

ENTER THE DRAGON: A FOREIGN POLICY
POSITION PAPER ON ENERGY, ENVIRONMENTAL, AND ECONOMIC
RELATIONS WITH CHINA

By

Matthew B. Kraynyak

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Approved by:

Nancy Bauer, Ph.D., Advisor

Peter Steiner, Ph.D., Reader

John Fielder, Ph.D., Reader

ABSTRACT

In the next several decades, the United States will be confronted by major challenges in international policy-making. Currently, the Peoples' Republic of China represents one of the most important players in global politics. China will surely occupy a great amount of attention from American foreign policy experts. As America navigates the international waters of the next century, an extensive knowledge of the Chinese psyche is necessary. Experts must not only maintain an extensive knowledge of China's current condition, but also learn its history. Both will contribute to the nation's interactions with others in the future. The purpose of this paper is to provide a foreign policy strategy for United States as the country engages with China in the next century. Energy, environmental, and economic issues will be of critical importance for both nations in the next century. The key to this relationship will be respect, collaboration, and cooperation. It is time to start learning.

INTRODUCTION

The world has changed. Times have changed so much in the past three months it would seem as if September and December of 2008 were decades apart. In America, change manifested itself primarily through the economy. Oil and gasoline prices are less than half of what they were this fall. Congress passed a seven hundred billion dollar economic bailout in an attempt to remedy the carelessness of Wall Street. Three rocks of American industry – Ford, General Motors, and Chrysler – plead their cases before Congress in attempt to avoid bankruptcy. Finally, Barack Obama handily defeated John McCain in the 2008 Presidential Election with the promise of change and hope.

Around the world, nations are trying to adjust to similar economic realities. Britain, Belgium, the Netherlands, and Luxembourg have all passed financial rescue measures. In China, many manufacturing firms are fighting for survival (like the American automobile industry). As a result, China has passed a five-hundred and eighty billion dollar economic stimulus package.

When this project commenced, it was done in the frame of the world of September 2008. The author recognizes that today's world is one of profound new economic and political realities, which have magnified the importance of maintaining a strong relationship between the United States and China. There is no telling what the future holds for both nations, but one certainty remains. The best way to move forward is to do so together. Neither nation can afford to make economic decisions in a vacuum. This project addresses issues relevant to both nations before recent economic

developments, but they are realities that will require significant attention for decades to come.

As China and the United States attempt to get their economies back on the road to prosperity, their leaders must do so aware of potential effects on each other. Hu Jintao and Barack Obama have heavy responsibilities to shoulder. The prosperity of nearly two billion people is dependent upon their knowledge, skill, and leadership. The world will be watching. And hopefully, the people will not be disappointed.

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CHAPTER 1

THE HISTORY OF CHINA

Background:

Mao was nearly right. His China was not a global power. There had been too many failed regimes in the past. Before his nation could ascend, they needed to break free of millennia of history. What he managed to accomplish was the organization of peasants into his chief revolutionists: the nationalization of China¹. The cycle of imperialistic rise and decline was to be broken, for it ended invariably in a collapse precipitated by foreigners. China needed to rise on her own terms, dictated by one national voice, and communism was his vehicle. But Mao missed the mark. It would be capitalistic reform under Deng Xiaoping that would create the environment necessary for China to emerge as a global power in today's world.

The only way to truly understand China's current position in the world is to look through the lens of the past. Without a thorough appreciation of this rich history, the lens that Americans use to examine China is bound to appear more like a kaleidoscope. With this knowledge, the picture becomes less fractured. China's stance today is the result of thousands of years of evolution in government and philosophy. Today, China looks to create a permanent place in a global community built upon the lessons of the past.

It is imperative for the United States to change its suspicious views of China. Throughout its long history, China was largely a nation of peace. Unity and prosperity of the dynasties was accomplished through peace more often than by war. The rise of China

today is not the rise of a nation eager for conquest; it is the opportunity to provide peace, unity, and prosperity to every citizen.

The Long Road to Today:

To truly understand China's evolution over the past few millennia, one must learn to appreciate the path taken throughout the ages by the Chinese civilization. Crucial to the country's history is an understanding of the ideas of balance: yin and yang and wen and wu¹. Just as light balances dark, for thousands of years China experienced a waxing and waning of regimes. The violent upheaval that the country experienced during the early twentieth century was a natural reaction to a protracted succession of failing regimes. Today, China seeks the ultimate goal of this rise: a seat with the nations of the developed world.

The rise of central authoritative governments in China can be attributed to many factors. Of critical importance were dedicated agricultural workers that allowed nomadic peoples to settle into sedentary tribes. As the population of these settlements expanded, government and administration systems arose to organize the population by their needs or talents. Early leaders were usually chosen as a result of apparent abilities to contact or channel deities. The early religion of these growing populations was typically shamanism. Thus the relationship between the leaders and the holy men (often the same man) was critical to maintaining authority for a given lineage. Once a leader was chosen, the succession of authority continued through that bloodline.

China's history is filled with stories of great empires that brought the country to great heights only to fall into ruin. Imperial dynasties emerged four thousand years ago.

The dynastic era, which began with the rise of the Shang, Xia, and Zhou dynasties, around 2000 B.C., formally ended in 1911 with the fall of the Qing dynasty. During this time, the Chinese people endured the rule of four major imperial regimes: the Han, Ming, Song, and Tang Dynasties. Each new empire learned from the lessons of the past, but ultimately improvements upon the old model of governance failed. New ideas and new leaders emerged, yet the country never truly united. Warlords filled the power vacuum after each regime until 1927 when Sun Yatsen's apprentice, Chiang Kaishek tried to mold China into a republic. But their republic was built on superficial unity. It promptly fell apart, and an opportunistic communist party (along with a charismatic teacher, Mao Zedong) picked up the pieces to build a new nation: the People's Republic of China.

Sunrise:

When one empire disintegrated, new leaders capitalized on the impulse of the people for unity. They used popular new ideas from contemporary philosophies (Confucianism, Buddhism, and Daoism) to quickly consolidate power. Quick conquests created short-lived, interim regimes (Qin and Sui). While these rapid conquests burnt out quickly, they left the people eager for a stable country. When the Qin or Sui conqueror died, they left behind a land that was for the most part unified. The impulse of the people after their departure drove the country to complete the unification under one government. Here is a glimpse into a key facet of the modern-day Chinese condition: the desire for one Chinese nation. "Unity was so strong an ideal because it promised stability, peace, and prosperity¹" (p. 47).

After the fusion into dynasties, the new emperors improved upon the flaws of their predecessors. Early Han dynasty rulers became adept at managing their families. Emperors rarely had one mate, and with each new empress came a new hub of power. Each empress sought to place her sons as the leading contenders for succession. If widowed, the empress dowager, appointed the successor¹. In prior courts, the power of the empress was unchecked if the newly anointed emperor was young as she would manipulate the power structure to favor her son. But the Han relied on a large staff of eunuchs to look after his offspring (and his empresses). The eunuch's power stemmed from his duty to the young emperor, which therefore kept the empress from gaining control over the court. Thus, the issue of succession was consolidated and simplified.

Later dynasties also improved the system by creating new systems of bureaucracy. Tang rulers set up ministries to attend to empire administration: personnel, finance, rites, army, justice, and public works¹. This effectively ended the bureaucratic headaches created during the Han Empire, which relied on the imperial family for the administration of the empire. The Tang government added an additional step to this system by creating a monitoring agency that evaluated the various ministries. Later in the dynastic era, the Song Empire employed a rigorous system of examinations for public officials to assure that appointees were qualified for their position.

The key to the rise of empire was the focus on the ideas of wen and wu¹. Wen represented “the written word and so by extension its influence in thought, morality, persuasion, and culture” while wu “connotes the use of violence and so stands for the military order¹” (p. 69). When wen could not provide the solution, wu was employed. Chinese history has shown that stability came more from wen than wu. The history of

China is not filled with grand tales of imperial conquest. Great Chinese empires rose, but rarely expanded through long wars (like many Western powers). Confucian and Buddhist ideals despised the use of violence unless absolutely necessary. Thus, once empires were established (many times based upon these philosophical ideals), emperors avoided violence in order to maintain the confidence of the people. Otherwise they risked alienating their most important constituents: the peasantry. Unfortunately, setting aside the wu left them vulnerable to barbarian tribes that did not subscribe to similar ethos.

Sunset:

Each Dynasty from the imperial era ultimately fell to outsiders, but it was the flaws within the governments that put them on the precipice of destruction. The fundamental problem of the dynasties was that the imperial court and bureaucracy grew too large to sustain. Emperors sired too many heirs. Royal families grew, and “accumulated over the generations a heavy load of dead wood¹” (p. 48). Factions in the court and the bureaucracy vied for succession. As both entities grew larger, their efficacy diminished.

The costs of administration and bureaucracy eventually caught up with the empire. Ineffective emperors, cunning empresses, and overzealous eunuchs created an overly factionalized (and weaker) court. Bureaucracies swelled in size, but grew inefficient at generating revenue. Even with the advent of family appointments to key posts, imperial examination systems, and specific ministries (personnel, finance, rites, army, justice, and public works), bureaucracies ended up helping themselves to funds

intended for the sustaining the empire. The administrations grew fat, and the empire had to do more with fewer resources.

Aristocratic families proceeded to act in their own interests as well. In order to expand their own wealth and influence they worked to increase their land-holdings. As they expanded their territories, they petitioned for larger tax exemptions for their lands. Smaller landholders allied with regional magnates, paying them taxes owed to the empire. Local aristocratic regents became powerful enough that they ignored dynastic rule, initiating the fracture of Chinese society. As more landholders evaded taxation, peasants were forced to pay increasing levies upon their lands. When the peasants revolted against excessive taxation, the empire became easy prey for opportunistic foreigners.

It also seemed that the gods had enough of the imperial government. Empire decline usually coincided with more frequent (and numerous) reports of natural disasters. As the emperor was seen as the chief conduit between the spiritual and living worlds, a multitude of natural disasters was seen as a portent of his falling-out with contemporary deities. Once the people doubted the right of the emperor to rule, the country began to come apart. Opportunistic barbarian tribes finished the collapse.

Enemies at the Gates:

The knockout punch for the dynasties came from outside their borders. The imperial families, protectorates, bureaucracy, and corruption all weakened the supports of the empires. However, it was foreign invasion that brought about the death of the

dynasties. Once the empire was no longer effective at protecting its borders, the people became the prey of foreign tribes bent on conquest.

When times were good, dynasties enjoyed significant control of their territory. Much of this came through military force. Ample funds allowed the empire to maintain a larger military force; soldiers secured borders. More troops allowed more miles of the border to be patrolled. Neighboring tribes were less likely to invade if they were certain to meet dedicated troops defending Chinese land. There was something to be said for shows of strength along the frontier. Even in those times the rumor of projected strength went a long way to deter invasion.

Good economic periods for the dynasties also allowed the central government other means of engaging the barbarian hordes. Stability could come through military might, but it could also come through bribery. When barbarians invaded, they usually struck quickly to obtain supplies necessary for survival along with whatever valuable loot was available. Beginning with the Han Empire (206 BC – 220 AD), the empire treated with the invading tribes through other means. This usually involved “entertaining the nomad chieftain, giving him Han princesses in marriage, and making lavish gifts¹” (p. 61). Many times the barbarian leaders were guests of honor at the imperial court; “Nomad warriors learned that if they performed a ritual at Chang’an in which they accepted suzerainty, they could profit while having a good time¹” (p. 61). The lesson learned for the empire was that a happy warlord translated to a secure border. Unfortunately, this kind of appeasement came back to haunt the empire. The nomadic tribe learned that it was possible to regularly collect the necessities they required to stay

powerful. Once the empire could no longer afford to pay the bribe, the invasions resumed.

Diplomacy was accomplished with methods other than bribery. Emperors from many of the dynasties simply turned tribes against one another. By turning rival tribes against one another, the empire effectively minimized two threats at once. When two tribes attacked one another, the barbarians lost and the Chinese gained. Both enemies lost the ability to threaten the empire through conquest. Lesser tribes were either completely wiped out or became incapable of troubling Chinese trade routes and settlements. Meanwhile, the more powerful tribes found their military (and plundering) capabilities greatly reduced by the in-fighting among rivals. Once the barbarian military muscle was minimized, the Chinese could then use imperial forces to eliminate the remnants.

But the prevailing trend was that the empires could not secure their borders for long. Over the millennia, the Xiongnu (Turkish nomads), Mongols of Chinggis Khan, and the Manchus were all examples of opportunistic hordes that took advantage of the porous borders of the imperial dynasties. They proved too much for the diminished empires to handle, and the dynasties fell into ruin. However, the Qing Dynasty (the last empire), did not suffer invasion from the north and west. Instead, barbarian tribes on inland borders were replaced by Europeans that arrived by sea.

Besides carving China into spheres of influence, the European arrival fundamentally shook the Chinese psyche. For many ages, China had been one of the most advanced civilizations. The Chinese saw this as a confirmation of their way of life. By the time of the British and Dutch arrival, that technological advantage had

disappeared. Europeans came ashore with new technologies: advanced machinery, weaponry, paved roads, gas lighting, water sanitation, and police forces. They also brought new ideas that were contrary to those followed by the Chinese for centuries. Foreigners with radical new ideas, ethos, and technologies were taking over their country; the Dynasty and its people were being humiliated by those embracing contrary beliefs. Western philosophy was prevailing over traditional Chinese ideals. As eastern beliefs faltered, the result among the people was resentment. Was the life they were living wrong? How were these foreigners with such contrary beliefs prevailing? Some Chinese people began to buy into some of these dangerous Western ideas.

Rising European influence and excessive opportunism eventually outlived their welcome in China. They embarrassed Qing leadership by forcing the empire to act on behalf of agreements with the Europeans. Eventually, the people lashed out against the foreigners. The most recognized event was the Boxer Rebellion of 1901. Chinese imperial loyalists adopted one unified ideal: “support the Qing, destroy the foreigner¹” (p. 230). Hundreds of Christians, diplomats, missionaries, and journalists were killed¹. The payback from the West was swift and harsh. In the aftermath of retaliation, the Qing Dynasty had to endure the embarrassment of paying an indemnity of over thirty million dollars to foreign powers.

The Doomed Republic:

By the final years of the Qing Dynasty, many western ideas permeated throughout Chinese society. Under the direction of Sun Yatsen (and later Chiang Kaishek), a growing wave of nationalism and unity spread through the country during the brief rule

of warlords after the Qing. Using the help of the Soviet Union (who used this as an opportunity to support the Chinese Communist Party), Sun Yatsen and Chiang Kaishek helped create a grass-roots movement that endorsed self-government, constitutionalism, a free press, and elected assemblies. With the help of local propaganda campaigns and Soviet military advisors, Kaishek (Yatsen died in 1925) ousted the warlords and unified the Republic of China in 1927. However, the unification was superficial. Far too many disparate regional elements remained. When Japan invaded China during World War II, it became clear that the Republic was a failure. The government faltered as the Japanese advanced. The new Republic disintegrated. And the Chinese Communist Party emerged with a charismatic socialist teacher (Mao Zedong) to fill the vacuum with a message that the peasantry (the largest class in China) could understand.

Mao's message was one of unity and nationalism for the Chinese people. He recognized that the dynasties and the republic failed to protect China from outside invasion. A unified Chinese point of view needed to rise above the cacophony of voices that had led the country to stagnation. His national declarations were to make his country self-sufficient; China was to feed itself and create its own industry. The era of growth without development needed to end¹. Regional barbarian, Mongol, and Western parasites had ruined his country for millennia. The resulting xenophobia was a natural psychological reaction to the cycle of stagnation: no advancement, no unity, and no outside voices would be a part of the new China.

CHAPTER 2

CHINA TODAY

Introduction:

China today is a nation of immense promise and problems; although the country is experiencing newfound prosperity, the nation still faces a multitude of problems. What is troublesome for the Chinese is that they will face so many major dilemmas in such a short period of time. Some of the issues to be faced are large scale worker migration, unemployment, maintaining labor supply, a rapidly aging population, intellectual property disputes, energy consumption, and environmental catastrophe^{2,3}. Further complicating the situation are two problems of scale. The first is a compressed timeline, for China does not have decades of time to resolve many of these issues. The second is a problem of scale; China has approximately 1.5 billion citizens to placate.

Bound to the Dragon's Economy:

Over the past three decades, the careful opening of China's markets to the rest of the world created growth and opportunity. For China, it has meant explosive growth – an economy that has annually averaged double digit economic expansion. This expansion has translated to China's thirsty appetite for steel, aluminum, copper, nickel, iron ore, gas, coal, and many other basic metals and resources⁴. In the United States, the emerging markets generated opportunity for American businesses. As China's doors opened, American companies jammed that doorway for a chance at opportunity. As a result, the United States and China have become inseparably linked – from trade deficits, mutual

investment, intellectual property rights, and labor issues. With the Chinese economy's emergence, investors around the world are eagerly pouring money into the country with the promise of major returns. Currently, American consumerism has created the largest trade deficit to China in the history of relations between the two nations. On the other hand, China has established many links in the United States as well. Chinese surpluses have resulted in ownership of a substantial amount of American debt.

As the world's economy changes, these two nations will find themselves increasingly dependent upon one another. Thus it will be critical for both nations to forge a positive relationship.

The direction that China and U.S.-China relations take will define the strategic future of the world for years to come. No relationship matters more – for better or for worse – in resolving the enduring challenges of our time: maintaining stability among great powers, sustaining global economic growth, stemming dangerous weapons proliferation, countering terrorism, and confronting new transnational threats of infectious disease, environmental degradation, international crime, and failing states. And for the United States in particular, a rising China has an increasingly important impact on American prosperity and security, calling for some clear-eyed thinking and tough economic, political, and security choices² (p. 2).

As China and the United States approach an uncertain economic future, they will have to realize that they must not solve their problems in isolation. Hiccups caused by an ever changing global economy will be felt by each country. Because each nation is at a different point in their development, their reactions will be different. The evolution of each nation's position in the global economy as it affects labor, aging populations, quality control issues, and intellectual property rights will all be examined.

One effect of China's opening to the outside world has been rapid industrialization. The world sought cheaper labor to manufacture goods at lower cost, and China provided. But the labor drain will not continue indefinitely. In the coming

decades, China will have to monitor its manufacturing sector: the sparkplug of its economic rise. Two hundred million Chinese workers (nearly two-thirds of the population of the United States) have moved to cities in search of economic opportunity². Three hundred million Chinese citizens emerged from poverty. The challenge of the future will be manifold for China. Several hundred million Chinese remain impoverished, and sustained economic growth will be necessary to provide the jobs needed to elevate them from peasantry.

China must be worried about a developing world that can provide cheaper sources of labor. Currently, China is ranked 132nd in the world in per capita GDP (\$5100). However, there are other nations with significant labor pools that rank below China in this statistic. Indonesia (158th, \$3600) and India (167th, \$2600) are nations with large populations of workers that can easily compete with China in the global market⁵. As the rest of the world's nations begin the process of modernization, they will become new centers of discounted labor as well. China must either find new ways to keep manufacturing jobs in country or foster growth in other sectors of their economy.

Another effect of China's growth is labor migration. Large factories required the peasants to leave their land to operate these facilities. But opportunity did not uniformly spread across the country. Ten percent annual expansion did not translate to every region and city. Some areas boomed while others remained undeveloped. Hundreds of millions of Chinese moved to urban centers to take new jobs, but several new problems were created. One immediate effect was in coping with how to feed its citizens. Most of the laborers in today's factories were farmers before they relocated. When local farms were abandoned, China faced the reality of how to feed its citizens with few farmers.

Other effects were felt gradually. Opportunity for labor was not a uniform boom across the country. As this uneven regional development unfolded, labor followed the opportunity. The result has been an immense migrant laborer population: a problem of scale due to China's massive population. While one city or region experienced mild growth, other regions boomed. Hundreds of thousands, sometimes millions, of workers appeared on the doorstep of these areas. The fallout from this problem will be difficult to curtail. First, the new centers of industrialization will struggle to accommodate the influx of people moving in search of these jobs. Housing, health care, sanitation, and utilities organizations will struggle to support the needs of these people while cutting back their services in contracting regions of the country. For regions with less robust growth, the question remains about what is to be done when people relocate in search of better opportunities.

Complicating this issue is the role of technology. Cell phones and the internet have connected the Chinese worker to opportunity. Although access to such technology is sparse in some parts, reports of better prospects spread faster. Here is another example of the effect of a compressed timeline. The Chinese government will not have the opportunity to anticipate needs as easily as in the past. In today's world, a phone call, text message, or e-mail can connect a worker to better wages, housing, and benefits. Even with government attempts at censorship, stemming the flow of information will be nearly impossible.

China's industrial sector has also faced difficulties in the area of quality control. The desire to build bigger plants that produce more goods and employ more people has produced many problems. Maximizing output can not be accomplished without cutting

the occasional corner. Minimizing cost does have a downside, especially when there is a significant impact on consumers. One example has been the prevalence of stories about large scale recalls of Chinese manufactured goods. Mattel announced a massive recall in the summer of 2007 after it was revealed that many toys made in China were covered in toxic lead paint⁶. Recalls like this create many problems for the Chinese: plant closures, lost jobs, and damaged reputations.

The other side of quality control is the effect upon the worker. Besides cutting costs, short cuts in the manufacturing process create dangers for the worker. Some have had limbs mangled or amputated by machinery not equipped with worker safeguards. Another side is protecting the worker from the product being produced. For example, in a pharmaceutical plant producing oral contraceptives, airborne particles of the drug began to adversely affect the male workforce. The Chinese will have to find a way to protect both consumer and employee in the future.

Perhaps the most difficult problem to overcome in the future will be China's rapidly aging population. Currently, eleven percent of China's population is over sixty years of age (compared to only fifteen percent in the United States). By 2040, over twenty eight percent of China's population will be over sixty years-old² (compared to twenty five percent in the United States). According to "China: the Balance Sheet" the difficulty in China will be that the population will become "old before it becomes rich"² (p. 46). As people live longer, the Chinese will have to find a way to pay for their medical and living expenses. Additionally, as life expectancies continue to rise, money will be needed to support this population for longer periods of time. The big question is how does China intend to pay for this? The people will be looking to the government for

the answers to this problem. What magnifies the problem is not just the larger percentage of elderly citizens that China will have, but also the sheer number that will require support. Twenty eight percent of the Chinese population translates to close to four hundred and fifty million elderly citizens. The costs of any kind of social security and health care program will surely be staggering.

A final issue that the Chinese must control is protecting intellectual property rights. This is one of the key sore spots in relations between China and the United States. From Trademark, Patent, and Copyright Law, Chinese piracy has known few bounds during their industrialization². The cost to the United States has been astounding. Approximately sixty percent of all counterfeit material seized by American Customs officials in 2004 came from China². But the piracy has not been limited to defense or manufacturing technology. Hollywood, Mo-Town, and the Silicon Valley have also been hurt by intellectual property violations. Many of the items hawked in stores (or on the streets) of major American cities are counterfeit goods – bootlegged copies of movies, albums, and software. As Chinese counterfeit goods are sold around the world, the loss to the United States is compounded.

In response to the growing international stir, the past few years have seen the Chinese pass an enormous number of laws and regulations as a result of their joining the World Trade Organization². Furthermore, the government has issued mandates to the country's courts regarding issues of intellectual property. All of these measures were passed in order to bring the country into compliance with the World Trade Organization (and the TRIPS agreement). What has not followed has been a strict enforcement of these laws. Instead of honoring the letter and spirit of laws meant to guarantee the

creative output of the developed world, China's laws thus far simply met the needs of the WTO in order to reap the benefits of membership².

Feeding the Dragon:

China accounted for less than four percent of the world's trade in 2000, and that number increased to over twelve percent by 2005². China must find a way to not only feed its people, but provide the energy necessary to light their homes, fuel their cars, and sustain trade. While the Chinese government has conceded that it will not be able to feed its population domestically, the country will be hard pressed to find a solution to China's energy needs.

Energy consumption in China has risen eighty percent in the past fifteen years². China represents one tenth of energy demand, but one third of energy consumption (approximately one half of American consumption). Compounding the problem for the Chinese is the rapid pace of their expansion. Meeting the need for energy has surpassed the need for efficiency. Oil, gas, and coal are being wasted. Inefficiency is causing China to consume more fossil fuels because of poorly designed automobiles, factories, and power stations that were hastily constructed to meet the needs of the people. This waste is having multiple impacts on the global economy. Inefficiency only increases the cost of development for China. Furthermore, wasting energy drives up the price for the rest of the world. The final impact is being felt by China's environment.

Sustaining growth requires energy, and it remains unclear when the economic expansion will finally slow. What is certain is that China's demand and consumption will rise for the foreseeable future. The current trend that must trouble China is the price

of oil as a result of their increased demand. As more oil is consumed to power infrastructure construction, agriculture, and automobiles, the energy costs of maintaining growth will skyrocket. In time, the energy costs of expanding China's infrastructure throughout the country will cause economic expansion to slow.

Another problem the Chinese are facing stems from the middle and upper-class love affair with the automobile: the new status symbol in China. A country that was mostly propelled by bicycles is quickly turning to the convenience of the car. The problem once again is a problem of scale. There are four hundred million automobiles in the United States. For a nation populated by over three hundred million people, this translates to over one car per person. China is a nation of 1.5 billion people. In the next century, the Chinese may see over a billion automobiles on the roads. This problem is amplified by the fact that Chinese cars are not the efficient, low-polluting (or hybrid) models on American roads today. Their hurried construction and poor design translates to billions of gallons of gasoline (and dollars) being wasted every day.

According to a study conducted by the Asia Pacific Energy Resource Center, the amount of energy spent on transportation in China is on the rise. By 2020, twenty-four percent of China's energy demand will be for transportation, which is up from fifteen percent in 2000⁷. Energy consumption for transport grew eighty percent during the last decade of the twentieth century. Of particular alarm are the statistics of energy use on China's roads and highways. Consumption for highway transport rose by one hundred and fifty-seven percent, and the highway share of total energy increased from forty-eight percent to sixty-eight percent. Furthermore, the increase in transportation energy consumption on highways was accompanied by declines of thirty-six percent on rail

transport and fifty-two percent on water transport. All of these changes have drastically increased China's dependence on oil.

In 1991, oil represented 17.1% of China's energy use. In 2002, that percentage had risen to 24.7%⁷. As industrialization and development continue to spread, China's reliance on oil will surely increase. What is troubling is that the Chinese government subsidizes fuel prices for their consumers. The subsidies represent a double-edged sword. Chinese businesses and consumers that earn one twenty-fifth as much as an American can not afford to pay fuel prices at three to four dollars per gallon. However, discounted fuel can have other trickle down effects that will only slow the momentum necessary to provoke change.

Cheap oil hampers Chinese efforts to improve vehicle efficiency. It also fails to curb the number of cars that citizens are purchasing. Furthermore, artificially lowering the price of oil may help the economy in the short term, but eventually subsidies like that become far too expensive for the government to maintain. If the government continues to shield the citizen from the actual price, China's domestic oil consumption in the next century will continue to rise far above what the government can afford to sustain. If the government finally ceases the subsidy, the consumer may not be able to afford the market price for oil. What happens when the consumer is no longer protected from the true price of energy? When the Chinese government stops protecting the firms developing the nation from the true costs of expansion, China could experience a severe economic bust.

The other key energy piece in China is how they will generate electricity. China's current domestic electricity sources include hydroelectric, nuclear, natural gas, oil, and coal power plants. Nearly seventy percent of their domestic electricity is produced by

burning coal for two reasons². The first reason is that China possesses ample coal reserves. Second, coal power plants are inexpensive to construct. Unfortunately for the Chinese (and the world), these coal plants have created a multitude of problems. The nation's coal reserves are rife with lignite and sub-bituminous coal⁸. These types of coal contain less carbon and more impurities such as sulfur, which produce more greenhouse gas emissions and acid rain. Second, these hastily built coal plants are extremely inefficient. Unlike modern facilities in the west, these plants were constructed to supply power as quickly as possible. Efficiency was not a priority. Technologies and construction techniques that limit heat transfer, maximize current production, and reduce pollution were not used in their construction to cut costs. New technologies that remove greenhouse gases such as sulfur oxides (or SO_x), nitrogen oxides (NO_x), and carbon dioxide were also not part of their design⁹. Until this domestic power supply is modernized to be more efficient, the world will suffer the environmental consequences of China's reliance upon coal.

The Dragon's Desolation:

The final crisis that requires the government's attention has been the devastation of China's environment. The Chinese have seen major urban centers rise across the country, an industrial boom that led to an increase in prosperity, their country now accounting for twelve percent of global trade, a budgetary surplus swell to over a trillion dollars, and most recently an unforgettable Olympic Games. All of these were economic gains. Once the country adopted the fiscal policy changes of Deng Xiaoping, many of China's other needs became second tier priorities. And China's environment suffered.

The effects of economic expansion wreaked a cascading havoc upon China's ecosystem. Once the reforms of Deng Xiaoping took effect, the first domino to fall was China's forests. Elizabeth Economy's "The River Runs Black" indicates that within the first decade of economic expansion twenty-five percent of China's forests were felled in order to provide fuel for its citizens as well as infrastructure construction³. First, disappearing woodlands led to an increase in flooding. Forests provide a natural barrier to the fluctuations in water levels in the world's rivers. When removed, there is no buffer to rising water levels. Furthermore, the flooding caused by deforestation is magnified because of shifting ecosystems. Once woodlands disappear, marshes and grasslands creep ever closer to the riverbanks. These types of terrain make poor barriers when rivers crest their banks. Deforestation wreaks havoc upon more than just humans; animal species in China have also been unfortunate victims. China is home to twenty-five percent of the world's endangered species. As ecosystems morph, the homes of many of these species simply disappear, which can be traced to shifts commenced by deforestation³.

Another lasting impact of China's deforestation has been the reduction in the amount of carbon dioxide removed from the atmosphere. Algae, plant, and tree species absorb this chemical compound from the atmosphere through photosynthesis (which produces glucose and oxygen). When the forests disappeared, the amount of carbon dioxide (and other greenhouse gases) removed from the atmosphere plummeted. Air pollution levels are extreme. Of the ten most polluted cities in the world, six are Chinese³. For the Olympic Games in Beijing, the government had to shut down factories and limit the numbers of cars on the roads around Beijing in order to cleanse the air: a

major concern voiced by the world's athletes. Much like the notorious smog that hangs over Los Angeles, many metropolitan cities in China are said to be under the pan of smog³. They can ill afford to lose additional natural sources of atmospheric carbon removal.

Deforestation also contributed to an increasing rate of desertification across China. Besides being barriers to flooding, forests prevent deserts from spreading. Once removed from the borders of the Central Asian deserts, the rate at which the deserts expanded eastward was twenty five percent faster than it was twenty years ago³. The consequences have been dire. Just as forests block rising rivers, they do the same to resist the advancing desert. Once they disappeared, there was nothing to stop the sands from sweeping across the country. In recent years sandstorms have moved eastward, covering large cities (including Beijing) in sand.

But the side effects have not stopped there. Dust particles from Chinese sandstorms have reached the United States, landing as far away as New England and Florida³. With the forests gone and the deserts growing, desertification has also impacted China's agricultural potential. The drying out has claimed millions of acres of arable farmland. For a nation home to only seven percent of the world's arable land, it can ill afford to lose more fertile ground.

The drought has continued below ground as well. Desertification has drastically affected China's water supply. For a country with a water table that can barely support its population, desertification has placed a major burden China's water supplies³.

Growing desert conditions have significantly dried up the water reserves. This caused

widespread migration to regions with better water tables. Unfortunately, that has only placed additional stress upon those water reserves.

Regions that have ample water reserves are facing other demons. One is the stress that mass migration is causing. But the more devastating impact is coming from the pollution that is seeping into the water reserves. Over seventy-five percent of China's water is not potable for human or animal consumption, which represents a critical danger to the future ability to supply their population in the future³. Livestock farmers in China routinely dump tons of raw animal waste into rivers and lakes without a thought of the consequences to those that live downstream³. But the problem of water pollution has also been exacerbated by growing urban populations. The population explosion in China's cities occurred before adequate sewage removal and sanitation stations were built. Millions of tons of human waste are released into nearby water sources as a result of lax environmental enforcement³.

Hastily erected factories are another key source of water pollution. The industrial waste produced in Chinese factories is dumped into rivers and lakes in the same manner as animal and human wastes. Because they were built so quickly, most of China's factories are not equipped with technologies such as closed water systems and waste water recycling. Instead of treating and purifying the water used in production, manufacturing firms discard it directly into the country's rivers, lakes, and streams³. Less than a decade ago, the largest nitrobenzene (an extremely carcinogenic organic molecule) spill was documented in northeastern China near Harbin, but little effort was expended to clean up the spill¹⁰. The government maintained order as residents were forced to do without running water until much of the spill passed downstream. However,

nitrobenzene is denser than water, which meant that it harmed plants, animals, and people for a longer duration of time before toxicity levels waned.

In the future, China will have to find a way to stem the tide of their horrendous environmental impact. Solutions will be needed to curb flooding, halt desertification, prevent water pollution, and decontaminate their water supplies. Without adequate attention, the Chinese may find that their newly modernized nation a toxic home.

CHAPTER THREE

SOLVING CHINA'S PROBLEMS: COLLABORATION AND COOPERATION

A Democratic China?:

Mao Zedong was right. Millennia of imperial rule and a failed republic had failed to make China a leader in the world. At his time, history had proved that monarchy and representative government failed to empower the Chinese people. For the last five hundred years of imperial rule, Chinese society stagnated. Technological and cultural golden eras were replaced by stagnant and fractured times. A new form of government was necessary, and socialism proved to be part of the solution. What Mao's vision lacked was the proper vehicle to make China a strong global power: capitalism. Deng Xiaoping, not Mao Zedong, delivered China to its global importance today by combining a communist government with a capitalist economic policy. The country's meteoric rise since 1979 was a direct result of Deng's reform.

For the United States, the key to relations with China is to understand the psyche of a nation that quietly (and repeatedly) rose to greatness only to fall into ruin over thousands of years. Today, they are a people striving to avoid that fate. America must appreciate that past in order to effectively work with the Chinese in the coming decade. The lessons of their past provided the Chinese with a long memory. They have not forgotten them, nor will they forget the mistakes of the future. What should change this time around is that the rest of the world (and especially America) must positively invest in the success of China's emergence. The United States should pursue a policy of provoking without provoking. China must respect American interests and America must

reciprocate. The intention is to coax China into action where necessary, but doing so in a way that does not cause them to lose face among the international community.

Additionally, the United States must realize that China's rise is not a threat to national security. The idea that China represents a menace to its neighbors or the world is ludicrous; it is antithetical to Chinese customs and traditions. The nation's progression has made it more dependent upon the rest of the world. China currently represents twenty percent of the world's population, but only possesses seven percent of the earth's arable land². As a result, the country no longer produces enough food to be self-sufficient. The Chinese are also dependent upon the world for its energy. They represent over twelve percent of global energy consumption (and a third of global demand). For a nation of one and a half billion consumers, that percentage will increase in the coming decades.

There is an inverse relationship between China's dependence upon the rest of the world (for energy and food) and its potential to wage a war. The hundreds of millions of impoverished Chinese are still waiting to rise out of indigence. A war instigated by the Chinese would place thirty years of development in jeopardy. It would not be difficult for the rest of the world to cut off China's access to food and oil as most of their imports arrive via ocean transport. If the people begin to starve in the cold, the government will have to face down over a billion angry citizens. The war at home would be infinitely worse than any international conflict. China has accepted the idea that it will be dependent upon other nations to secure its future. This should send a strong signal to the rest of the world of the necessity of peace for the Chinese. China will need to secure

access to energy, food, and resources (just as the United States has) in order to sustain prosperity.

Finally, the United States must remain patient with China. The author remains confident that a representative government will emerge in the future. Mao Zedong's era of paranoia and xenophobia has passed. The images of the violent crackdown at Tiananmen Square in 1989 are gradually dissolving as the government allows the people to protest (provided that the citizens receive permission). There have been numerous examples of such protests. Many of these have been in response to the growing environmental crisis. Citizens are using the internet and cell phones to coordinate protests across the country¹¹. Furthermore, they are using this issue as a national civil rights issue; the well-being of the citizenry is linked to the health of the environment¹².

The democratization of information via the internet will be another way that ideas spread across the country. Despite government attempts at controlling the content, the spread of information will not discriminate. It will spread from citizen to citizen as more people gain access to the World Wide Web. As hundreds of millions of Chinese become networked, the grass-roots campaign that failed during the 1920's will be reborn. The government will not be able to dam the river of ideas and information that are already exchanging amongst its people.

There are a few roadblocks that still stand before a Chinese democracy is a reality. First, hundreds of millions of Chinese citizens are still living in poverty. Peasants do not have access to the resources or the technology to provide them with the ideas and information necessary for change. They are, however, mostly literate. Once the technology arrives, change can (and will) sweep across the country.

A final piece of the puzzle will be the evolution of the middle class. Their ideas will become a driving force in the direction of Chinese society in the coming decades. They are already a technology and information savvy generation. When combined with growing wealth, the middle class will be able to influence the government; they will be able to vote with their money. That is a power the Chinese government will find extremely difficult to ignore.

Until then, the United States must continue the process it has already begun. Keep the lines of communication open. Maintain an open dialogue with China on the issues pertinent to both nations, and find new ways for the nations to make concessions to each other while protecting national (and worldwide) interests. The answer to these problems will be reached faster through cooperation and collaboration.

Economic Solutions...and Opportunities:

China's economic problems require serious attention. Many of the issues that China will face in the future have already been seen in America. Unfortunately, the solutions to these problems still elude the United States. Thus, it will be important for America and China to maintain a constant dialogue in an attempt to create solutions that can work for both countries. Neither nation can afford to be overly critical of the other without adversely affecting open lines of communication. Nor can they be overly obsequious, for the gravity of these problems necessitates candor. The economic ties between the two nations are strong; so strong that enmity between the United States and China will only impede their progress. Both nations will have to show a lot of humility to effectively collaborate with each other.

China and the United States have been doing business together for decades. Economic and trade agreements have resulted in windfalls for citizens, businesses, and governments alike. The key for the United States will be to maintain these strong bonds with China as their relationship evolves. As both countries adjust to new roles as global citizens, it will be important to use each other as resources in managing change.

The massive trade surplus China has created over the years left it looking for somewhere to invest that money. The Chinese poured significant sums of money into American government bonds, and now hold an enormous sum of American debt. Given the current state of the American (and the global) economy, the United States can not afford to give the Chinese a reason to withdraw their investment. That kind of a blow to the American economy could knock America into the worst fiscal crisis since the Great Depression. If America had to endure another depression, the effects would be acutely felt in China (and the rest of the world). The United States must tread lightly because of the sheer amount of business done between the countries on an annual basis. Since 1985, the trade deficit of the United States to China went from zero percent to nearly twenty-six percent of its total global trade deficit². It is difficult to ponder how much more Americans would spend if the majority of their purchased goods came from markets in the developed world. Furthermore, it becomes dizzying to consider whether China would have experienced the same rate of growth without the United States: whether it came through the consumption of Chinese goods or American corporate investment. Finally, it is rather easy to believe that American firms would have struggled without access to China's markets or its discounted labor. There is too much potential loss to be had by mutual alienation.

Of critical importance in the next few decades are labor issues, and they represent an interesting challenge for the Chinese. In the coming decades, the employment of China's citizens will be at the fore of economic planning. The key issues that China will face are potential problems with sustained growth, labor shortages, and distribution of wealth.

If China's manufacturing sector experiences modest (or below average) growth over the next decade, the Chinese will have to find a way to employ their unskilled laborers. One potential solution will be to use unskilled labor to build and maintain infrastructure. In the coming century, China will need to build the roads, rails, bridges, subways, sewage plants, power plants, and ports needed to support its people. A major subway line recently opened in Beijing. Immediately after it entered service, it became clear that the line was overwhelmed as thousands waited to board overcrowded trains. Construction of these structures would employ millions of Chinese for years to come. The maintenance of an infrastructure that serves the transportation and energy needs of over a billion people will need constant maintenance, and a constant pool of unskilled labor to perform that upkeep. A project like this will remain essential to the nation in the coming decades, keeping unskilled workers employed long into the future.

The United States can also play a part in the modernization of China's infrastructure. American civil engineers have ample practical experience in urban planning and mass transit construction. China currently graduates record numbers of engineers, but they lack the experience of their American counterparts. If sent to China, American engineers would be able to advise and train the Chinese as they plan, organize, and construct a mass transit system. Working abroad would give American engineers

international training experience to boost their resumes. Furthermore, American engineers would have the benefit of planning a system on a blank canvas. When they returned home, their expertise could be put to use on building an analogous (and long overdue) system in America.

On the other hand, China may have to contend with continued strong growth in the future. One potential pitfall associated with rapid growth could be an evaporation of China's available labor pool. If the available labor pool contracts, China might have more jobs than workers. This scenario seems unlikely because of the sheer size of China's available labor pool. It has been thirty years since the beginning of Deng Xiaoping's economic reforms, yet China still has approximately three hundred million potential workers (migrant and rural laborers)¹³. Even with continued double digit economic expansion, the pool of labor in China will be large enough to meet the needs of development for the next several decades.

Another issue associated with economic development is increased wages. As Chinese workers earn higher salaries, the world's manufacturing firms may look to other nations as new labor sources. However, the Chinese should not be worried about the outsourcing of labor similar to what occurred over the past few decades in the United States. China's per capita GDP is still very low compared to the rest of the world (132nd of 229 nations). A doubling of China's per capita GDP will only elevate their position to 96th (of 229). Thus, the likelihood of labor migration to other nations seems unlikely⁵.

Furthermore, China's development has allowed its companies to accumulate enormous sums of capital as a result of the sheer volume of exports. Because of this, Chinese companies can afford to pay workers higher salaries. Citizens earning higher

salaries will boost domestic consumption, providing more demand for Chinese goods. Domestic consumption may pay additional dividends as a result of the slowing global economy. Demand for domestic goods rather than imports from elsewhere could soften (or slow) the impact of decreased global consumption (important today).

Additionally, the prospect of Chinese workers earning more will have other positive consequences. First, higher wages across the country will lead to a more even distribution of wealth. As development stretches east, there is hope that the vast difference between a worker's wages in Shanghai and inland China will begin to close, homogenizing prosperity across the country.

What the Chinese should avoid is changing their economy as drastically as the United States in response to growing costs of labor. Over the past several decades, American industries sent many of their factory jobs overseas to countries such as China, Vietnam, Indonesia, Malaysia, and Cambodia. The migration continued in the 1990's after the North American Free Trade Agreement (NAFTA) was passed. Instead of moving across the Pacific Ocean, manufacturing jobs moved south of the border to Mexico. In the wake of these changes, the American economy fundamentally changed. It became an economy of consumption instead of production. In order to drive such a level of consumption, Americans accrued a lot of debt.

Such a shift will probably not occur in China. One reason is that the large surpluses that Chinese companies have accumulated will trickle down to the worker. This will drive significant domestic consumption, which will keep domestic manufacturing healthy for quite some time. Furthermore, eastern philosophy does not endorse the path of American consumerism. There are several examples in Buddhism of

being content with what one has, and that acquiring too many things leaves one impoverished¹⁴.

Another matter the Chinese will have to address is quality control in order to protect employees and consumers. This should include building safer factories, monitoring working conditions, and product inspections. Firms in the United States have had organizations like the EPA, the Congress, and labor unions to protect workers and consumers. Despite the existence of these systems, manufacturers still cut corners by polluting, recalling, or lying to the public about their activities. In 2007, Merck settled a lawsuit related to a potassium thiocyanate release in June of 2006, which killed large numbers of fish and shut down a drinking-water intake on the Schuykill River¹⁵.

Examples such as this are why America must offer support to Chinese firms when similar situations arise in the future. Instead of chastising China's manufacturers for mistakes, American counterpart firms should realize that lapses still occur in the United States. They should also send their quality control and safety inspectors abroad to help fix the problem. Cooperation would yield immediate and long-term results. First, problems of quality control would be resolved faster, minimizing the impact to employer, employee, and consumer. Additionally, the likelihood of major events in the future would be minimized. Manufacturers and their employees would be better equipped to resolve problems before massive recalls or major polluting incidents occurred.

China and America must also discuss is the dilemma of an aging population. America, Europe, and the rest of the developed world have struggled with this problem for decades. Ever since the Social Security Act was passed, the number of impoverished elderly Americans dramatically decreased. Unfortunately, the American system is

crumbling under its own weight. Retired Americans are living longer, creating more of a drain on the pool of funds. This drain is magnified as the percentage of elderly Americans continues to rise. The result is a system on the verge of bankruptcy.

The utility of such a program in China is questionable for a variety of reasons. The two key reasons are the collectivist nature of Chinese society as well as the regional diversity of China. In western China, a social security system will most likely not be necessary. The western regions represent the frontier of development. Families are larger because they have not been under the government mandated one-child policy. As a result, there are more heirs available to care for older family members. Furthermore, life expectancies for the elderly are shorter than in the developed east.

However, the developed Chinese provinces have a need for a social security system. Because of the one child possibility, there are many families that have two children caring for as many as four parents (and a few grandparents) in addition to a son or daughter of their own. Additionally, life expectancies in the east are on the rise because of advent of modern medical technology. With such a high number of dependents, these families could struggle to support their elders without help.

There are two potential remedies to this situation. One solution involves the government removing the one-child restriction on the marriages of two one-child families. Such a policy would allow those families to raise more heirs to support their elders. Another possibility would be a social security system for couples of two one-child families that have only one child. This could include subsidies to pay for nursing home care. The other possibility would be payments from a government controlled fund to families to subsidize care. Grandchildren would not have to pay the price of

population control. Instead, the government would be providing the solution to a problem it created. Because this program would only target a specific population of families, this system would remove issues of scale from the problem: reducing the need for heavy taxation or massive government spending.

The next issue that will require open dialogue between the nations is the protection of intellectual property. Violations of these rights by the Chinese cost America hundreds of million dollars in revenue². The technological advancement of the United States makes it a frequent target of Chinese piracy. Unless the Chinese government begins to intercede, this issue will continue to be a sore spot between the two nations.

Justice in the realm of intellectual property protection should be primarily economic. Copyright infringement steals from the originator in several ways. One effect is short term; the counterfeiting firm pays only a small fraction of the money invested in creating the new product or technology. In the long term, victims of this kind of piracy become reluctant to invest in research and development. Therefore, justice must be financial.

One solution to the intellectual property issue would be for American companies to sell technologies to China that pose little threat to national security. One way to release this technology would be to employ the model that pharmaceutical companies use today. Instead of charging the full price, American companies could sell some of these technologies or goods at rates that the Chinese can afford (rather than the full market value). Currently, the per capita GDP in China is four percent of American per capita

GDP (approximately \$1700 to \$42000 USD).² American companies would have to adjust their sales accordingly.

However, American companies should not have to lose money when selling their products and technologies to China. The Chinese government could pay the difference. American companies would sell their goods or technologies at discounted prices to China. The Chinese government would then pay the American company the difference. This would ensure that the American company met their fiscal needs. Additionally, this system might diminish the massive trade deficit that exists between the United States and China.

Examples of these kinds of sales include American agricultural technologies that would allow Chinese farmers to produce more food with less environmental impact. More fuel efficient equipment, planting and harvesting techniques, animal waste disposal techniques, and the latest fertilizers all represent technologies that would improve the quality of life for the Chinese people.

America could also share some its technical expertise with Chinese manufacturers through a similar system of discounted prices. The manufacturing and energy industries in China are rampantly polluting. Factories and power plants pollute the air because they do not employ any kind of scrubbing technology to remove harmful chemicals from their exhaust. As a result, tons of sulfur oxides (acid rain), nitrogen oxides (smog), and carbon dioxide (global warming) are released into the atmosphere. Furthermore, these plants do not purify any of their waste water, which is returned untreated to the source. Such systems would be invaluable to China. They would allow the Chinese to purify their water, minimize the smog, and curb the carbon imprint of the country. Helping China

would also earn the United States some much needed international capital as Korea and Japan continue to suffer as China's pollution drifts through the atmosphere.

Another possible solution originated from an idea proposed by Dr. Jillian Clare Cohen and Dr. Patricia Illingworth. They proposed several mechanisms for the pharmaceutical industry to improve access to crucial medications necessary for developing nations. One of these solutions placed the World Bank as an intermediary between pharmaceutical companies and the developing world¹⁶. In their model, the World Bank issues loans to manufacturing firms in developing nations (i.e. China) to purchase patent licenses to produce essential medications. Those firms would then be able to sell those medications at affordable prices (because they are not paying the price of consumers in the developed world). The World Bank would benefit because it would recoup interest on top of the principle cost of the license. Pharmaceutical firms in developed nations would earn the profit simply from the volume sales of the patent licenses. This model could easily be applied in fields other than pharmaceuticals. The Chinese people would benefit from the domestic production of products that would improve their quality of life; pharmaceutical, transportation, and other essential products would be made available at affordable prices for the Chinese consumer.

The one short-coming of this model is preventing the distribution of these licenses to other manufactures after their sale. However, there are a few solutions that would ensure effective monitoring of license distribution. The first organization that should be employed is the World Bank. Violating firms could be punished first through economic means. This could be done by increasing the interest rates on loans owed to the World Bank, increasing the principle, or even requiring closure of the factory. Another

organization that could be employed is the United Nations. The United Nations already issues sanctions based upon poor global citizenship, and intellectual property violation could be added as justification for employing economic penalties. As a member nation, China would be obliged to meet these standards or jeopardize their status in these international organizations.

Developing nations could also use non-government organizations as monitoring entities. If the United Nations proved to be too slow or inefficient at protecting production licenses, companies in developed nations could employ NGOs to monitor copyright infringement. This would be the equivalent of hiring a private investigator when the resources of the police department are over-taxed. According to the TRIPS (Trade-Related aspects of Intellectual Property Rights) agreement of the World Trade Organization, “Without prejudice to the protection of confidential information, Members shall provide the competent authorities the authority to give the right holder sufficient opportunity to have any goods detained by the customs authorities inspected in order to substantiate the right holder's claims¹⁷”. Once pirated goods were discovered, NGOs could take this one step further by bringing evidence of violations to the WTO and United Nations. In this manner, the Chinese government would be compelled to act to protect their membership.

Curbing Consumption:

The Chinese will also have to deal with uncertainty because of the current energy crisis. Developing nations will continue to crave the fuel necessary to elevate their societies, which will drive up prices for the rest of the world. As fuel prices rise, the

nations of the world will have to find ways to deal with the economic side effects. In order to resolve the energy crisis, the United States and China should work on a common domestic energy policy, create nationwide mass transit systems, and find new ways to decrease consumption.

The first step of this process for American and Chinese leadership is to craft a better solution to domestic energy needs. Sound energy policies for both nations will prove vital in decreasing consumption, which will slow increases in energy prices. Furthermore, China and America can publicly display their commitment to reform by working together to create similar policies. New energy policies should include domestic energy supplied largely by nuclear power, economic incentives for alternative energy generation methods, tax credits to consumers that purchase hybrid vehicles, and better mass transit systems.

The most critical portion of a new energy policy for both nations will be to reduce fossil fuel consumption as a source of electricity. It is the belief of the author that the short-term solution to domestic energy needs is nuclear energy. Nuclear power produces no carbon dioxide and produces less toxic waste than fossil fuel plants (even those equipped with scrubbing technologies). It is an efficient and extremely safe energy bridge to the future. Hopefully, the next century will either yield a better energy source or a better containment system for nuclear waste. Until that time, nuclear power should become a mainstay of domestic energy production.

Currently, China has announced that fifty nuclear power plants are being constructed across the country. America objected on the grounds that an expanded Chinese nuclear program threatened national security. Yet the objection seems

hypocritical as nuclear energy has been hailed as a keystone of a new American energy policy. The United States is preparing to build the third generation of nuclear power plants (Limerick Nuclear Power Station is a second generation plant). Furthermore, America should not complain about a domestic energy source that may take dozens (if not hundreds) of inefficient Chinese coal burning plants off-line.

Another ray of light in the nuclear energy debate is the pebble bed reactor¹⁸. This technology is promising because it employs helium as a coolant rather than water: eliminating the need for elaborate waste water containment systems featured in today's nuclear power plants. Also, the uranium pellets used for fuel are covered with a silicon carbide coating which absorbs much of the radiation emitted from the spent fuel. This kind of technology represents yet another way that the United States can help reduce the pollution levels of the Chinese energy industry. At the same time, an efficient nuclear energy program would provide China with an effective new component to growing energy demands. The Chinese are already beginning construction of one of these nuclear facilities¹⁸. This kind of technology also eliminates the American objection to a large scale Chinese nuclear program because the spent pellets are very difficult to weaponize: translating to a minimal threat to American national security interests. A source of clean nuclear energy could become the critical blow to dependence on fossil fuels for both countries.

Other technologies, such as wind power generation, represent clean energy sources that can further reduce the amount of fossil fuels burned in each country. Companies like General Electric, the pioneers of this energy source, could create large sums of revenue by helping to distribute wind generators across America and China.

It has become clear that both nations are committed to working through this problem together. President George W. Bush signed the Energy Policy Act in 2005, firmly committing the United States to a path of cleaner and more efficient energy generation¹⁹. The following year, representatives from both countries met for the second U.S. – China Energy Policy Dialogue after President George W. Bush's visit to China²⁰.

Another key to reducing energy consumption in the United States and China will be through a modernization of infrastructure. In the 1950's, the Eisenhower Highway Bill began the love affair between Americans and their cars. When combined with cheap fuel, the American economy became reliant upon discounted transportation. Fifty years later, oil prices skyrocketed, and the economy suffered. China seems to be heading down a similar path. The growing Chinese middle class has developed a similar affinity for the automobile. With the government subsidizing fuel costs, the number of cars on the roads will increase. The specter of billions of cars must haunt the Chinese government. They can not afford to rely on the automobile like America.

America must help the Chinese prevent billions of cars from reaching the roads, and the answer is mass transit. A nationwide high speed railroad infrastructure project will not only keep many citizens employed for years to come, but it will also curb China's energy appetite. The United States must help China plan and construct a nationwide mass transit system based upon railroads. As far as cooperative efforts between the two nations are concerned, this is a windfall opportunity for all involved (as already discussed): engineers, city planners, and construction firms. When American ex-patriots return home, they can begin the much needed overhaul of the system in the United States. But the ultimate prize that cooperation will yield is the system itself. Both nations will

have found a way to minimize the role of the automobile, curb energy consumption (especially dependence on foreign oil), and improve the lives of their citizens.

Finally, for the cars that do remain on the road, the United States and China must find a way to turn their citizens toward energy efficient vehicles. The larger the number of gas guzzling cars (whether American SUV's or inefficient Chinese models) on the roads, the more the two countries will be tied to nations like Saudi Arabia for energy. National tax breaks or subsidies for consumers that purchase hybrid models would be one way to accomplish this. Similar incentives should be offered to the manufacturers based upon the overall mileage of a company's fleet of cars, number of hybrid vehicles produced, and the total number of available hybrid models produced by a given manufacturer. Another solution would be for consumers to pay tax penalties for purchasing inefficient models. A large tax added to the price of the car (to offset the fuel consumption) would boost sales of more fuel-efficient models. Finally, cities and regional governments could further aid this process by offering tax breaks for residents that participate in programs such as Philly Car Share²¹. Instead of ownership, residents pay a fee to reserve access to a car. Programs like this could also use cars such as the Chevrolet Volt (which can travel forty miles without using gas) in order to diminish fuel consumption.

Both governments could take this a step further by offering public transportation subsidies to their urban populations. Cities with large mass transit systems could offer citizens a significant tax reduction if they did not own an automobile. Instead of allocating money toward a monthly car payment, a tax break or subsidy would become a yearly allowance for public transport. In this manner, the government would be able to

serve two purposes. The first would be to remove as many cars as possible from roads and highways. Additionally, this measure would hopefully maximize the utilization of new public transportation systems.

There is one final issue outside of a new energy policy that America must help the Chinese address: fuel subsidies. Despite the increases in fuel prices in the past two years, very little of that increase was passed to the Chinese consumer. China will soon become the largest energy consumer in the world. If the government continues to insulate businesses from the rising cost of energy, then there will be no pressure to curb inefficiency or the rise of the automobile.

China's government can achieve a higher level of control over fuel consumption and regional authorities in the future. The key will be to link regional fuel utilization to the government subsidies on energy prices. In this way, China can create economic incentives to conserve fuel. An interesting solution would be to tie an increase in per capita GDP to a decrease in the level of the government fuel subsidy. For instance, an increase in per capita GDP of ten percent for a given region would result in a ten percent drop in the government fuel subsidy for that region. In this manner, citizens with more disposable income would have a financial incentive to not purchase an automobile as they would be paying more for fuel. For regions in the early stages of development, the government could allow a grace period of a few years before growth and fuel subsidies were linked (in order to foster high growth rates). This type of system, when combined with tax breaks or allowances for public transport, would present a significant incentive to prevent cars from crowding China's roads and highways.

The major difficulty will be monitoring regional differences in consumption. Because agencies such as APERC (Asia Pacific Energy Research Center) and IEA (International Energy Agency) have long studied Chinese energy consumption, they make excellent candidates to monitor fuel consumption. This would prove to be invaluable in preventing regional magnates from falsifying statistics.

Oil consumption could also be decreased by government taxation of domestic automobile manufacturers. Much like the taxes levied on carbon emissions, the government could tax car manufacturers at a level which would ensure that fuel saving technology was being used. In the energy industry, the price per pollution unit of sulfur dioxide is equal to the cost of scrubbing technology. For automobile manufacturers in China, an analogous tax could be levied on cars to ensure that efficiency technologies were being employed. If that tax was around five percent more than the cost of implementation, the company would actually save money by building a more fuel-efficient automobile.

Healing the Land:

The energy crisis that both countries face is directly tied to environmental issues. Economic expansion in China has come at the expense of their environment. Fiscal policy has ruled in China for the past three decades, which has devastated the Chinese ecosystem. Regional magnates endorsed policies that maintained local prosperity. The results were horrendous: de-forestation, desertification, water table pollution, carbon dioxide emissions, erosion, flooding, and rapidly changing ecosystems. The United States has been down this path before. Nearly forty years ago, the Cuyahoga River burned and

the Great Lakes were dying from toxic levels of pollution. American lawmakers passed an extensive amount of environmental legislation in the wake of these catastrophes. The United States continues to work toward an environmental policy that works harmoniously with economic growth. Some may argue that eco-regulations cost businesses too much money, but it is hard to argue with the results. Over eighty percent of the pollution has been removed from the Great Lakes, and the Cuyahoga River has been restored as both a clean outdoor recreational area and a functional commercial waterway. China must learn that its environmental perils can be reversed, but only if restoration efforts commence immediately.

The first step in healing China's environment should be to create economic incentives for regions to reduce pollution. Currently, coal burning plants are responsible for generating nearly eighty percent of China's electricity. They also represent seventy percent of the nation's overall energy consumption^{2, 7}. However, the reliance on heavily polluting coal-fired plants has created several problems that need to be resolved.

The first problem associated with burning coal is that large amounts of carbon dioxide, sulfur dioxide, and nitrogen oxides are emitted into the atmosphere. The first stage of fixing this problem should come through taxation of sulfur dioxide emissions. The Chinese government currently taxes sulfur dioxide emissions at a rate equal to the cost per plant unit of desulfurization equipment⁷. The end result is that the installation of scrubbing equipment no longer represents a financial penalty to the plant. However, the Chinese government should increase the tax on sulfur emissions in the future (and on other major pollutants) so that there is a financial incentive to protect the environment.

Coal burning also produces large quantities of carbon dioxide emissions. Compared to other fossil fuels, coal burning produces more carbon dioxide (as well as other atmospheric pollutants) than other fossil fuel sources like natural gas. Today, China has overtaken the United States in the amount of carbon dioxide released into the atmosphere²². But there are no incentives or systems in place in China to reduce carbon dioxide emissions. There are several means by which the Chinese government can reduce these emissions.

One option for the Chinese would be to implement a system based upon the model that the European Union implemented: carbon emissions trading. Regions would be issued set numbers of allowances (the right to emit one ton of carbon dioxide) based upon their yearly emissions. These allowances amount to ninety to ninety-five percent of the previous year's emissions for that region. Then each region would create an allocation plan to distribute allowances amongst industries. Companies short on allowances must find a way to reduce their emissions: either by purchasing surplus allowances from other companies in the market or by implementing technologies that decrease emissions. If the market price for purchasing additional allowances is too high, then the solution would come from implementing carbon capturing technology²³.

The Chinese government could also tax carbon emissions. According to the 2004 study by APERC, China could drastically alter its carbon footprint through taxation. It compared the generating cost of electricity (via coal with and without carbon capturing technology and natural gas with and without carbon capturing technology) with a per ton tax of carbon emissions. The best source of power generation with a tax level below \$22 per ton of carbon dioxide produced is coal power without carbon capturing. Between a

tax rate of \$22 and \$28 per ton of carbon dioxide, coal power with carbon capturing becomes the optimal power source. With a tax rate above \$28 per ton of carbon dioxide, natural gas plants with carbon capturing represent the best power source⁷. One recommendation for the Chinese government would be to start implementing a tax at a rate greater than \$22 per ton of carbon dioxide, which would make the use of carbon capturing technology cheaper than releasing one hundred percent of carbon emissions. This would create a financial incentive regional administrators would easily understand: saving the environment saves money. Furthermore, “greener” energy firms should be rewarded for their efforts to curb their environmental impact with contracts to build more power plants across the country.

All of these solutions require one crucial missing piece: a monitoring and enforcement agency. China’s SEPA has not done enough to manage the repeated violations of environmental law. The United States should push for organizations like the United Nations, WTO, and the World Bank to become part of the solution by setting up monitoring agencies across China. Their chief focus would be to issue fines to violators. Furthermore, companies could forego a portion of the fines if they used the money to purchase scrubbing and carbon capturing technologies. Another possibility would be to create a fund consisting of collected money to pay for environmental technology in other developing nations. In this way, China’s violations would be able to help other nations avoid the Chinese predicament.

In addition to these economic incentives, the United States can help with discounted sales of technology (as previously discussed). Science can also be involved in other ways. Chinese scientists have begun creating the Green Wall of China, an effort to

plant a man-made forest to prevent desertification²⁴. The wall of trees is expected to span almost three thousand miles across China in order to prevent the rapid expansion of the country's deserts. While American companies send technology and information across the Pacific Ocean, American Universities should send their best botanists, environmental scientists, and biologists overseas to help. A forest of that magnitude will not only cut down on the frequency and number of sandstorms affecting the nation, but it will also provide a much needed carbon-sink for growing carbon dioxide emissions. Currently, this project has already become a bit of a debacle²⁵. It appears as if many of the millions of trees planted are either not surviving or are failing to stop the onslaught of the desert²⁵. The spread of the Gobi desert may never be contained if help from abroad fails to arrive.

In the meantime, current examples of Sino-American cooperation should be expanded. In 1999 the U.S. – China Water Resource Management Program formed in order to diagnose problems, jointly discuss problem solving, create collaborative water resource and energy projects, and develop new methods of technology implementation in China and the United States²⁶. The EPA has already begun advising SEPA (the Chinese environmental protection agency) on enforcement issues. With the aid of the economic incentives discussed, the EPA can help SEPA ensure that enforcement meets the letter of Chinese law.

Besides the work of the EPA, American legislators have also aided the business sector. The government has sponsored numerous trade shows through an organization known as the United States Commercial Service. The activities at such gatherings include presentations about tax exemptions, existing business relationships, financial

experts and partners, and market research about business opportunities in China⁹. All of these efforts are intended to pipeline American technology into China.

Congress could take one more step to help provide China with additional means to clean up the environment. Part of China's pollution problem has been rampant American consumerism. Cheap manufactured goods have allowed the American consumer to buy more for less. This has allowed manufacturers in China to forego environmental enforcement in order to meet demand. If the American consumer paid a small environment tax on Chinese goods, money could be raised to purchase systems that would clean up China's manufacturing outfits. Taxation, however, could prove to be risky business. First, too great a tax would decrease consumption, which might imperil the very Chinese manufacturers it was designed to help. Second, Americans would want guarantees to ensure that the money was being put to proper use.

A final stanchion of aid to China has come through the efforts of American NGOs (non-governmental organizations) that are focused on protecting China's environment²⁷. Over the past few years, the number of these organizations has increased drastically, and so has the specialization among them. Their interests span from pollution control and enforcement, energy conservation efforts, project finance, sustainability, and waste removal. Besides efforts specifically directed at environmental improvement, NGOs also developed public health projects that were necessitated by the impact of pollution.

American NGOs have much to learn as they work with the Chinese government. Though the work they are doing is important, too often their efforts are used as a platform to criticize the Chinese government. Instead of concentrating on the mission at hand, these organizations condemn the Communist government for past human rights

violations, especially crackdowns on protests against democratization. These groups must recognize that they can not continue to demean the Chinese government without some form of retaliation. Whether through economic or political ends, these organizations are only there because China allowed them access. There is a way to provoke the Chinese into action without embarrassing the government. For instance, China's environmental crisis (in the author's opinion) represents one of the grandest potential human rights catastrophes if left unaddressed. Toxic air and water represent a bigger threat to the Chinese people than the government. Instead of waving the "bloody handkerchief" of events like Tiananmen Square, NGOs should be championing the right of the Chinese people to clean air and water. Over a billion angry people are not a reality that the government can afford to ignore. The environmental movement could be a way for NGOs to gain credibility with the Chinese government, which could result in increased access and opportunity.

One such way for these organizations to gain more credit within China's political sphere is to have them become the watchdog monitoring agencies of the United Nations, WTO, or the World Bank. If these respected international organizations allowed NGOs to become certified environmental supervisors, they would gain much more political clout within China. Instead of being perceived as radical political activists, they would be helping the government achieve the goals set by law. Employing NGOs in this manner would be a win-win opportunity for both the NGO and the Chinese government in protecting China's environment.

The situation in China is significantly worse than conditions in America in the late 1960's and 1970's. Therefore, as much information, research, and technology must

be employed to help China's environment recover. Without American aid, the Chinese may inherit an environment that is too toxic to sustain what decades of work have created. It is time to act.

CHAPTER 4
THE UNWRITTEN BOOK

Conclusion:

The United States must be a partner to China. Whether the aid comes through economic, energy, or environmental means, there are a plethora of conduits for America to help the Chinese people. For five thousand years, every rise of the Chinese civilization was accompanied by an epic fall; usually one perpetrated by outside influence. This time, the role of America should be to help China realize its potential.

For my entire life, my parents and teachers have always stressed that there was always something bigger in life. I remember being told that I was special, but there are always people in the world that might be more intelligent, athletic, talented, or gifted. I was also reminded that regardless of my own talent, it was always important to make a contribution to more than my own personal benefit. The idea that there was something else, that there was more in the world than one lens, has proven invaluable to me. I truly believe that this is a lesson that China can (and will) teach the United States through cooperation. Perhaps there are things the Chinese may be able to teach Americans through how they handle these problems. There is certainly something to be learned by working together.

It is time to recognize that working with China is more than a business partnership. It is more than a market. It is more than money. Aiding the Chinese is a chance for the United States to be a part of something larger than American prosperity. It is an investment in the future of twenty percent of the world's population. It is a chance

to save part of the world's environment. It is the opportunity to create solutions to energy demands. It is a chance to help one and a half billion people find their voice in the world. It is time to invest in their future. It is time to invest in what may well be the largest democracy in the coming century. It is time for the United States to be involved in something larger than its own narrow self-interest. It is time to treat China as more than a means to an end. It is time to invest more than money in what can be the greatest national success story in the history of the world. It is time to be a good partner. It is time to be engaged and to stay engaged. America can do all of these things, and China will remember. The time has come for action.

NOTES

1. Fairbank's book was the chief historical resource used for the first chapter of the capstone. It was a great resource for the evolution of China from the dynastic era to Republic created by Chiang Kaishek.
2. The book by Bergsten, Gill, Lardy, and Mitchell was helpful in providing information regarding all aspects of China's economic development. It was filled with data that was helpful when studying major trends in China's economy: age demographics, trade deficits, energy consumption, and labor.
3. "The River Runs Black" painted an excellent picture of the environmental crisis in China. The book covered every aspect of how China's growth sparked the current environmental catastrophe. It also discussed how the Chinese government has begun to address the problem as well as the work that still needs to be done.
4. This reference was more important in translating the contemporary Chinese mindset. Whereas the first reference (Fairbank) helped set the tone for the historical influence on the Chinese condition, this book shed more light on how the Chinese condition has changed as a result of industrialization.
5. The C.I.A. website had the per capita GDP of 229 nations listed in decreasing order. It was helpful to see how China and the United States ranked relative to each other. Furthermore, it was helpful to see what nations were close to them in the rankings.
6. This was a news story from MSNBC.com regarding the massive Mattel toy recalls in 2007 due to a toxic lead paint. It was important to get concrete information regarding issues of quality control among China's manufacturers. Furthermore, the high profile nature of the recall (the impact in the United States) made it a sound choice for the paper.
7. This study, prepared by APERC (the Asia Pacific Energy Research Centre), provided an excellent source of specific energy statistics and information regarding all aspects of Chinese energy. It was invaluable in providing the author not only with the data of China's energy consumption and production, but also in projecting scenarios of possible developmental strategies for the country.
8. The "Oil Drum", an energy website, provided information regarding China's coal reserves. In particular, it broke down the coal reserves by tons of each type of coal.
9. The U.S. Commercial Service website was helpful because it provided examples of the links between American and Chinese businesses, particularly in the realm of environmental technology sales. It provided links and contact information to help American companies gain access to markets in China for their goods.

10. This article by the New York Times, described the nitrobenzene spill near Harbin, China, in 2005. It was interesting to contrast the story told by the American Press versus the story reported in China (a friend of the author was honeymooning in China at the time of the spill).
11. The story on RedOrbit.com presented information regarding how the environmental crisis in China is creating political unrest. Furthermore, the article mentioned how things have changed due to the use of new technologies (like the internet and cellular phones) to coordinate protests by Chinese citizens.
12. Worldwatch Institute wrote a great article about how the environmental crisis in China is creating a grassroots movement for democracy across the country. Much like the RedOrbit.com reference, this article was particularly helpful in describing the evolving democratization movement across China.
13. This article was particularly helpful in highlighting some of the major potential changes in the Chinese labor pool in the coming decades. It highlighted the possibility that the labor surplus in China may be used up in coming decades. This large pool of labor has been responsible for rapid industrialization.
14. The Five Precepts of Buddhism are the most important principles of Buddhism. It will be difficult to establish American consumerism in China due to the prevalence of Buddhist influence.
15. The U.S. Department of Justice issued this report regarding Merck's release of potassium thiocyanate into the Wissahickon Creek in 2006. The Chinese are not the only nation with quality control issues.
16. This brilliant paper by Cohen and Illingworth discussed options about potential methods of getting important pharmaceuticals into developing nations. Of particular interest was their idea to employ the World Bank as a financial intermediary for sales of production licenses. It was valuable to the author because similar ideas could be applied in other realms (like sales of environmental technology and limited production licenses of pollution reducing/energy producing devices).
17. The TRIPS agreement will be crucial to obtaining China's compliance on intellectual property protection. The World Trade Organization's website allows one to read through the entire agreement. This portion of the site described how the TRIPS agreement would be monitored and enforced.
18. This document outlined in great detail the construction of a pebble bed nuclear reactor by M.I.T. students. Furthermore, it mentioned the Chinese plan to build a pebble bed reactor. There was also detailed information about the science of the this new kind of nuclear reactor.

19. The entire Energy Policy Act of 2005 is online. This was a crucial first step in energy planning in the United States.
20. A transcript of the press briefing regarding the second U.S. – China Energy Policy Dialogue was available on this website. America and China are serious about working together to create an open discussion of energy issues. Many issues were raised by reporters at the briefing, and they were discussed in Karen Harbert's press conference. She is the Assistant Secretary for Policy and International Affairs for the U.S. Department of Energy.
21. This website has all of the information one could want about Philly Car Share. Members can pay to have access to cars without all of the hassles of ownership.
22. The author thought that the United States was the leading emitter of carbon dioxide (CO₂). As of June 2007, China has overtaken America.
23. This website was very informative about the intricacies of carbon credit emissions trading in the European Union. Beneath the photograph of the factory, there is a link to a PDF file called "VAT". This is a brochure that describes in detail all aspects of the carbon trade, but thoroughly explains the information for any audience (as if a teacher wrote it).
24. The first of the two articles on the Green Wall of China discussed the aims of the project to help prevent desertification. The Gobi Desert's growth rate has increased dramatically over the past decade.
25. The second of the two articles on the Green Wall covered the failing attempt to use a man-made forest to block the spread of the Gobi Desert. The project appears to be failing as a result of corruption, poor planning, and dying trees.
26. The U.S. – China Water Resource Management Program website was similar in utility as the U.S. Commercial Service and U.S. – China Energy Policy Dialogue sites. This particular organization is currently working (through members of the Departments of Agriculture and Commerce) to help China protect its water tables.
27. This website contains links to information about ongoing NGO work in China. The focus of the NGO activity on the site is the Chinese environmental crisis, and the role of the NGO in their work to help resolve the problem.

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