These demographic statistics imply that Indian migrants are upwardly mobile workers who are moving to the United States to earn more money rather than provide for a better life for their families. This description jells with what we have previously discovered about Indian migrants, that they are, as a group, no nonsense individuals motivated by the opportunity to excel beyond what their native economy allows them to achieve with their superior education and technical skills. As evidenced by the fact that the Indian

⁷⁸ Aaron Terrazas, *Indian Immigrants in the United States*, <http://www.migrationinformation.org/USfocus/display.cfm?id=687> (accessed February 16, 2009).

⁷⁹ Sunil Bhatia, *American Karma* (New York: New York University Press, 2007), 18.

immigrant population has doubled in five states between 2000 and 2006, Indian nationals are flocking to the United States because of the success they enjoy as health care professionals, engineers, and information technology specialists due to their high qualifications prior to migration to America.

This examination of Indian immigration, which typifies the current model of developed states whose educated citizens leave for better paying jobs abroad, reveals the contrast between its immigrants and those from states whose economic and developmental status are lower, such as Mexico. The main difference between Indians' motivations for immigration and Mexicans' motivations is education level. This is what allows Indians to come to the U.S. as an alternative rather than as the necessity that drives Mexicans to migrate. Even though both populations immigrate as a means of improving their level of income, Indian immigrants have options and opportunities upon arrival that the Mexican workforce, nearly two-thirds of whom have not completed high school, does not have.^{80 81} This is because Indians arrive in America already holding advanced technical degrees that make them candidates for jobs in the more attractive and higher salaried professions such as healthcare, engineering, and information technology, whereas Mexicans are forced to hold jobs rejected by “native” Americans that require no education, such as “construction, hotel and restaurant jobs...agriculture, and manufacturing”.⁸² The contrast between Indian immigration and the Mexican variety is also deepened by the demographic makeup of the migrants. The ratio of female to male

⁸⁰ Ruben Martinez, *The New Americans*, (New York: The New Press, 2004), 187.

⁸¹ *Labor Market Characteristics of Mexican Immigrants in the United States*, Center for Immigration Studies, <http://www.cis.org/articles/2001/mexico/labor.html> (accessed April 9, 2009).

⁸² Nina Bernstein, *Most Mexican Immigrants in New Study Gave Up Jobs to Take Their Chances in U.S.*, *The New York Times Online*, December 7, 2005, <http://www.nytimes.com/2005/12/07/national/07immig.html> (accessed April 9, 2009).

Mexican immigrants is higher, signifying a movement of families rather than single workers. The high number of Latino children with foreign born parents also indicates that Mexican immigrants are driven more because of a desire to improve their families' living conditions than because of a sole desire to maximize income.⁸³

In short, Indian immigrants migrate for reasons similar to those of immigrants from developing states, but are encouraged to dwell and thrive in America because of their difference in motivation and education. Although migrants from developed and educated regions such as India also migrate to earn more wages, the opportunities they are given upon arrival place them in a much better position than less skilled workers; this encourages future immigration and better allows them to assimilate into the native American culture.

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Fertility and Major Religions

Nicholas G. Lewis-Walls

There is no denying that in certain areas of the world, population growth, or lack thereof, is a driving factor behind many pressing issues. From resource availability to political representation, the growth of a population has far ranging impacts and consequences. Many have tried to answer the pressing question: what makes people reproduce? What forces drive an individual's decision to bring a child into the world? Governments have tried mixtures of legislation, incentives, and harsh punishments in order to encourage certain levels of fertility. Scientific research has gone to lengths identifying the propensity of women to have children in certain areas in the world, providing wonderful amounts of statistics and evidence and fact. For example, economic studies have shown the profitability or inefficiency of adding another unit of labor to global, regional, and local labor pools. However, none of the aforementioned endeavors looked to a more philosophical, or perhaps, spiritual reason why fertility rates exist at their current levels. Religion is an overriding factor that must be taken into consideration. Religion is a driving factor for day-to-day actions and decision making across the world. How, then, does religion affect fertility rates? Depending on the particular religion, the set of group beliefs, values, and dogma can have a great impact in determining how the adherents view the issue of fertility. This paper will look at the views and teachings of the five major world religions, Islam, Judaism, Buddhism,

Hinduism, and Christianity, concerning fertility, and the implications of the resultant fertility rates in parts of the world.

Islam, a monotheistic, universalizing religion, has risen in prominence to the second most common religion in the world despite a later start than many of the main modern religions. Unlike Christianity, everything from the theological to the political is encompassed by Islam, including all parts of human activity in both the private and public sectors of life.⁸⁴ Laws and guidance are set forth through the Five Pillars of Islam, and then encoded further through the Qur'an and teachings of the prophet Muhammad, leading to the Sharia, or religious law. Sharia is the driving force behind many of the more devout Muslim states or communities. At the most basic level, Islamic law treats sex as an act to be carried out between a married couple, and, though viewed as an enjoyable endeavor, sex serves as a means to fulfill a duty to bring about offspring. The Qur'an does not give any specifics as to the relative importance of intercourse in the marriage: as a function of procreation or just of unifying two "elements of humanity."⁸⁵ However, the fact remains that certain institutions and understandings of Islam bring about different interpretations of fertility. For example, in Saudi Arabia, Islamic influence in governmental policy has led to high fertility rates, while since the 1979 revolution, Iran has adopted an approach to legitimize family planning programs, bringing a decline in fertility.⁸⁶ Within the predominately Muslim states, fertility rates vary drastically. Albania, Algeria, Tunisia, Iran and Turkey all fall below the

⁸⁴ Vincent Houben, "Southeast Asia and Islam," Annals of the American Academy of Political and Social Science 588 (2003): 149.

⁸⁵ Zulie Sachedina, "Islam, Procreation and the Law," International Family Planning Perspectives 16.3 (1990): 108.

⁸⁶ Kevin McQuillan, "When Does Religion Influence Fertility?" Population and Development Review 30.1 (2004): 42.

replacement fertility rate of 2.1 children per woman, while fertility remains under three children per woman in countries such as Morocco, Qatar, Brunei, Egypt, and Jordan.⁸⁷ In fact, out of the 15 states with fertility rates over six children per woman, only six are predominately Muslim.

Though only accounting for the religious beliefs of a small percentage of the world's population with almost 14 million adherents, Judaism nevertheless is a major factor in the decision making process of at least one strategic and relatively important state – Israel. A religion with a long history, Judaism's four thousand years of existence has brought about many sects, subsets of beliefs, and a distribution of Jews living across the world. However, many generalizations and similarities in the various subsets of Judaism can be made regarding the subject of fertility. Judaism preaches 613 mitzvahs, or commandments and obligations that Jews are meant to follow to lead a holy life. One of these mitzvahs deals specifically with fertility. This mitzvah is to “be fruitful and multiply (which, at a minimum, consists of having two children, one of each gender).⁸⁸ Under Jewish law, sex is not looked upon as “a necessary evil for the sole purpose of procreation.”⁸⁹ In fact, the most important reason for sex in Jewish teachings is just to strengthen the relationship and bond between a husband and wife.⁹⁰ Within Judaism, views on contraception and abortion vary between Orthodox Jews and less conservative groups. However, evidence from the United States in the 1930's shows that contraceptives, family planning, and other methods of birth control were used in a

⁸⁷ Jennifer Johnson-Hanks, "On the Politics and Practice of Muslim Fertility," Medical Anthropology Quarterly 20.1 (2006): 15.

⁸⁸ Rich, Tracey R. "Judaism 101: Kosher Sex," JewFAQ, 17 February 2009 <http://www.jewfaq.org/sex.htm>.

⁸⁹ Ibid.

⁹⁰ Ibid.

relatively greater proportion by Jews than other religious followers of the era.⁹¹

Presently, contraception is acceptable as long as the basic mitzvah regarding procreation is met. Abortion is also generally allowable. According to most modern interpretations of Judaism, an unborn child represents a potential life, which doesn't hold value equivalent to that of a living being.⁹²

Based on the teachings of Siddhartha Gautama four centuries BCE, Buddhism remains the major driving religion throughout Asia, with hundreds of millions of followers. Buddhist teachings center around the Four Noble Truths: that life ultimately leads to suffering; suffering is caused by attachment and cravings; enlightenment is the end of suffering; and reaching enlightenment can be accomplished by following the teachings of the Buddha. The last of the Four Noble Truths – the road to enlightenment – is further given as the Eightfold Noble Path, which sets out the basics for living a good life. The concept of the Eightfold Noble Path is important in understanding, then, the views of Buddhism on fertility. Although Buddhism does speak against sexual misconduct and deviation, specific guidance as to actual practices are lacking. There is no reproductive agenda aspect involved in Buddhism at all – in fact, marriage itself is a civil matter in Buddhist states, and is not connected to any spiritual or religious institution.⁹³ In fact, most of the real guidance, or lack thereof, concerning the Buddhist view of sex comes from vague teachings from the Buddha.

The Buddha was in fact a social engineer's worst nightmare...he did not waste a word of condemnation on non-procreative sex...not because he disapproved of sex or babies, but in an era when a non-celibate usually

⁹¹ Calvin Goldscheider, "Fertility of the Jews," Demography 4.1 (1967): 198.

⁹² Rich, Tracey R. "Judaism 101: Kosher Sex," JewFAQ, 17 February 2009 <http://www.jewfaq.org/sex.htm>.

⁹³ Winston Higgins, "Buddhist Sexual Ethics," BuddhaNet Magazine, 17 February 2009
<http://www.buddhanet.net/winton_s.htm>.

ended up with many children to feed, clothe and house...celibacy made a lot of practical sense for many people with a spiritual urge.⁹⁴

In addition, the vagueness of dogma governing fertility issues leads to variations in the acceptability of use of contraceptives or abortions. Although some of the stricter sects of Buddhism reject abortion, most Buddhists in Thailand, for example, agree with a “middle path” that demonstrates allowance of abortion in more circumstances than currently allowed by Thai law.⁹⁵ The Buddha certainly did not concern himself with putting forth much information on reproduction. This lack of fertility guidance in Buddhism does not allow for an accurate predictor of fertility rates for predominately Buddhist states and areas. However, looking at the predominately Buddhist states of Bhutan, Singapore, Sri Lanka, Thailand, and Cambodia as examples, fertility rates are found to be 2.38, 1.09, 1.99, 1.65, and 3.04 births per woman, respectively.⁹⁶ These average to be around the replacement mark of 2.1 to 2.2 births per woman, not indicating a strong push for procreation on the basis of religion.

Most often associated with India, Hinduism in fact is the third most commonly practiced world religion, with a history dating back to nearly three thousand years BCE. Hinduism basically has five common themes throughout its various sects. These themes include karma, the feeling that actions and reactions are linked; dharma, a sense of ethics or duties imposed in order to live a good life; the concept of a life cycle that involves rebirth/reincarnation; yoga, the paths by which Hindus lead their lives; and moksha, similar to the Buddhist Nirvana – a state of spiritual enlightenment that is achieved at the

⁹⁴ Ibid.

⁹⁵ Andrea Whittaker, "The Struggle for Abortion Law Reform in Thailand," Reproductive Health Matters 10.19 (2002): 46.

⁹⁶ Central Intelligence Agency, CIA World Factbook, 9 April 2009, 10 April 2009
<<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html>>.

end of the reincarnations and life cycle.⁹⁷ To these ends, Hinduism – like Buddhism – is relatively vague on its treatment of fertility. Hindus themselves focus their lives around the four aims of Hinduism, of which Kama involves a “gratification of the senses; pleasure; sensual, sexual, and mental enjoyment.”⁹⁸ This is the most direct approach Hindu teachings take towards the issue of sex, and from this perspective, Hinduism leans away from just viewing sex as a means of procreation, but rather as another means to pursue a good life. The best examples of predominately Hindu states in the world are India and Nepal. India’s fertility rate of 2.72 births per woman and Nepal’s rate of 2.64 births per woman show the propensity of Hinduism to not simply view sex as a utility, even in places that aren’t considered completely developed.⁹⁹

The most common religion in the world, Christianity’s teachings reach nearly a third of the world’s populace, through various sects and subsets of the faith. Encompassing Catholics, Protestants, and dozens of other sects, generalizations about Christianity as a whole are hard to make. However, many of the major sects share common teachings and feelings regarding the issue of fertility and sexuality. For most of Christian history, Christianity was more or less united in the belief that sexual intercourse was reserved for marriage, and the purpose of this act was procreation. In Genesis 38: 9-10, Onan was struck down by God because he “spilt his seed upon the ground” by practicing coitus interruptus instead of fulfilling his duty to get a woman pregnant.¹⁰⁰ From Genesis 1:28, God tells Christians to "Be fruitful and multiply, and fill the earth,

⁹⁷ B.A. Robinson, Hinduism: A General Introduction, 26 August 2005, 17 February 2009 <<http://www.religioustolerance.org/hinduism2.htm>>.

⁹⁸ Ibid.

⁹⁹ Central Intelligence Agency, CIA World Factbook, 9 April 2009, 10 April 2009 <<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html>>.

¹⁰⁰ Lockman Foundation, “The New American Standard Bible.” Bible Gateway Online, 1995. 17 February 2009 <<http://www.biblegateway.com/passage/?search=Genesis%201;&version=49>>.

and subdue it; and rule over the fish of the sea and over the birds of the sky and over every living thing that moves on the earth.”¹⁰¹ However, in recent times, splits and schisms in the faith have developed differing views on fertility and sexuality in marriage, as well as contraception and abortion. Christianity does view procreation as an important means of continuing the faith, although in predominantly Christian states, there isn't as visible a fertility push as in countries of other ethno-religious backgrounds. These countries may be predominately Christian but nonetheless secular, and seem to be influenced more heavily by non-religious factors.

Religion certainly provides a great impetus for how people live their lives. Some religions, like Islam, Judaism, and Christianity, attempt to give a detailed outline for the conduct of life, providing for strict guidelines in many areas, including that of fertility. Buddhism and Hinduism take a differing role, approaching procreation, sex, and fertility from an extremely vague and ambiguous standpoint. However, in terms of areas like fertility, religion today plays a decreasing role as a driver of action. In many parts of the world, religion as a means of producing, urging, or inspiring reproduction or procreation often now takes a back seat to more economical and secular issues. Secular governments sometimes institute policies that countermand conventional religious guidelines, while some theocratic states, even if adherent to the same religion, produce legislation that seems contradictory or of a different aim. It is important to look at the religious philosophies that shape how individuals and groups reproduce in regard to the historical patterns of population growth and implications for the future. Coupled with an understanding of medical, economic, environmental, political, and others social factors

¹⁰¹ Ibid.

behind fertility, religion can help determine a state or group's overall fertility rate.

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Will Bare Branches Float Best?

Thomas Comer

The opening ceremonies of the 2008 Olympics in Beijing China has been referred to by many as China's coming of age party - the world being the guest. In many ways this is true. A state does not get to host the Olympics unless it is economically viable, politically respectable, and socially stable. However, China, though ever improving its world status, is not the utopian oasis that its 2,008 in sync drummers would suggest. Like all other states, China has its fair share of those who want to get in, but it also has its fair share of those who want to get out. What makes emigration from China such an interesting topic is that China's "fair share" means some percentage of over 1 billion people, which in essence makes Chinese emigrants a uniquely large share of the world's transient population.

The world's quintessential migrant is a working aged single male. This stereotype perfectly coincides with China's excess male population as established in Valerie M. Hudson and Andrea M. Den Boer's, "Bare Branches: The Security Implications of Asia's Surplus Male Population." Bare branches is a phrase coined by the situation in China to describe their excess male population. It is the contention of Hudson and De Boer that a large male age cohort, with a smaller corresponding female age cohort will translate into a lack of wives. Thus, such a society will be devoid of the stabilizing effects of the traditional family structure, and thereby more prone to radical politics, ideologies, and general instability (De Boer 2005, 21). In China, Hudson and De Boer suspect that "by 2020, 12-15 percent of their [China's] young adult males will not be able to 'settle down'" (De Boer 2005, 21). In light of such an idea, one must ask what does a society do

with a surplus of men? A logical answer is to get rid of them. However, because the Bare Branches generation has already been born, antinatalist policies such as legal abortion and the one child rule (which some may argue caused the gender discrepancy to begin with) will not work. Thus a logical answer is that surplus men migrate from their homes to new places in order to find brides.

Therefore, will there be a relationship between the ranks of Overseas Chinese and Bare Branches? Or, more succinctly, Will Bare Branches Float Best? I posit that the answer is, no. Though the correlation makes perfect sense, the reality is that trends in emigration from modern China have changed in the past half century, and continue to change to this day. In order to understand the impact of these emigration trends on both the Bare Branches and the so-called Overseas Chinese, one can examine who the overseas Chinese are- how many there are, where they live, and what they do. When these questions are answered both in the present and extrapolated into the future, only then may one conclude that the bare branches are less likely than other Chinese to migrate overseas.

In 1991, the Singapore Chinese Chamber of Commerce World Chinese Entrepreneurs Convention began with the chairman stating, “Today, there are some twenty-five million ethnic Chinese outside of China, the bulk of whom are concentrated around the fast-growing Pacific Realm” (Ong 1997, 4). The specific term given to ethnic Chinese living abroad is “Overseas Chinese,” and it is upon this group that this paper shall focus. However, there is a vagueness that surrounds the term Overseas Chinese. Evidence of this vague term is given by Lea E. Williams (1966) in the statement that:

The Chinese overseas have been regarded by recent Chinese governments as full

members of China's political family. Until a short time ago the expatriates and all their descendants through the male line over infinite generations were officially classified as citizens of China. Every Chinese census or attempt at population count tallied the Chinese abroad as well as those within the state frontiers of China. (4)

This statement raises concern about the definition of the Overseas Chinese because it establishes a basis for inaccurate data. Essentially, at the time of Williams' writing in 1966, Overseas Chinese may not have been counted as Chinese emigrants (thus not accounted for in net migration rates). The statement does mention one interesting point that may provide a clue into the possible emigration of bare branches. If Chinese ancestry is traced solely through the male, then the mother's nationality does not matter. Whereas this may simply be evidence of the traditions of a paternalistic society, it may also be evidence that there is no negative stigma attached to men marrying non-ethnic Chinese. Regardless, the reality is as Williams states:

No definition can be unfailingly sharp or concise because the decision on whether or not a man or group is overseas Chinese is made by governments, both Chinese and foreign, by the larger societies alongside and within which Chinese settlers live, and by innumerable individuals" (1966, 5).

It is the individual which Mary F. Somers Heidhues claims to be the most important in determining one as overseas Chinese. "Being a Chinese is, in Southeast Asia, essentially a matter of self-identification" (Heidhues 1974, 3). Heidhues provided this data:

Estimates of overseas Chinese in 1970 (3)

Country	Total Chinese	Total Population	Percentage of Chinese
Brunei	32,000	116,000	27.6

Burma	440,000	26,980,000	1.6
Cambodia	435,000	6,701,000	6.4
Indonesia	3,100,000	117,000,000	2.6
Laos	58,000	2,893,000	2.0
West Malaysia	3,250,000	9,000,000	36.1
East Malaysia	455,000	1,581,000	28.1
Philippines	520,000	37,158,000	1.4
Portuguese Timor	6,000	590,000	1.0
Singapore	1,500,000	2,017,000	74.5
Thailand	3,400,000	34,738,000	10.0
North Vietnam	208,000	21,340,000	1.0
South Vietnam	1,200,000	17,867,000	5.5
TOTAL	14,604,000	277,865,000	5.2

Thus, according to this data, in 1970 there were close to 15 million Overseas Chinese in Southeast Asia alone. This number coincides with a figure provided by Garth Alexander who states that, in 1973, “they [overseas Chinese] comprise barely 5 per cent of the region’s population, approximately 15 million out of 300 million” (Alexander 1973, 6). Alexander continues with an assessment of the economic prowess of the overseas Chinese. However at one point he makes an interesting statement about marriage and the overseas Chinese. He states, “Mixed marriages between Chinese and Asians have not only produced new faces for the region, widening the forehead and narrowing the eyes of Balinese and Dyaks alike, but also thrown up a vigorous new breed of Mestizo leaders such as the national hero of the Philippines, Dr. Jose Rizal, and Burma’s strongman, General Ne Win” (Alexander 1973, 6). At first glance, this would appear clear evidence for the argument that bare branches float best, however one must remember that these emigration figures are from the 1970s, and bare branches is as much a prediction of China’s “soon to be” future as it is current reality. However, what this does reveal is Chinese willingness to marry foreigners, a sentiment which has only grown with China’s increased profile in foreign affairs in recent years. It is difficult to predict whether this

will continue as a trend. Heidhues wrote in 1974 that, “the drying up of the waves of Chinese migration to [Southeast Asia] during the Second World War, and in particular after the establishment of the People’s Republic of China, has meant that over half the ‘Chinese’ now resident in Southeast Asia are local-born” (Alexander 1973, 1). Slowing Chinese emigration in the mid 20th century is confirmed by the United Nations which recorded Chinese emigration rates varying from 0 (per year) at its lowest and 166,000 (per year) at its highest between 1950 and 1990. However, between 1990 and 1995, Chinese emigration numbers jumped to 256,000 (per year), rose as high as 380,000 (per year) between 2000 and 2005, and is projected to remain at a stable 320,000 (per year) until 2050. This rise in migration coincides with China’s rapid economic and population expansion. Thus, along with increased government permissiveness, one may make the correlation that Chinese emigration has increased alongside its economic growth. In China, it seems that the stronger the economy, the higher the emigration. Global trends seem to suggest that future emigrants from China will not be laborers as one might expect of Bare Branches. Rather, they will be young, but well educated and seeking technical positions. In fact, in many instances the emigrant will most likely be seeking education, not a wife.

While China as a state, and the Chinese people in general, attempt to gain prominence on the world stage, “Sending an adult son for education overseas is a gendered and classed strategy that achieves several goals associated with transnational repositioning” (Ong and Nonini 1997, 211). It would seem that English language education is highly sought after by Chinese expatriates, and as such is increasing the number of migrants to the United States, Britain, Canada and Australia. Having a son

study abroad also acts as a, “first step toward permanent residency, and later citizenship, for not only the son but also other family members” (Ong and Nonini 1997, 211). Thus, sending young men abroad would appear less prompted by finding eligible wives than by economic gain for a larger family group. Another interesting dichotomy is that, “when adult daughters are sent to universities overseas, their parents expect them to acquire not only degrees but often husbands as well” (Ong and Nonini 1997, 211). It is strange that daughters would be sent abroad to find husbands, when the China Population Information and Research Center (CPIRC) projects there to be “40 million men living as frustrated bachelors by 2020.” It would appear that “push factors” of Chinese migration are education and economic driven. Therefore, because most future immigrants will be educated, seeking economic venture, or seeking educations, the bare branches will be the least eligible bachelors (uneducated, rural to urban migrants, primary sector employees). It is this group that will most likely remain in China.

The Chinese embassy in the United States recently published that in 2007 overseas Chinese reached 35 million. The report however stated that most are now traveling to the US and other western nations. Furthermore:

Some 460,000 migrants from the Chinese mainland settled down in the United States in the 1990s, doubling the total number of Chinese mainland migrants in The United States. From 2000 to 2005, another 355,000 Chinese mainlanders emigrated to the United States, when the country saw the biggest "immigration rush" in history (CASS 2007).

According to the embassy, so many educated professionals have emigrated to Western nations that China has experienced a “brain drain,” so much so that, “China hopes to entice 200,000 overseas Chinese to return home in the period 2006-2010 by setting up

science centers where they can carry out their work, said the Ministry of Personnel. Statistics from 2005 show that barely a quarter of the Chinese scholars who have studied abroad have returned to China” (CASS).

It would seem that the overseas Chinese can be classified in two main groups. There are the original, pioneering, overseas Chinese who left China before or shortly after the Second World War. They are the world’s largest migrant group, representing both first, second, and third generation ethnic Chinese living abroad. They live predominantly in Southeast Asia, and they migrated for employment in primary sector jobs in order to avoid competition for similar jobs in mainland China. Who are the new Overseas Chinese? They are entrepreneurs, educated professionals or students seeking education and future jobs in technical fields that are unavailable in China. Essentially, the caliber of Chinese emigrant has risen. The new overseas Chinese will live in western states, and they will most likely not return to China. As such, it can be determined that although there is compelling evidence of Chinese willingness to marry non-ethnic Chinese, most overseas Chinese will not be bare branches. Rather, the new overseas Chinese will represent the fullest and most fruitful branches of Chinese society.

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EV 486: Environmental Geography

Course Director: Dr. Amy Krakowka



Whereas physical geographers focus on the earth's surface and atmosphere, and human geographers concentrate on the spatial aspect of human activities, environmental geographers are interested in both how people adapt to specific environments and how they alter those environments through human activities. To understand these interactions and their implications, environmental geographers must fully appreciate natural processes and landform development within and on the surface of the earth, as well as the implications of human intervention in the natural system.

Selected Papers from Fall, 2008:

“Electricity Consumption and Conservation” by Jeffrey Caslen, Natalie Heimel and Trey Wheeler

“Afghanistan’s Plight: Food Scarcity and Resource Security Lead to Conflict” by Heidi Koller, Caleb McCollum, and Desmond Ross

Electricity Consumption and Conservation

Jeffrey Caslen
Natalie Heibel
Trey Wheeler

Introduction

Fossil fuels have proven to be a valuable energy resource for economic development. This energy source is one of the most versatile and abundant source known – until recent widespread use has led to their depletion. The use of coal, natural gas, and petroleum has fueled an economic boom in the United States in the 20th century. The economy of the United States is inextricably linked to this fuel source. In particular, the electric companies have tapped these resources to supply a power-hungry United States. However, the supply of fossil fuels is finite, and their complete depletion lingers in the future. At the current rate of consumption, predictions forecast the exhaustion of oil in 2048, natural gas in 2072, and coal in 2158 (SOS-planete 2009). Faced with a tough transition to alternative energies, the most immediate solution to wean the U.S. off of fossil fuels is conservation. In particular, reducing consumption in the residential sector is relatively simple, but at the same time, this reduction would make a noticeable impact. The purpose of this paper is to propose energy-saving techniques to reduce residential electricity consumption and reducing the use of electricity derived inevitably from environmentally harmful hydrocarbons in tandem.

Problem Statement

This paper will examine the nature of electricity production in the United States to determine how much electricity is used by residences and the energy source used. In addition, the negative effects of using fossil fuels will be identified and explained. It is necessary to understand the extent of the problem posed by a fossil fuel-based economy. Conservation techniques that are pertinent in the residential sector will then be identified and explained. Electricity production and conservation is particularly interesting because the forced detour from a fossil fuel-based economy will be the next challenge, as well as a possible pitfall, for the American economy. The conservation of these fossil fuels will not only stave off their immediate depletion, but it will also mitigate the harmful environmental effects of using fossil fuels. This paper will show that conservation at the residential level is a quick and easy way in which electricity consumption can be reduced, and the impact of such a reduction would have a significant impact on the use of and pollution from fossil fuels.

Background

It is important to understand the nature of electrical production in the United States first. Like the economy at large, the electrical industry relies on fossil fuels as the energy source for its plants. The three major forms of fossil fuels—coal, natural gas, and petroleum, account for 70.1 percent of the energy sources used for electricity production. Coal is the leading source of fuel in the United States for power plants. Coal is responsible for 49.7 percent of the total electrical production in the United States (EIA Annual Energy Review 2007). Natural gas is the third largest source, almost tied with nuclear power, comprising 18.7 percent of the power sector (EIA Annual Energy Review

2007). Petroleum is a small, but important, proportion at 1.7 percent (EIA Annual Energy Review 2007).

These numbers represent the entire electrical production of the United States, but the consumption of that electricity is split between residential, commercial, and industrial consumption. The residential sector occupies the biggest slice of this pie using 37.1 percent of the total supply of electricity (EIA Annual Energy Review 2007). Therefore, it is reasonable to assume that 37.1 percent of the fossil fuels used to create electricity and the resulting pollution can be attributed to residential consumption.

Each year, electrical companies consume 1.05 billion tons of coal, 6.87 trillion cubic feet of natural gas, and 109.5 million barrels of petroleum to produce electricity for just residential consumption. Acquiring and using these fossil fuels create many problems for the United States. Ninety-one percent of the domestic coal production goes to producing electricity. Mining coal produces many environmental problems. Strip mining and mountaintop removal create millions of tons of rock waste, destroys habitats and wildlife (especially the fish populations), and creates permanent scars in the landscape (Union of Concerned Scientist 2004). In addition to mining coal, the import of natural gas produces an environmental security problem for the United States. Unable to provide sufficient supplies of natural gas, the United States imports 20 percent of their natural gas. The top five reserves of natural gas are found in Russia, Iran, Qatar, Saudi Arabia, and the UAE (aneki.com 2008). Each of these countries is either hostile towards the United States or located in an unstable part of the world. Therefore, in the future, the supply of imported natural gas may be curtailed, or the use of military force might be elicited to continue the supply.

Besides problems with acquiring these fossil fuels, their consumption contributes to harmful pollution. The most prevalent form of pollution is carbon dioxide. Each year, the use of the three types of fossil fuels in electricity production releases almost one billion metric tons (910 million metric tons) of carbon dioxide (EIA Annual Report 2007). Carbon dioxide, a greenhouse gas, is widely regarded as the primary factor in human-induced global warming. Fossil fuels also release sulfuric acid which contributes to acid rain. Each year, 3.93 million tons of sulfur dioxide is released by power plants (EIA Annual Report 2007). Sulfur dioxide, which combines with water in the Earth's atmosphere to create sulfuric acid, contributes to the devastating acid rain problem in Eastern United States (Environment Canada 2005). Power plants produce 1.56 million tons of nitrogen oxides (EIA Annual Report 2007). Nitrogen oxides contribute to photochemicals smog, and they can contribute to chronic lung disease (EPA 2006). In addition to these dangerous gases, coal plants produce mercury. Mercury can enter the water supply and contaminate the fish. Also, mercury can lead to birth defects and retarded development in babies (Moms for the Future 2006). Coal plants also release particulates, which can contribute to asthma and lung cancer (Moms for the Future 2006).

The dangers posed by fossil fuels are wide-ranging and devastating. Though technology exists that can reduce the pollution of fossil fuel-based power plants, it is expensive and it does not eliminate the pollution. The only way to completely eliminate the pollution is to not use fossil fuels, and the most immediate way to achieve this is a reduction in residential consumption of electricity.

Ideas and Details

Electricity is measured in kilowatt-hours (kWh). This means that a 1000 watt appliance running for one hour uses one kWh. Electric companies charge users based on how many kWh they use. The rates for electricity vary throughout the country. In 2007, the average price for electricity in the U.S. was 10.64 cents per kWh (EIA-861 2006). Many electric companies charge higher rates during times of peak usage which usually occurs between noon and 2pm and charge less at night when households use less electricity.

With the understanding of how electricity is measured and how users are charged, one is able to understand how to conserve electricity and reduce their bill. There are three things people must research to make themselves prepared to reduce their electricity usage. The first one is their electricity bill. Electricity bills contain usage information over the previous twelve months which indicate which months people use the most and least energy. Typically, the most energy is used in the late summer, because households use more air conditioners (EIA Energy in Brief 2008). Secondly, it is important to research where one stands in their electricity compared to others and set a reasonable goal for reducing their electricity usage. One can do this through reliable online tests provided by the government. An example of this test is the Energy Star Online Test. It will indicate how many people in the United States use more energy and will set a realistic goal for reducing dependence. Third, one must understand which appliances use the most energy. The appliances that use the most energy are appliances that heat or cool things. This includes dryers, ovens, water heaters, and air conditioners. Every appliance that plugs into an outlet contains the wattage information usually on the cord. This

number is the maximum amount of electricity the appliance will use. Exceptions to this rule are speakers and hair blow-dryers which will also indicate how much wattage they produce in sound or heat.

With this research and knowledge, one can finally set goals and identify how they can reduce electricity. There are two categories of actions that will reduce electricity use. The first category is doing things that are inexpensive and take little time. These things include unplugging appliances like televisions and microwaves when not in use so they do not consume electricity. By using power cords, one can easily turn on and off all items plugged into the power chord by flipping a switch. Other ideas include replacing lamps and overhead lights with LED lights, using clothes lines to dry clothes, and running full loads of clothes and dishes.

The other category of making your home more energy efficient involves a higher initial investment of money which will pay for itself over time. These actions replacing old energy-inefficient appliances with ones that have the government Energy Star label, indicating they use less electricity than the federal standards for the specific appliance. It could also involve installing dimmers, motion sensors and other lighting control devices to only provide lighting when needed.

In addition to saving money, the fossil fuels required for energy production will be reduced. Appendix 1 shows the savings for the simple fixes and well as the higher investment remedies. These vary as each appliance is different and the cost of electricity varies by location. In addition to saving money on the electric bill, the government also provides tax credits for buying energy efficient appliances. They also provide tax credits for home improvements, cars, solar energy systems, small wind energy systems and fuel

cells (Energy Star). A complete list of tax credits can be found online at the governmental website www.energystar.com.

Also, residential owners can remove their dependence on electricity from fossil fuel sources by generating enough electricity for their residency personally. Solar panels and wind turbines are the two best ways to achieve this energy independence. These two methods drastically reduce one's electricity bill and create electricity from renewable sources.

Solar panels are increasing in popularity. These are easy to install and maintain. The photovoltaic cells of a solar panel are composed of impure silicon crystal. When light strikes these crystals, the short-wave radiation excites the electrons in the crystals. The electrons leave their orbits and create an electrical current. These cells only generate 5-15 percent of the solar energy that is received (Solar Home 2007). Despite the relatively low conversion percentage of energy, if enough panels are installed, one can harness enough solar energy to become self-sustaining.

The solar panels have a moderate initial cost, but they can reduce the monthly electricity bill by at least half. For a 1080 watt system, the initial cost is approximately \$10,000 (Solar Home 2007). If the average monthly electric bill is about \$100, the solar panels save the owner \$50 a month. Assuming the owner will consistently pay \$50 a month, it will take the home owner about 16 years and 8 months for the benefits of the solar panels to equal the initial cost. Many solar panels have a life expectancy greater than 30 years (Premier Power 2004). Thus, the benefits for the home owner will exceed the costs of installing the panels. Though it is only beneficial for the current owner if that

owner keeps the house for a long time, the benefit for the economy's dependency on fossil fuels will extend through the life of the solar panels.

Installing wind turbines are another option which increases the residential production of clean, renewable energy. The operation of wind turbines is simple; the wind passing through the propellers on the wind turbine rotates the propellers. The propellers spin a shaft that is connected to a large gear which spins a smaller gear. Due to the gear ratio, the smaller gear will spin faster, which generates electricity via an attached generator. With a wind turbine attached to a house, a homeowner can generate 400kWh a month, drastically reducing the electricity bill (Skystream 2008).

Optimally, a wind turbine would be used for homes located in the Midwest, since this region has an average wind speed of twenty miles per hour (T. Boone Pickens 2008). Mountain valleys also provide high winds to sustain these systems. This high wind speed will allow the turbines to spin very fast and generate large amounts of electricity.

One popular wind turbine for a home unit is the Skystream wind turbine. The turbine is approximately forty feet tall and can begin generating electricity at wind speeds of eight miles per hour (Skystream 2008). This wind turbine will also require a radius of 250 feet of cleared area in order to allow the Skystream turbine to work safely. Even though the aesthetic qualities of a wind turbine are a drawback, the wind turbines for private homes can provide a great deal of power for the individual.

Conclusion

The United States economy is addicted to fossil fuels, largely as a result of their adaptability and perceived abundance. However, due to the standstill in nuclear power plant construction and the inability of solar and wind power to be large scale solutions,

the United States cannot reduce its consumption of fossil fuels in the near-term by switching fuel sources. Yet, if Americans can reduce their consumption of electricity in the residential sector, the use of fossil fuels (and the pollution that results from their use) will dramatically decrease. The information provided in this paper should help a homeowner to reduce their electricity use by at least 25 percent. If the entire residential sector reduced their consumption by 25 percent, 251 million metric tons of coal, 1.72 trillion cubic feet of natural gas, and 27.4 million barrels of oil will be saved per year. In terms of pollution, it will prevent 230 million tons of carbon dioxide, 1 million tons of sulfur dioxide, and .39 million tons of nitrogen oxide from being released. Human-induced global warming, acid rain, and respiratory illnesses would be mitigated. The best part is that these reductions can be achieved almost immediately! In this manner, individual conservation is the best and quickest solution to America's dependence on fossil fuels and the resulting pollution from their utilization.

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Afghanistan's Plight: Food Scarcity and Resource Security Lead to Conflict

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Introduction

The concept of food shortage is not a novel occurrence, and it certainly is not anything new to Central Asia. Many regions there have constantly experienced small stretches of scarcity and uncertainty regarding food supply. However, recently, Afghanistan has been the victim of several events that combined to create a truly unfortunate situation. According to Antonio Maria Costa, the executive director of the United Nations Office on Drugs and Crime, "Afghanistan is one of the poorest countries in the world," ("War"). This is not only because Afghanistan is considered a developing nation, but also because its dependence on subsistence farming has been drastically affected by environmental, social and political issues. The food shortages may have begun small, but they are now creating problems that may begin to influence the course of the war in Central Asia.

The Issue

The problem is that Afghanistan has a scarcity of food supply due mainly to the recent drought and consecutive harsh winters. Insufficient crops have left farmers with

nothing with which to make a profit, nothing to feed their families, and no hope for sustenance through the summer. As a result, some families have moved to nearby towns to find jobs. However, those jobs cannot exist if there is no food to sell and no people with money to buy what little there is left.

Related Work and Literature Review

Our most important source was “War and Drought Threaten Afghan Food Supply” from the New York Times. This article was helpful in giving us up to date information on the situation in Afghanistan. It was helpful because some of the articles with which we began our research were from 2001. Though these were good articles (and give us an extensive historical perspective on the problem) they were a little outdated. The article also had several statistics which we found useful in order to visualize the effects of the drought on agriculture.

“Afghanistan: Food Shortages cause grass eating, displacement” from Rawa News was slanted toward Afghanistan and focused primarily on the terrible idea that children are starving. It also mentioned that people may be reverting to producing drugs or even to conducting insurgency operations because those are easy ways to make a living. It specified why the food scarcity is dangerous for an inactive government and that Afghanistan officials need to act quickly to mitigate any social conflict.

“U.N. Warns of Food and Security Crisis in Afghanistan” from the New York Times was extremely helpful in pinpointing that the food shortage could lead to a security issue. This article led us to consider environmental security as an issue that potentially induces conflict in that region. It certainly does not help that there is already an international war occurring in the south. Further government inaction and political

instability could lead to serious social problems such as an increase in drug production and in the membership of insurgent groups.

“Hunger and Food Prices Push Afghanistan to Brink” from the New York Times spoke about raids and public unrest that led to higher crime rates and robberies. People do not trust the government to keep them safe anymore, and it almost seems that anarchy is threatening to overtake the country. Furthermore, food prices have risen dramatically, causing a vacuum where people cannot afford to feed their families, let alone provide for others.

“Countries with Rapid Population Growth and Resource Constraints: Issues of Food, Agriculture, and Development” from the *Population and Development Review* was helpful in giving us some statistics on population and how it will further affect the food supply issue in Afghanistan. According to this article, by 2050 Afghanistan will experience a population increase of 225%. This will certainly create major problems for a country already short on food and unable to provide the environment for future solutions to the problem.

The Idea

Our theory is that the food shortage is mainly a function of the country’s farmers being dependent on good weather for successful crops. Without good weather, the crops are not big enough to support them or the communities. When this happens, the market price increases as supply decreases (“War”). This combines with an unorganized government that cannot decide on any course of action and eventually leads to local and regional conflicts over resources and the few jobs that are left.

An In-Depth Look

In order to describe our idea we have five main points that explain the situation and how it has gotten out of control. Within these five points are several sub-points that support our idea in an effort to discover the root of the problem and a possible solution.

The current situation depicts a dire one where some families in the most desperate districts of the country have resorted to eating grass. The district of Ajristan is one of these areas. Here, people are eating alfalfa, which is cattle food and is detrimental to the human digestive system (“Afghanistan”). Nawa is another such district where people have resorted to unhealthy eating habits. The diet of alfalfa increases people’s susceptibility to diarrhea, which affects children the most (“Afghanistan”). Subsistence farming, which is when a farmer subsists on his or her own crops, is important because 90% of the population relies on it for a living. The government only sets aside \$2,400 for agriculture a year (“War”). This puts people in Afghanistan in a difficult position.

Public health is a big concern in Afghanistan because the lack of daily nutrition and energy has led to medical complications that often lead to death if not addressed. Malnourishment has already occurred in areas where people have begun to sustain themselves on cattle feed. Experts agree that “patients do not receive adequate treatment in the...health clinic in the district and there is also a lack of medication in local drug stores,” said one resident.” (“Afghanistan”). Provincial director of public health, Ziagul Asfandi, replied that “acute food-insecurity could increase children’s vulnerability to communicable diseases.” (“Afghanistan”).

Food insecurity has forced many people in northeastern Afghanistan to be displaced. Afghan Red Crescent Society reported that up to 1000 families are in this situation in the Argo and Kishm districts. (“Afghanistan”). The outlook remains grim as

officials report that population is also increasing. The expected population boom will only worsen the problem (Alexandratos 240). Efforts by many programs have helped a little bit but have not had a lasting influence toward any solution. The World Food Programme has announced that “increases of up to 70% in staple food prices, road blockages and other winter-related problems have pushed millions of Afghans into ‘high risk food-insecurity’” (“Afghanistan”). \$15 billion in assistance was given to Afghanistan in 2001, but 40% “returned to donor countries in corporate profits and consultant salaries,” (“War”). The Afghan government is planning on spending \$50 million on the distribution of flour, and the World Food Programme hopes to continue assistance over the next six months. However, officials understand that “food aid...[is] not a long-term answer to Afghanistan’s hunger,” (“Hunger”). Some humanitarian aid groups are having difficulties getting food out to the public because of conflict and raids, and declining security has not improved the situation (Cumming-Bruce).

Some economic and social problems have also arisen as a result of the public outcry over the food shortage. Some officials, like Governor Habiba Sarabi from Bamain, Afghanistan, are concerned that law abiding provinces with little trouble are being overlooked for the distribution of food and resources from donors (“War”). Donor countries such as the United States have mainly focused on the southern provinces in order to help combat the insurgency there. However, neglecting the Northern provinces, some of which are fairing worse, may lead to further social unrest. Furthermore, neglecting the Northern provinces could lead to instability “by pushing people to commit crimes or even to join the insurgency, which often pays its recruits,” (“War”). People are losing faith in the government and some are resorting to the cultivation of drugs (i.e.

poppy seeds) (“War”). One citizen replied that “we don’t have security and we don’t trust the government to provide it.” The United Nations has noticed an increase in insurgent attacks and reported 422 deaths due to conflict. This is evidence that people are trying to solve the problem themselves, creating social unrest and situations of anarchy (“Hunger”).

Other officials have noted that the current conflict in Afghanistan, coupled with the food shortages and the problems associated with it place the country further in a dire situation. (“Hunger”). Many people cannot go to work because they are not being paid. The 172,000 teachers who are currently receiving food aid cannot even afford to go to work. (“Hunger”). Another example is that of two boys who “worked as day laborers in the market and they did not earn enough to feed the family.” People who aren’t even farmers cannot go to work because the food shortage has affected every other market. (“Hunger”). The situation is getting worse as food convoys meant to aid communities in need are attacked along their routes and raided by distressed citizens, (Cumming-Bruce). Moreover, the drought in the middle and Northern provinces has intensified the situation by creating opportunities for people to fight over water rights and supplies (“War”). Afghanis spend 70% of their already small income on food for their sustenance. (“Hunger”). Simply put, the United States and United Nations cannot expect Afghanistan to evolve into a healthy democratic society when the most basic human needs are absent.

Conclusion

According to our research we have determined that the water and resource conflicts occurring in Afghanistan, especially in the Northern provinces, are due to several factors. These factors include the combination of environmental changes and an

unstable infrastructure. In what we identified as a “Loop of Unfortunate Events,” one thing led to another and the larger issue has now become one of environmental security. The loop is similar to a cause and effect flowchart in which each step only builds upon the negative aspects of the previous ones. What started out as an issue of bad weather became a regional scarcity in food and eventually a countrywide famine that caused and continues to cause conflicts for resources. These small conflicts could lead to larger ones, as well as surges in terrorist activity and an increase in drug production. Thus, though no real solutions besides international food aid have been initiated, the Afghanistan food shortage must be recognized on the world stage as one that could turn into a whole new conflict. The United States will have to work with the United Nations and several non-governmental organizations if a feasible solution is to be reached.

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EV 303: Foundations in Geography

Course Director: MAJ JON Bushman



This course presents the basic concepts, theories and methods of inquiry in the discipline of geography as a foundation for advanced study in Human Geography, Environmental Geography, or Geospatial information science. The course includes models and concepts from the many sub-disciplinary (systematic) areas of geography to include cultural, historical, economic, urban, political and military geography. The application of concepts to real-world issues is emphasized. Research skills and techniques used by professional geographers are presented. Cadets use these approaches to spatially analyze and map the distribution of human and environmental phenomena.

Selected Paper from Fall, 2008:

“IT’S CRIMINAL” by PAUL L. KNUDSEN

It's Criminal

Paul L. Knudsen

Urban centers bear many common stigmas the world over such as crowds, pollution, traffic, and perhaps above all others – crime. Though crime has existed as a constant feature in condensed urban centers for centuries, the problem still persists as one of the largest in modern times. Crime originates from a variety of stimuli both situational and environmental but practicable solutions must focus on holistic control rather than the influence of a few selected stimuli.

Prevailing conceptions of urban crime center heavily upon racial divisions but research reveals this to be a less influential stimulus for crime than commonly perceived. From 1964 to 1997 data collected on approximately two thirds of the US population did demonstrated homicides committed by blacks exceeded those committed by whites. Interesting to note however, the disparity averaged out to a surprisingly small margin of just over 500 homicides, and in 1981 the number of white homicides actually exceeded the number committed by blacks (Eckberg). Minorities do often reside in poorer areas and are exposed to different stimuli however criminal geographers have found that crime is not class-specific, “the more powerful the class, the greater the potential harm of its offending behavior” (Lowman, 85). It is important that if social engineers use human geography to analyze criminal patterns they look at the larger picture. As crime doesn't strictly reside within racial or economic lines, a broader understanding of its causes becomes important.

Complex situational and environmental factors combine to create a ripe setting for crime. It is important that rather than thinking of crime as derived from race or education, it is “usually a response to several stimuli that occur simultaneously” (Birkbeck, 116). Though policymakers can most easily comprehend and act on individual stimuli, it is more realistic and effective to take a holistic view of crime and then break it down causally into major sub-factors. Christopher Birkbeck and Gary LaFree in their article *The Situational Analysis of Crime and Deviance* outline five such situational correlates in the form of “goal blocking and frustration, physical or verbal attacks, aggressive models in the media, objects of influence (aka. weapons), and deindividuation” (Birkbeck, 117). John D. Brewer in writing the article *Informal Social Control and Crime Management* expounded on a theory known as the Social Disorganization Theory of Crime Causation (SDTCC) in which “senses of community, stability and tradition are associated with lower levels of crime” (Brewer, 571). Considering all of these factors, a workable solution can begin to come into being.

An effective solution for lowering crime in urban areas should include structural geographic considerations, predictive models, and an emphasis on combative as well as preventative mitigation. Preventative measures should be applied to the problem in similar fashion to the Cambridge-Somerville Youth Study crafted by Professor Richard Cabot of Harvard. This approach sought to mitigate the five factors outlined by Birkbeck and LaFree by employing “social workers to provide friendly counsel to youths and parents, refer youths to specialists, tutor them, and take them to sporting events and participation in the woodwork shop” (19). Though the study was in fact a quantitative failure, the youths in the study claimed that the plan helped them significantly in finding

the right path in life. An oversight in the Cambridge-Somerville Youth Study was in its solvency for only the single environmental stimulus of family life. The Cambridge-Somerville case study provided a workable model for a preventative solution to crime but a separate case study in Belfast demonstrates the other half of the equation.

The Belfast case study applies structural and social methods for reducing stimuli outlined in the SDTCC. In Belfast, crime was thought to result from the “erosion of social control... and the loosening of bonds in the neighborhood, community, family and religion” (Brewer, 571). To fight the problem, the Belfast government took a combative crime management approach using “social processes, such as the survival of community structures, extended family kinship patterns, neighborliness and legitimate authority accorded to community representatives, which constitute important informal social controls” (Brewer, 570). In addition to these organizational changes, some changes were made to the actual living environment to increase neighborliness. Renovating some residential urban areas to include cul-de-sacs, city planners intended for communities to “become close knit” (Brewer, 577). By addressing the social stimuli contributing to the problem in an organized and holistic manner, Belfast managed to significantly reduce its crime rates.

Urban crime relies on a number of stimuli to flourish to include Birkbeck’s five factors and the SDTCC. In order to solve these problems, city planners and local leaders must incorporate a solution that draws on multiple resources to combat the various contributing stimuli. By loading the incomplete value of the Cambridge-Somerville model to the workable Belfast model, a hybrid approach to crime mitigation would result.

Though crime will be present in any concentration of humanity, many of the irritants that encourage it can be stymied and with hope, the larger flow can be reduced.

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EV 373: Geography of Latin America

Course Director: MAJ Jason Ridgeway



This course studies the physical and cultural landscape of Latin America, giving special treatment to the diversity and cultural identity of the region. Topics covered include a historical geography of the region, including Pre-Columbian civilizations, Iberian, African, and European influences; the geography of transportation networks, agriculture, urbanization, and population. National boundaries, major landforms and climatic conditions are discussed to describe their effect on civilization. This course also investigates the historical relationship between the United States and Latin America, and covers recent U.S. military interventions in the region.

Selected Paper from Fall, 2008:

“Book Review: Estrada, Alfredo. (2007). *Havana: Autobiography of a City* New York: Palgrave Macmillan” Review by: Derek Debruhl.

Book Review:

Estrada, Alfredo. (2007). *Havana: Autobiography of a City* New York: Palgrave
Macmillan

Review by: Derek Debruhl.

In *Havana: Autobiography of a City*, Alfredo Estrada uses Havana's history to explain how the city got the cultural identity that it has today. Estrada begins at the beginning of Havana during the founding of the city, and finishes the book with future issues that Havana faces. Most importantly, Estrada shows exactly what kind of influence Havana has had on the rest of Cuba and on the rest of the world.

To critique the book on a more broad level, Estrada does an excellent job of being impartial while explaining largely controversial occurrences in Havana's past. For example, he does not take a partial view of Che Guevara's role in the firing squads of Cuba's 1960s. This impartiality shows the professionalism in Estrada's writing, especially since the content of his writing is born of personal experience living in and visiting the city of Havana.

The first specific aspect I must point out while critically assessing Estrada's book is his successful and continuous drive toward explaining not the entire island of Cuba, but specifically the city of Havana. It is tough for a writer to distinguish the city from the rest of the island since their histories are so closely linked. Estrada was able to successfully

focus on painting the picture of the city as an independent body. I think it was easier for Estrada than I had imagined because although the histories of both the island and the city are intimately intertwined, their cultures have been different since they were both first inhabited. Havana's existence as a primate city in Cuba implies an inherent cultural difference between the city and the countryside. Just as in other Latin American countries, the jobs in the countryside include low-paying, hard-labor employment opportunities, based mostly upon the extraction of natural resources or the exploitation of fertile land. Conversely, in the main city of Havana the jobs are mostly service sector and support a much larger population than the countryside has to support.

One interesting aspect to this difference in job distribution is that the minority population lives largely in Havana and the countryside is generally dominated by white or mixed race Cubans known as *guajiros*. This concept is based upon a policy difference between Cuba and the rest of Latin America. When Castro nationalized Cuban agriculture in the late 1950s, the whites stayed to work on the farms that they used to own and the blacks or Afro-Cubans moved into the cities to find alternative work. This is different from other Latin American countries such as Mexico, where the peasants who work on the haciendas are largely of native descent, and the mixed and European population lives in the cities to reap the benefits of the minorities who work in the fields.

Another very important aspect of Estrada's book is the interesting relationship between the United States and Cuba over the past 200 years. Dependency theorists have argued that the United States and other fully developed countries take advantage of developing countries by providing certain services and not allowing the developing countries to industrialize. This theory is represented in Estrada's book mainly because

Cuban leaders have had that perception of the United States over the past 100 years or so. But that theme is more of a macro-scale application, and at the smaller scale Cuba and the United States seem to have a more complex interaction. For example, the United States has a travel ban restricting Americans from visiting Cuba on vacation. Yet tens of thousands of Americans visit the island annually. The travel ban is based upon the sour relationship between the U.S. government and Fidel Castro's regime. That is why there is not an embassy in Havana. However, the U.S. recognized Cuba's government in the 1950s, and that recognition has never been formally withdrawn. This recognition is represented by the U.S. Interests Section in Havana, which is an embassy in almost all respects except by name. Estrada explains the relationship between Cuba and the U.S. as one in which they are "dance partners determined to step on each other's feet" (Estrada 236). Estrada seems determined to show that Cuba has a strength (though not quite comparable to that of the U.S.) that can carry it to success and allow Havana to make its own future instead of listening to another nation. After all, Cuba continues to succeed without any direct help from the United States.

Boyd Childress, reviewer of *Havana: Autobiography of a City*, considers Estrada's chapters on Ernest Hemingway in Havana "pure gems." I agree that Estrada's insights on Hemingway are eye opening and very intriguing. This is especially interesting because of the impact that Hemingway had on the city of Havana in particular. In fact, there is a "Hemingway Trail" where tourists can follow major events in Hemingway's existence while he lived in Havana. They can start at the place where Hemingway's boat docked, go to the writer's favorite bar, and visit his house on the southern side of Havana. But of particular note is Estrada's decision to add the old story of Hemingway's ghost

and compare that to the old Spanish proverb that when one dies, his “spirit returns to where one was happiest in life” (Estrada 204). Many Habaneros, as residents of Havana are called, claim that they can see Hemingway’s ghost roaming Obispo Street at night. Aside from being a great literary conclusion to a well-organized chapter, the point that Estrada makes here is that Havana is home to people who are very stigmatic and fascinating. He is showing that Havana really is an alluring and intoxicating city.

The main question I have for Estrada’s work regards his motives. Childress said that the book was a “virtual travelog,” which leads me to believe that Estrada was trying to promote travel to Havana. I suppose promoting the intrigue of readers and promoting tourism are very similar tasks, but I am left wondering if there was a deeper reason for Estrada to write this book. It would be very interesting and seemingly counterintuitive for a Cuban-American to want to provide money for Castro’s “Revolution” by promoting tourism to the city. Perhaps Estrada had experienced the city as a young boy and wanted the city to generate funds in order to renovate and restore it to its original beauty. Unfortunately he does not outline his purpose for writing the book, leaving my mind only to speculation. I truly wish Estrada would have written a more personal preface.

This book is interesting because of its geographical significance. It is accurate in its assessments and provides many examples when considering the application of a theory. Whether analyzing the government, the land, the culture, or the historical imprint, Estrada took a relatively impartial approach and covered all viable possibilities when considering controversial issues. Estrada used his personal experience to his benefit while writing about the culture of Habaneros. More importantly, Estrada traces Havana’s impact from its conception to today, and proves its importance on the world scale through

historically significant occurrences. Estrada's apparent aim was to write a book about Havana from the perspective of the city, and I believe that he did this effectively by limiting his personal beliefs. Though I do not understand his primary aim in writing this book, I do know that Estrada's interest in the topic shined through and made the reader want to know more about the city of Havana.

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