### Transition

#### Contention One is the Transition

#### Cuba’s current reforms are slow, contradictory, and insufficient

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\*This card is from pages 1,3, and 4 of the pdf. Page two contains a wholly different article. “Are Raúl Castro's Reforms Helping Cuba's Economy?” is published on pages 1, 3 and 4 of the PDF. Our evidence is the entirety of the article. We will provide you the PDF if you are curious\*

In late September, Cuba's government announced the legalization of 18 new categories of private employment, including real estate agents, bringing the total number of approved types of independent employment to 199. While Raúl Castro's government has issued more than 430,000 private employment licenses since 2010, the latest employment legalization effort also included bans on certain economic activities, including the reselling of imported goods. Are Cuba's newest economic reforms likely to bear fruit? How much has the state ceded control of the economy to market forces in recent years? What surprises might lie in store for Cuba's economy and its business climate? AMatthew Aho, consultant in the corporate practice group of Akerman Senterfitt in New York: "The decision to legalize new categories of private employment is yet another incremental step that—combined with other changes since 2010—clearly indicates a shift away from total state control and toward a 21st-century mixed market economy. Other recent examples include the September publication of new rules governing foreign investment at the Mariel Export Processing Zone and the Oct. 9 decision to allow state tourism agencies to do business with private enterprises, such as bed and breakfasts and restaurants. The Cuban state will remain the economy's dominant player, but the space it has yielded so far was inconceivable five years ago. And it's paying off: visitors to Havana report a never-before-seen economic vibrancy transforming the urban landscape, as black-market businesses leave the shadows and new, remittance-fueled ventures arise. What's more, the recent loosening of migration restrictions and the passage (likely in 2014) of new foreign investment laws signal that policymakers are preparing for infusions of foreign investment and remittance capital in the medium- to-long terms. There is a bevy of potential surprises, foreign and domestic. At home, the recent ban on reselling imported goods met swift and unusually vocal opposition from entrepreneurs vowing to disobey the rules. In the months ahead, the government must decide how to engage 430,000 private economic actors (and those dependent on them) as a rising political force on the island. Abroad, President Obama will decide whether to support the Cuban people in their pursuit of greater economic self-determination through proactive policies or do nothing—thereby clinging to decades of failed sanctions— because he sees no political upside. 2014 could be a real tipping point in U.S.–Cuba relations, but only if both sides seize the moment. That, unfortunately, would be the biggest surprise of all." ACollin Laverty, founder and president of Cuba Educational Travel: "Time will tell how far and how fast the reforms go, which will determine their economic, political and social impact. Up until now, the government has been very cautious— prioritizing stability while also making drastic changes within the context of the last five decades of communist rule. Legalizing small-scale enterprise, expanding cooperatives and creating a housing market are important steps, affecting the psychology of Cubans and how they see and operate in the market. However, these important reforms will not result in significant improvements in the overall performance of the economy. Larger, more controversial and difficult reforms will need to be implemented in order to fundamentally change the makeup and output of the economy, such as currency reform, increased foreign investment, legalization of more private enterprises, including those of medium-scale, the organic creation of cooperatives, an end to excessive subsidies to inefficient state-owned enterprises and increased access to telecommunications. The government's decision in late September to expand private enterprise but simultaneously restrict the sale of imported goods shows contradictions in the process. Official discourse is to remove the state from non-essential areas of the economy, but the forces that be are unwilling to relinquish their monopoly in the retail sector. A better approach would be to remove luxury taxes on goods sold at dollar stores and focus on currency reform and economywide pricing adjustments, which would allow it to compete with the private sector. Albeit slowly, the process continues to be two steps forward, a half step backwards, and demographics and economic necessity should keep it that way." AKirby Jones, president of Alamar Associates in Arizona: "The numbers speak for themselves: the reforms in Cuba are real, will continue and have already changed the face of Cuba. If you had asked me just a few years ago whether I would expect what is going on in Cuba today, I would say a resounding no. But the reforms have already borne fruit. The Batistianos like Rep. Ileana Ros- Lehtinen and Sen. Robert Menendez can question the reforms all they want, but their criticisms do not change the reality on the ground. And now we hear of pilot projects with only one currency. Facts speak for themselves. And through all of this, the United States is on the outside clinging to a policy rooted in the last century. The Cuban government has ceded some control on economic matters, and true market forces are at work. Is that not what the United States wants? These reforms are like toothpaste that cannot be put back into the tube. There will be problems as well as starts and stops along the way. The United States could be helping this process instead of trying to stop it. Meanwhile Brazil, China and many others are part of the change, realize that it is real, are investing in Cuba and are making money in the process. The United States should do the same." Carmelo Mesa-Lago, professor emeritus of economics and Latin American studies at the University of Pittsburgh: "The re-authorization/extension of selfemployment is a key of Raúl's reform to enlarge the private sector and dismiss 1.8 million workers unneeded in the state sector. Currently, 22 percent of the labor force is in the non-state sector. It should jump to around 40 percent by 2015 and account for a rising percentage of GDP. But self-employment is obstructed by several constraints: 1.) The large majority of occupations are unskilled or require little skills, whereas most of the state employees to be fired are professionals or skilled workers. 2.) University graduates (badly needed in the private sector, such as managers, engineers and architects) can't practice as self-employed, hence they may work as taxi drivers or food sellers but not in their professions. 3.) Taxes are quite a burden. For instance, the tax rates on the labor force gradually increase with the number of employees hired, therefore penalizing those self-employed that hire more employees, which is a disincentive for the self-employed and counterproductive in the state quest to get rid of surplus labor. 4.) The government sends contradictory signals, such as raids to shut down self-employed Cubans who have stands under Havana porches, or the government first taxes and then bans the sale of imported goods. Currently the reforms are insufficient to solve the many economic and social problems accumulated under half a century of centralized, inefficient socialism. There is a wide consensus inside and outside Cuba that they must be deepened and accelerated to accomplish that task, but Raúl has little time left to do so before he retires in 2018." AArchibald Ritter, distinguished research professor emeritus of economics and international affairs at Carleton University: "Major changes have been implemented already, and further reforms are in the works or on the horizon. The reforms will continue to orient economic policy and lead to substantial improvements in the Cuban economy and in citizens' living standards. The market-oriented component of the Cuban economy has expanded and now includes about 27.5 percent of the employed labor force. It will expand dramatically if the pseudo-cooperative state farms and non-agricultural state enterprises become authentic cooperatives. Registered micro-enterprises now include 430,000 people, 8.6 percent of the employed labor force. The market-oriented joint foreign/state enterprises employ about 1 percent of the labor force. The market-oriented underground economy provides full- or part-time first or second jobs for maybe 10 percent of the labor force. Under September 2012 legislation, the Unidades Básicas de Producción Cooperativa should become real cooperatives, increasing the mainly private sector in agriculture to approximately 11.6 percent of the labor force. Non-agricultural cooperatives in time should include most of the goods- and services-producing state sector. They are to be worker-managed and under the forces of supply and demand. The new Mariel Export Processing Zone may attract major investments, especially from China and Brazil, and provide a strong market-propelled stimulus. The transformation of state enterprises into authentic market-oriented cooperatives would constitute a change and improvement of historic dimension. Cuba could become a country of 'worker ownership and management' and continue to be unique in the world. In contrast to the ideology-based policy impetuosity and vacillation of President Fidel Castro over 47 years, the approach of President Raúl Castro has been cautious, gradual, pragmatic, stable and 'evidence-based.' There are downside risks. Bureaucratic footdragging may slow the reforms. The 'special relationship' with Venezuela may falter with political change and changed economic priorities in that country. But the economic surprises are more likely to be positive, and there may even be some positive political surprises—I never cease to hope. A most welcome surprise would be a normalization of U.S.-Cuba relations during the presidency of Barack Obama."

#### Full removal of the embargo is critical to provide foreign capital and foster economic and political liberalization.

CSG 13 – The Cuba Study Group is a non-profit and non-partisan organization studying Cuba. (“Restoring Executive Authority Over U.S. Policy Toward Cuba”, February 2013, <http://www.cubastudygroup.org/index.cfm/files/serve?File_id=45d8f827-174c-4d43-aa2f-ef7794831032>)

Beyond failing to advance its stated objectives, the most counterproductive aspect of Helms-Burton is that it codifies U.S. embargo sanctions toward Cuba, and conditions the suspension of any and all such sanctions on congressional recognition of a transition government in Cuba. This is counterproductive in two ways. First, it hinders the United States’ ability to respond rapidly and strategically to developments on the Island as they occur. For example, if the Executive Branch wishes to increase assistance to the 400,000 private entrepreneurs currently operating small businesses in Cuba, it can only do so in a limited way through its licensing authority. Second, it creates a dynamic of “all-or-nothing” conditionality that effectively places U.S. policy in the hands of the Cuban government, making it easier for Cuban officials to resist political reform and dictate the degree of American influence on the Island. Defenders of the status quo inside the Cuban government have shown that they view greater engagement with the United States as a threat to their hold on power. As Elizardo Sanchez, the head of the Cuban Commission for Human Rights, has recognized: “The more American citizens in the streets of Cuban cities, the better for the cause of a more open society.” The Cuban government has become increasingly adept at manipulating U.S. policy choices. This is why any sign of a thaw from the United States has repeatedly been followed by confrontation or repression, which in turn has been followed by U.S. domestic pressure to tighten economic sanctions. This pattern has become somewhat predictable, as recently exemplified by Cuba’s imprisonment of U.S. contractor Alan Gross after President Obama relaxed family travel and remittance restrictions in 2009 and U.S. policymakers’ refusal to pursue improved bilateral relations in response.xvi It can be reasonably concluded that elements of the Cuban government do not, in fact, seek any substantial liberalization from U.S. sanctions. Indeed, Helms-Burton provides them with an alibi for their own failures and may well be essential to their political survival. Senator Jesse Helms famously said that Helms-Burton “tightened the noose around the neck of the last dictator in the Western Hemisphere, Fidel Castro.”xvii In practice, however, Helms-Burton may have served as an incredibly convenient life raft, giving a struggling and failing system the legitimacy that comes from the appearance of being a “state under siege.” Repealing Helms-Burton and related statutory provisions that limit the Executive Branch’s authority over Cuba policy. Over time, U.S. policies toward Communist countries with poor human rights records and histories of adversarial relations—such as China and Vietnam—have evolved toward diplomatic normalization and economic engagement. Policymakers in both parties have rightly judged that engagement, rather than isolation, better serves U.S. national interests and lends greater credibility to calls for political and economic reform. The Cuba Study Group believes the most effective way to break the deadlock of “all-or-nothing” conditionality and remedy the ineffectiveness of current U.S. policy is by de-codifying the embargo against Cuba through the repeal of Helms-Burton and related statutory provisions that limit the Executive Branch’s authority over Cuban policy.xviii Repealing Helm-Burton and related statutory provisions would shift the primary focus of U.S. Cuba policy away from the regime and toward empowering Cuban people. It would also enhance the leverage of the United States to promote a multilateral approach toward Cuba, as well as embolden reformers, democracy advocates and private entrepreneurs inside the island to press their government for greater change. De-codifying the embargo would allow the Executive Branch the flexibility to use the entire range of foreign policy tools at its disposal—diplomatic, economic, political, legal and cultural—to incentivize change in Cuba. The President would be free to adopt more efficient, targeted policies necessary for pressuring the Cuban leadership to respect human rights and implement political reforms, while simultaneously empowering all other sectors of society to pursue their economic wellbeing and become the authors of their own futures.xix Repealing Helms-Burton would also free civil society development and assistance programs to be implemented outside of a contentious sanctions framework. Repealing the extraterritorial provisions of Helms-Burton would allow the United States greater leverage in persuading the international community, especially key regional partners, to adopt a multilateral and targeted approach toward focusing on the advancement of human rights in Cuba. This would fundamentally transform the international dynamic that has long helped the Cuban government stifle dissent, since its efforts to isolate critics at home would increasingly lead to its own isolation from the international community. While it is difficult to prove a direct causal connection between economic reforms and an open society, modern history has taught us that it is increasingly difficult for dictatorial governments to maintain political control the more prosperity their people enjoy.xx Repealing Helms-Burton and related statutory provisions would allow the U.S. the ability to efficiently promote and provide direct support to Cuba’s private sector. Such support would empower a greater plurality within Cuban society, including government reformers, democracy advocates, Cuban entrepreneurs and society as a whole by increasing their access to the resources and expertise of the world’s most prosperous private sector (and largest Cuban diaspora), located a mere 90 miles from Cuba’s shores. In turn, this would enhance the relative power of Cuban society to that of the state, while stripping the latter of its preferred scapegoat for its oppressive practices and economic blunders. U.S. policy should also seek to incentivize the Cuban government to end state monopolies on economic activities and allow greater private participation in the economy. The Cuba Study Group believes that any forthcoming congressional review of current legislation relating to Cuba, such as a review of the Cuban Adjustment Act, must require a review of the totality of the legislative framework codified in HelmsBurton and related statutory provisions so that the United States may finally develop a coherent policy toward the Island. The U.S. should pursue this course of action independent of actions taken by the Cuban government so as not to place the reigns of U.S. policy in the hands of Cuban proponents of the status quo.

#### The impact is the Cuban health Care sector. A democratic and market-based transition is necessary for a stable system.

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As a transition occurs, further deterioration of medical care services and, in turn, the public’s health is likely to take place. Indeed, often during transitions, a reallocation of funds occurs to meet other needs of the changing state. Health care services are at risk under such a real location. This is what countries in Eastern Europe experienced subsequent to the collapse of the Soviet Union (WHO Regional Office 1998). Further, when changes occur in economic, political, and/or social conditions, there appear to be greater incidences of heart disease and suicide due to stress, especially among the young and middle-aged male population (“UNICEF Warns” 1994). When socioeconomic pressures manifest themselves in these ways, they add further strains on an already overburdened health care system. Transition may open up additional important roles for NGOs. The influence of NGOs to date has been limited in Cuba, due to distrust regarding their political motivations (Gonzalez and Coil 1997) and the role of a centralized government in making services available independently of NGOs. In other countries during transitions, NGOs have had a strong track record of providing assistance to restore infrastructure and provide basic food, shelter, and health care needs. Their role may be of great importance in Cuba’s transition. One area of focus would be in rural regions, where indications are that infrastructure has deteriorated and health problems have been even more prominent than in urban areas. NGOs may also be involved in assessing the continued provision of basic medical services and blood bank services, as they did once before when Castro first came to power and a health care personnel exodus caused a crisis (Claudio 1999). Indeed, one of the many functions that NGOs can have during a period of transition is the tracking of medical data. Even if a transition is smooth with insignificant changes in political processes, blood supply and vaccination programs nonetheless will be put at risk. NGOs can help to ensure the continuation of global immunizations and the safety of the blood supply. These programs will have to be monitored closely, as a breakdown would be very problematic for the country. Depending upon the openness of the new regime. NGOs will have a strong or a minimal role. The needs, however, that could be served by NGOs will be diverse and significant. The nature of regime change will be instrumental in determining the future focus of Cuban society as well as the level of openness to the growth of NGO involvement, private sector participation, and the provision of health care. With all that could potentially occur, there are certain indications that opportunities for development of a private sector, including the medical private sector, may be limited, even though there is so much potential. The actual outcome is a function of the type of political system that emerges after Castro is no longer on the scene. Several writers have been developing theories relating to democratization and emergence of a market-based economy. Edward Gonzalez of the RAND Corporation argues that a number of potential scenarios exist in a post-Castro Cuba (Gonzalez and ColI 1997). These scenarios would, in turn, impact the health care delivery system in the country. Gonzalez argues that the probability of a reformist or a coalition government. focused on democratic reform and the development of market systems, is quite limited He indicates that as Castro passes on, a strong possibility is that the military, under the direction of Raúl Castro, Fidel’s brother, would retain power with a possible allowance for minimal market opportunities. A second scenario reflects the establishment of a coalition government, although Gonzalez claims that the possibility of an open coalition is not great. Gonzalez suggests that there is so much invested in the underlying concepts of the Fidelistas and so much distrust of any reform movement, either from within or from outside the country by the Cuban exile community, that this is not a viable option. As such, the opportunities for a market-based health care system layered upon the current public health care system may also be limited in scope. As Alberto Coil indicates in his paper. The Future of US-Cuban Relations, the importance of social security cannot be overestimated (Gonzalez and Coil 1997). Fear of the impact of market reform on distribution of wealth is of great concern. Further, the advent of capitalism is not without consequences. Full employment, zero inflation, and perceived egalitarianism have been mainstays of the Castro communist system (putting aside the strong black market that exists in the country). Fears of loss of jobs, security, and homes, and reduced access to a perceived high-quality health care system are some of the concerns that would accompany any market reforms. Policy changes will have to be introduced very carefully, smoothly, and incrementally in a post-Castro Cuba, even though, as indicated, elements of it already exist. The implication, however, from these studies is that there may be only limited prospects for real market-based health care reform in the near term. More widespread reforms may only be forthcoming over time. With the end of the Fidel Castro regime, negligible changes in the politics within Cuba and in foreign relations and trade between Cuba and the United States are indeed a possibility. Recent moves to strengthen the military infrastructure within the country seem to indicate this. If little political change occurs after a regime change, U.S. frustration will cause, if anything, increased U.S. restraints on trade with Cuba. If this scenario occurs, then it is quite possible that there will be more of the same, namely, continued deterioration of the economic situation within Cuba with carryover to the health care sector. One can assume that the medical infrastructure, operating under compromised conditions within hospitals and clinics, would continue to deteriorate, with even more constraints on technology and equipment and fewer basic sanitary supplies. Housing and food shortages and current nutritional concerns would not be alleviated; vulnerable populations would continue to be at risk, and their health care problems would become worse. This would put increased strains on the already stressed medical care system. It is reasonable to expect that aggregate mental health would also continue to decline with resultant increases in murder and suicide rates. The government of Cuba would attempt to counter this situation by generating revenues with increased tourism, a factor already discussed as one of the major causes of an increased incidence of STDs and AIDS and a variable affecting the high rate of abortion in the country. More efforts to trade doctors and medications for oil will result from continued political processes, as Cuba will seek markets that are not foreclosed to trade. With this situation, however, will come continued frustration on the part of medical professionals. A combination of an oversupply of medical personnel, poor working conditions. and very poor remuneration will only reduce the morale of the medical care workforce even further. Ultimately, all these stresses will have consequences in terms of stress on the political system. The period of transition post-Castro will be an extremely critical period in the lives of Cubans. So far, we have discussed issues associated with changes inside the country. What about the potential for investment of foreign capital in medical and health care from external sources? Again, concerns relate to the concept of significant market opportunities in Cuba after the fall of Castro. These opportunities may actually be more limited than has been anticipated by the exile community, not only for political reasons but also for economic reasons. Pointing out the large amount of foreign debt Cuba owes to numerous Western and Eastern Bloc countries and the fact that the economy has been handicapped over the last 10 to 15 years, Jaime Suchlicki indicates that these circumstances reinforce the concept that Cuba is now a poor country without the near-term resources to rebuild (1997). Until the economy improves and at least some of the debt is repaid or resolved, there may be fewer opportunities for investment in Cuba than many anticipate. If there are to be any major opportunities for investment and potential growth, they may be found in the health care industry. As discussed, Cuba has developed its own pharmaceutical and biotechnology industries out of necessity. The country has highly trained scientific and medical talent and has invested in an infrastructure to meet domestic needs. Further, Cuba has sold pharmaceutical supplies and biotechnology in foreign markets, but it has been essentially foreclosed from selling to less developed countries, as they do not necessarily have the financial resources to afford products produced by Cuban firms. Given that Cuba’s talented and experienced professionals are paid minimally and that the appropriate infrastructures for production, research, and development are in place, partnerships with U.S. and other foreign-based pharmaceutical and biotechnology firms may present worthwhile opportunities for all parties. Foreign pharmaceutical and biotechnology firms would have access to relatively inexpensive professional labor and capital. The potential for scientists’ brain drain, just as for medical personnel, could be lowered by offering professionals financial incentives to remain in the country. Partnerships like these would stimulate an infusion of new capital into Cuba, and the participation of foreign firms would allow for the expansion of output into the international marketplace, currently foreclosed to Cuban producers. With an infusion of capital, additional technology, necessary inputs, and know- how, these firms will be able to meet the pharmaceutical needs of the domestic economy as well. Such partnerships will also encourage imports of other necessary pharmaceuticals: hence, a wide selection of medications would be available. Such opportunities hinge upon the post-Castro administration’s degree of openness and disposition toward the rest of the world. Transition, by its very nature, brings about instability. This is especially true when transitions rarely occur, offering few patterns associated with change. As Fidel Castro leaves power, whether voluntarily, by force, or by death, there will be many unknowns. This monograph has attempted to provide insights into how health care systems may react and adjust to change. Ultimately, we will not know the outcome until a change actually occurs. What is certain, however, is the fact that the health care system in Cuba will be an extremely important component of any political, economic, and social transition in the country as well as in this active region of the world.

#### Cuba’s health care model is key to check disease spread worldwide.

Cooper et al 06 – Richard S. Cooper is in the Department of Preventive Medicine and Epidemiology at Loyola University – Stritch School of Medicine, Maywood, IL, USA. (“Health in Cuba”, International Journal of Epidemiology, May 4, 2006, [http://ije.oxfordjournals.org/content/35/4/817.full.pdf+html](http://ije.oxfordjournals.org/content/35/4/817.full.pdf%2Bhtml), Callahan)

Infectious diseases The combination of high levels of community participation, access to primary care and an aggressive public health approach has made the Cuban campaign against epidemic infectious diseases particularly successful.58–60 A number of common illnesses have been eliminated altogether, often for the first time in any country [poliomyelitis (1962), neonatal tetanus (1972), diphtheria (1979), measles (1993), pertussis (1994), rubella and mumps (1995)]. In 1962, against the advice of external health officials, ‘vaccination days’ were established with the goal of reaching the entire population. When this method quickly proved to be effective in eliminating polio it was subsequently adopted elsewhere as the primary strategy.58 After dengue was introduced in 1981 Cuba adopted a campaign of community mobilization, focusing on elimination of mosquito breeding sites, which lead to prompt control.20,58,59 International attention for infectious disease control in Cuba has focused primarily on HIV/AIDS.10,20,61–63 Among 300 000 military personnel returning from Africa in the 1980s 84 were found to be infected with the virus [Ref. (20), p. 85]. A nation-wide screening programme which began in 1987 reached 80% of the sexually active population (~3.5 million people) and identified 268 HIV-positive individuals.20 In the initial phases, the Cuban HIV/AIDS strategy provoked controversy, some of which was negative.20,64 While assessing the public health impact of this unknown epidemic, persons infected with HIV were quarantined in health facilities where they received supplemental nutrition and available medical care.20,61,62 Treatment is now provided in the outpatient setting; domestically produced triple therapy has been provided free to all paediatric patients since 1998 and to adults with HIV or AIDS since 2000.62 With the rapid increase in foreign tourists, and the development of a local sex trade, the HIV incidence has risen in the past 5 years, although it remains the lowest in the Americas.23 Increased integration into the global economy may continue to pose challenges which Cuban public health has not previously had to address. Cuba’s role in global health assistance Given its limited economic resources, Cuba can only rarely afford direct aid.20 Instead it has adopted a strategy that relies on human resources. First targeted to Africa, the programme has now placed physicians, nurses, dentists, and other professionals in 52 countries.20,65,66 The most prominent episodes involved sending doctors to post-apartheid South Africa, providing long-term care for Chernobyl victims, and giving disaster aid to Central America after hurricane Mitch. Cuban personnel also staffed a new hospital in Gonaives, Haiti, which had been constructed with the Japanese aid; this facility was subsequently destroyed during the anti-Aristide strife in 2004 although the Cuban physicians have remained.67 To move from emergency assistance to a sustainable programme, a multicountry collaborative plan has recently been developed to improve health services in poor Latin American countries.66 A medical school was established in Havana in 1999 and more than 6000 students, primarily from Africa and Latin America, are currently being given a medical education at no expense.7,68,69 In the past 3 years more than 14 000 physicians and dentists have been placed in slums and rural communities in Venezuela as part of the new the partnership between Cuba and the Chavez government, and this number is set to rise to 20 000.68 Cuba has also agreed to educate 40 000 new physicians for Venezuela over the next several years.69 Cuba’s medical assistance campaign has a number of dimensions. Like all foreign aid programmes, it assumes that some political benefits will be forthcoming in return. However, most of the countries that have been assisted, for example, Ethiopia, The Gambia, and Haiti, have nothing to offer in return. Unlike many donor programmes, placing physicians where none have practiced before has been overwhelmingly well received by the local communities.69 Thus, while the arrangement with Venezuela has direct economic benefit to Cuba, it has also transformed the health system by giving large segments of the Venezuelan population access to modern medical care.69 The special character of health sector development in Cuba can perhaps be best appreciated by considering the challenge any other society would face if it tried to send tens of thousands of physicians to live in slum communities in a foreign country for 2 years. While a range of incentives and motivating factors unique to the Cuban social context are operating, these assignments are accepted as a professional obligation by the vast majority of the Cuban practitioners and they perform effectively in the host communities. Much like the experience of military personnel on long tours of duty, the Cuban programme of assistance does nonetheless require extraordinary sacrifice and the hardship is not always borne lightly. Furthermore, the mobilization for assistance to Venezuela has meant that many Cuban neighbourhoods must share facilities. These sacrifices must, of course, be balanced against the conditions of desperate need in the communities on the receiving end. Many of these countries, particularly in Africa, have watched helplessly as the majority of their health professionals emigrate to the US and Europe.70 Offhand dismissal by observers in industrialized countries of the Cuban medical aid programme, which has such a powerful impact on these marginalized communities, is a clear indication of how perilously divided the discourse over global development has become. Does Cuba’s experience have broader significance? The history of science is replete with stories of the delayed acceptance of unpopular or unfashionable ideas. The approach to improving global health taken by the donor community and academic medicine in rich countries is no exception. While criticisms of the basic approach are voiced—as in the recent assertion that the external measures of development have no meaning for the general population71,72—these critical voices have little influence on the practice of large international agencies. It is not the intent of this article, however, to summarize and make a judgment on economic assistance and progress in global public health. Instead, based on the weight of the evidence presented on the Cuban experience, we pose the following question: ‘Why has the debate on solving the most urgent challenges in public health in poor countries ignored the experience of success?’ Traditionally, whether the experience is derived from randomized trials, high survival rates in clinical series, or favourable trends in vital statistics, biomedicine embraces the winner and seeks to imitate it. Precisely the opposite has happened in this instance. There is, of course, no shortage of historical and ideological reasons why a debate on the ‘Cuban question’ has never reached maturity. Blind optimism is thought to have discredited the sympathetic scholarship about the Soviet Union, and to a lesser extent China, in an earlier era.73–75 Some observers are too concerned about putative restraints on civil liberties and the independent character of its foreign policy to develop any enthusiasm for the objectively more successful aspects of Cuban society. None of these concerns, however, undermine the force of the question, why have we ignored what works? Before recommending components of the Cuban model for use in other settings, a thorough and balanced assessment of the strengths and weaknesses of those components would be required. That assessment would require a very different study of the health system’s organization, capacity, and services. Our intent here is to demonstrate that sufficient cause exists to undertake that assessment. For an objective evaluation of the Cuban experience to succeed, an acceptance of certain ground rules would be required. First, this evaluation cannot be undertaken with the goal of winning a political argument. Although the trajectory of social development in Cuba over the past 50 years is both complex and controversial, as in all other countries, the public health experience should be subjected to judgment on the basis of the usual rules of science. Second, this judgment cannot be permanently postponed by skepticism about the validity of the data or concern over unrelated broader social questions. Ongoing, careful scrutiny of Cuban public health data is justified and to be welcomed; however, sufficient data now exist in several key areas to demonstrate that skepticism can no longer be the basis for a refusal to engage the question. Likewise, many societies embrace domestic and foreign policies that are questioned and even condemned by broad segments of the world community, yet the attempt to evaluate progress in improving the health of their populations is not thereby condemned as illegitimate or unnecessary. Third, the apparent successes recorded by Cuba should be seen as consequences of a well-defined strategy; the value of these underlying principles, not the accumulation of better numbers, is what holds implications for other poor countries, and not a few well-resourced societies. Two aspects of the Cuban experience serve as reasonable demonstrations of the value of that strategic approach. In the area of infectious disease, for example, the operative principles are particularly straightforward: once a safe and effective vaccine becomes available the entire at-risk population is immunized; if a vaccine is not available, the susceptible population is screened and treated; where an arthropod vector can be identified, the transmission pathway is disrupted by mobilizing the local community which in turn requires effective neighbourhood organization and universal primary health care. The joint effect of these strategic activities will result in the elimination or control of virtually all serious epidemicinfectious conditions. In terms of child survival, a ‘continuum of care’ that provides for the pre-conceptional health of women, prenatal care, skilled birth attendants, and a comprehensive well-baby programme can quickly reduce infant mortality to levels approaching the biological minimum. Many observers will regard these propositions as reasonable, yet hopelessly too ambitious for the poorer nations of the world. It must be recognized, however, that these principles have been successfully implemented in Cuba at a cost well within the reach of most middle-income countries. Although other aspects of society, such as education and housing obviously make independent contributions to the success of public health campaigns, the Cuban strategy outlined here serves as a model that should be thoroughly evaluated. Needless to say, its implementation would face many challenges specific to the geography and politics of a region. Other models that dictate public health strategies face the same gamut of uncertainties and challenges, however, and none can be said to have met with similar success.76 The World Health Organization, for example, promulgated a set of principles in the Alma Ata ‘Health for All’ Declaration of 1978, many of which were incorporated into the Cuban approach.77 In recent years, however, international agencies have favoured privatization and reduction in state support for health systems.78 The record of achievement with privatized systems in poor countries has often been very limited.79 A debate which can use as a point of departure extensive empirical evidence of progress would provide a healthy reorientation in a discipline distracted by controversy and divided over political aims. The health professions have little opportunity to intervene directly on historical events. However, in the conduct of our science we have both choice and responsibility. Challenging the acquiescence of the scientific community to ostracism of some of its members in an earlier era, Einstein remarked, ‘Political considerations, advanced with much solemnity, prevent... the purely objective ways of thinking without which our great aims must necessarily be frustrated’ [Ref. (80) p. 80]. If the accomplishments of Cuba could be reproduced across a broad range of poor and middle-income countries the health of the world’s population would be transformed. This fact creates an obligation for health scientists. We should debate the merits of the principles embedded in the Cuban attempts to improve the health of populations.

#### The plan also fosters critical vaccine research and cooperation.

Pastrana and Clegg 08 – Sergio Jorge Pastrana is the Foreign Secretary of the Academia de Ciencias de Cuba. Michael T. Clegg is the Foreign Secretary of the U.S. National Academy of Sciences and Donald Bren Professor of Biological Sciences, Ecology and Evolutionary Biology at the School of Biological Sciences, University of California, Irvine. (“U.S.-Cuban Scientific Relations”, http://www.sciencemag.org/content/322/5900/345.full, 10/17/2008, MCallahan)

In a few years, the two oldest national academies of science in the world outside of Europe—those of the United States and Cuba—will celebrate their 150th anniversaries. Yet despite the proximity of both nations and many common scientific interests, the U.S. embargo on exchanges with Cuba, which began in 1961 and is now based on the 1996 U.S. Helms-Burton Act and subsequent regulations, has largely blocked scientific exchange. It's time to establish a new scientific relationship, not only to address shared challenges in health, climate, agriculture, and energy, but also to start building a framework for expanded cooperation. Restrictions on U.S.-Cuba scientific cooperation deprive both research communities of opportunities that could benefit our societies, as well as others in the hemisphere, particularly in the Caribbean. Cuba is scientifically proficient in disaster management and mitigation, vaccine production, and epidemiology. Cuban scientists could benefit from access to research facilities that are beyond the capabilities of any developing country, and the U.S. scientific community could benefit from high-quality science being done in Cuba. For example, Cuba typically sits in the path of hurricanes bound for the U.S. mainland that create great destruction, as was the case with Hurricane Katrina and again last month with Hurricane Ike. Cuban scientists and engineers have learned how to protect threatened populations and minimize damage. Despite the category 3 rating of Hurricane Ike when it struck Cuba, there was less loss of life after a 3-day pounding than that which occurred when it later struck Texas as a category 2 hurricane. Sharing knowledge in this area would benefit everybody. Another major example where scientific cooperation could save lives is Cuba's extensive research on tropical diseases, such as dengue fever. This viral disease is epidemic throughout the tropics, notably in the Americas, and one of the first recorded outbreaks occurred in Philadelphia in the 18th century. Today, one of the world's most outstanding research centers dedicated to dengue fever is in Cuba, and although it actively cooperates with Latin America and Africa, there is almost no interaction with U.S. scientists. Dengue fever presents a threat to the U.S. mainland, and sharing knowledge resources to counter outbreaks of the disease would be an investment in the health security of both peoples. Cuba has also made important strides in biotechnology, including the production of several important vaccines and monoclonal antibodies, and its research interests continue to expand in diverse fields, ranging from drug addiction treatment to the preservation of biodiversity. Cuban scientists are engaged in research cooperation with many countries, including the United Kingdom, Brazil, Mexico, China, and India. Yet there is no program of cooperation with any U.S. research institution. The value system of science—openness, shared communication, integrity, and a respect for evidence—provides a framework for open engagement and could encourage evidence-based approaches that cross from science into the social, economic, and political arenas. Beyond allowing for the mutual leveraging of knowledge and resources, scientific contacts could build important cultural and social links among peoples. A recent Council on Foreign Relations report argues that the United States needs to revamp its engagement with Latin America because it is no longer the only significant force in this hemisphere. U.S. policies that are seen as unfairly penalizing Cuba, including the imposition of trade limitations that extend into scientific relations, continue to undermine U.S. standing in the entire region, especially because neither Cuba nor any other Latin American country imposes such restrictions. As a start, we urge that the present license that permits restricted travel to Cuba by scientists, as dictated by the U.S. Treasury Department's Office of Foreign Assets Control, be expanded so as to allow direct cooperation in research. At the same time, Cuba should favor increased scientific exchanges. Allowing scientists to fully engage will not only support progress in science, it may well favor positive interactions elsewhere to promote human well-being. The U.S. embargo on Cuba has hindered exchanges for the past 50 years. Let us celebrate our mutual anniversaries by starting a new era of scientific cooperation.

#### Global pandemics are coming and direct US intervention fails.

Weber 06 – Steven Weber is a Professor of Political Science at UC-Berkeley and Director of the Institute of International Studies. (“How Globalization Went Bad”, Foreign Policy, December 27, 2006, http://www.foreignpolicy.com/articles/2006/12/27/how\_globalization\_went\_bad?page=0,2)

The same is true for global public health. Globalization is turning the world into an enormous petri dish for the incubation of infectious disease. Humans cannot outsmart disease, because it just evolves too quickly. Bacteria can reproduce a new generation in less than 30 minutes, while it takes us decades to come up with a new generation of antibiotics. Solutions are only possible when and where we get the upper hand. Poor countries where humans live in close proximity to farm animals are the best place to breed extremely dangerous zoonotic disease. These are often the same countries, perhaps not entirely coincidentally, that feel threatened by American power. Establishing an early warning system for these diseases -- exactly what we lacked in the case of SARS a few years ago and exactly what we lack for avian flu today -- will require a significant level of intervention into the very places that don't want it. That will be true as long as international intervention means American interference. The most likely sources of the next ebola or HIV-like pandemic are the countries that simply won't let U.S. or other Western agencies in, including the World Health Organization. Yet the threat is too arcane and not immediate enough for the West to force the issue. What's needed is another great power to take over a piece of the work, a power that has more immediate interests in the countries where diseases incubate and one that is seen as less of a threat. As long as the United States remains the world's lone superpower, we're not likely to get any help. Even after HIV, SARS, and several years of mounting hysteria about avian flu, the world is still not ready for a viral pandemic in Southeast Asia or sub-Saharan Africa. America can't change that alone.

#### Zoonotic diseases lead to extinction.

Casadevall 12 – Prof @ Department of Microbiology and Immunology and the Division of Infectious Diseases of the Albert Einstein College of Medicine Arturo. (“The future of biological warfare,” Microbial Biotechnology, p. 584-5)

In considering the importance of biological warfare as a subject for concern it is worthwhile to review the known existential threats. At this time this writer can identify at three major existential threats to humanity: (i) large-scale thermonuclear war followed by a nuclear winter, (ii) a planet killing asteroid impact and (iii) infectious disease. To this trio might be added climate change making the planet uninhabitable. Of the three existential threats the first is deduced from the inferred cataclysmic effects of nuclear war. For the second there is geological evidence for the association of asteroid impacts with massive extinction (Alvarez, 1987). As to an existential threat from microbes recent decades have provided unequivocal evidence for the ability of certain pathogens to cause the extinction of entire species. Although infectious disease has traditionally not been associated with extinction this view has changed by the finding that a single chytrid fungus was responsible for the extinction of numerous amphibian species (Daszak et al., 1999; Mendelson et al., 2006). Previously, the view that infectious diseases were not a cause of extinction was predicated on the notion that many pathogens required their hosts and that some proportion of the host population was naturally resistant. However, that calculation does not apply to microbes that are acquired directly from the environment and have no need for a host, such as the majority of fungal pathogens. For those types of host–microbe interactions it is possible for the pathogen to kill off every last member of a species without harm to itself, since it would return to its natural habitat upon killing its last host. Hence, from the viewpoint of existential threats environmental microbes could potentially pose a much greater threat to humanity than the known pathogenic microbes, which number somewhere near 1500 species (Cleaveland et al., 2001; Tayloret al., 2001), especially if some of these species acquired the capacity for pathogenicity as a consequence of natural evolution or bioengineering.

### Agriculture

#### Contention Two is Sustainable Agriculture

#### Cuban agriculture sustainability is failing. Foreign investment is key.

King 12 – M. Dawn King is a Visiting Assistant Professor at Brown University’s Center for Environmental Studies. She earned her Ph.D. in Environmental Politics at Colorado State University and worked as a policy analyst for the U.S. Geological Survey – conducting research on environmental decision-making models and internal governance of watershed management councils. (“Cuban Sustainability: The Effects of Economic Isolation on Agriculture and Energy”, March 21, 2012, http://wpsa.research.pdx.edu/meet/2012/kingmdawn.pdf)

Cuba needed an alternative agricultural model when foreign oil imports were cut off significantly at the end of the 1980s, and the partial opening of the Cuban economy, focused on creating more autonomous agricultural cooperatives, in the 1990s helped diversity food crops and set Cuba along a path of increased food security. The Cuban model was initiated out of necessity, not because of any sort of Cuban environmental consciousness, yet better environmental conditions went hand in hand with the new development strategy. Cuba learned the limits of their agricultural model under their socialist economic system and it is in need of further transformation in both the agriculture and energy sectors. A further opening of the economy to joint ventures could help with updating the power grid and providing more sources of renewable energy – potentially expanding Cuba’s potential for a more sustainable means of energy security. Further, Cuba needs foreign investment to update agriculture facilities and take maximum advantage of cogeneration and biofuel potential with sugarcane waste. The strong state control of farming practices, used to successfully jumpstart the alternative model, has hit its limit. The Cuban government must begin loosening its grips on the domestic economy to allow for more competition in the farming sector. Despite the potential to become more sustainable with a purposive and focused opening of the economy, the recent surge in joint venture investment on expanding domestic oil extraction, petrochemical facilities, and oil refinery infrastructure reveals a trend toward decreasing environmental sustainability. Once heralded as the world’s most sustainable country by coupling environmental performance indicators with their human development scores, Cuba is slipping further away from this goal. Perhaps the most distressing part of this current trend is that it took Cuba decades to create a national identity that embraced sustainable environmental practices in both the energy and agricultural sector, and it seemingly took only a couple of years to derail these efforts. Undoubtedly, conservation efforts and sustainable education programs can only satiate citizen’s energy desires to a certain point. In order to further the quality of life in the country, electric production must increase to rural areas with little energy infrastructure and to Havana in order to spur foreign investment and domestic small business growth. Cuba’s trade agreement with Venezuela is bringing in much-needed petroleum for electricity production, but their dependence on a relatively unstable country for crude is trapping them into the same relationship that crippled their economy in 1990 – impairing their original goal of self-sufficiency. Cuba is at a turning point in their path toward environmental sustainability, and the current need for immediate foreign capital and increased energy production seem to be trumping its desire to achieve development sustainably. Cuba still has enough centralized control to leap-frog dirty electric production for cleaner renewable forms of energy and the potential to guide development strategies that emphasize investments in and research on renewable energy. It can utilize its expertise on organic farming strategies to increase sugar production in a much more ecologically friendly manner than their monoculture approach in the 1970s and 80s. Decisions made in the next five years will demonstrate whether Cuba embraces their newly created national identity as a society striving for sustainable development or rejects the goal of sustainable development to increase short-term capital and energy needs.

#### The plan provides vital foreign capital which fosters the exportation of Cuba’s agricultural model.

Shkolnick 12 – JD Candidate, Drake University Law School. (“SIN EMBARGO: THE CUBAN AGRICULTURAL REVOLUTION AND WHAT IT MEANS FOR THE UNITED STATES”, 17 Drake J. Agric. L. 683, fall, http://students.law.drake.edu/aglawjournal/docs/agVol17No3-Shkolnick.pdf)

Cuba today is experiencing the most rapid shifts towards privatization and reform since the revolution more than sixty years ago. Though truly open trade with Cuba will remain out of reach until the embargo is relaxed or a new trade agreement is reached, it is worth the time of agricultural and business entities in the United States to consider how they may approach doing business in Cuba. Given the extent of pre-embargo trade between the United States and Cuba it is no stretch to imagine the enormous possibilities once that partnership is reestablished. Though reforms over the past decade have made significant progress towards this end, they only scratch the surface on what Cuba has to offer. The two economic areas where Cuba shows perhaps the most promise and have the greatest potential for international trade and investment are tourism and agriculture. Tourism shows great promise simply for the fact that for more than half a century the country has been entirely cut off from open trade and travel by U.S. citizens, citizens who will likely flock to the country once access is restored. Agriculture in Cuba also presents numerous unique opportunities, and since the collapse of the Soviet Union the country has developed novel agricultural production techniques that could help serve a growing demand for natural, organic foods in the United States. While tourism may increase economic opportunity for existing businesses and industries, Cuba’s agricultural model, on the other hand, presents unique opportunities to both existing and entirely new busi-ness opportunities in the United States. A. Cuba as a Tourist Destination Prior to the embargo, Cuba was a travel destination for as many as 300,000 American tourists per year.91 Tourists from various Soviet Bloc nations never came close to making up this loss in travel, reaching no more than 30,000tourists per year.92 Since the demise of the Soviet Union, however, tourism to the island has continued to increase dramatically. As of July 2012, Cuba is the sec-ond most popular tourist destination in the Caribbean region, trailing only the Dominican Republic.93 Slightly more than two million tourists per year now visit the island as of 2011, representing growth of 7.3% over the last year alone.94 Asof 2005, Cuba’s service sector accounted for 67.8% of the nation’s annual gross domestic product, eclipsing traditional Cuban exports such as nickel and sugar.95Tourist infrastructure in Cuba, however, has strained to accommodate the rapid surge in visitors, with hotels, resorts, restaurants, and other accommodations showing their age after decades of relatively little improvement or investment.96Depending on the precise means through which the travel and economic embargos are lifted, estimates of the number of U.S. visitors expected to visit Cuba within the first year range from six hundred thousand to more than one million, with up to five million visitors per year by the fifth year of open travel.97 There is the potential for modest yet not insignificant job growth in response to new travel opportunities, with potentially over twelve thousand new service sector and trav-el jobs in the United States within five years.98B. Agricultural Trade with Cuba It is the agricultural sector, however, that provides some of the most substantial and intriguing opportunities for both trade with Cuba and the creation of entirely new businesses in the United States. In fact, agricultural products were the very first items traded between the United States and Cuba since the embargo in December of 2001, when two ships loaded with chicken and corn arrived inHavana.99 The potential for the U.S. agricultural sector is abundantly clear when the sheer volume of Cuba’s agricultural imports are taken into account. In 2008,Cuba imported approximately $1.8 billion in agricultural goods.100 Only approximately 40% of imported agricultural goods were from the United States, leaving over $1 billion of trade going to other countries.101Cuba itself is very much in favor of increased agricultural trade with the United States simply for the logistical simplicity and cost-savings it would pro-vide.102 Import costs account for as much as 35% of the goods Cuba currently imports from its trading partners.103 Because Cuba is less than one hundred miles from the coast of the United States, the country is naturally eager to enter into trade relationships that lead to lower transportation costs.104 Cuban officials cite rice as just one example of an agricultural product that they would be inter-ested in obtaining from the United States.106 Rice is a staple food for Cuban citizens, and they enjoy it with almost every meal.107 Presently, the bulk of their rice must be imported from Eastern Asia, meaning a long voyage by sea and the expenses that go along with shipping tons of goods across the Pacific Ocean.108Rice exports alone present an enormous opportunity for U.S. producers. The United States is a major exporter of both processed and unprocessed rice, accounting for 10% of all international trade in rice each year.109 Half of annual U.S. rice sales come from the export market, and the United States is considered a reliable supplier of a quality product on the international market.110 The USDA estimates that if the current restrictions on trade were removed, Cuba could potentially exceed Mexico and Japan as the biggest importer of rice grown in the United States.111 As of September 2005, Cuba estimated that they could purchase more than one million metric tons of rice annually, but restrictions make it unlikely that import from the United States will go much beyond current levels of 712,000 metric tons.112 A key obstacle, according to Cuba, is the requirement that all shipments of agricultural products from the United States be paid for in cash before they leave port.113 This resulted in a reduction in rice ex-ports to Cuba by nearly 50% from 2004 to 2005, according to the USA Rice Fed-eration.114 For the foreseeable future, any effort by agricultural groups in the United States to take advantage of trade opportunities with Cuba will have to operate within the guidelines and policy directives of Cuba as well as the United States. One risk that any organization that wishes to trade with Cuba might encounter is that their proposals and business plans will run into red tape not only through regulations in the United States, but through conflict with the Communist Party of Cuba, which still holds tremendous sway over policy and business decisions on the island. Cuban officials are, of course, aware of the tremendous opportunity that trade with the United States might bring to their country, and for the most part remain eager to pursue closer ties with whom they see as their closest, most natu-ral trading partner.115 Roy Ramón Philippón, a leading official with the Cuban Society of Agrarian Law, indicated that the country recognizes that changes are necessary in order to properly compete with and participate in an open globalmarket.116 Long gone are the days when Cuba could count on highly subsidized exports to the Soviet Bloc as a stable source of income.117 For the first forty years of Cuba’s “socialist experiment” following their revolution, the first priority for the Cuban government was to provide the maximum amount of social services and benefit to the population regardless of the cost; something that they could achieve through trade with the Soviet Bloc prior to its collapse.118The process of reform in Cuba is necessarily dependent upon the approv-al of the national Communist Party. All of the reforms that have been put in place must be considered by and ultimately recommended by the Communist Party operating under their internal guidelines.119 By its nature this is intended to be a slow, deliberative process, the intent of which is to allow all interested gov-ernment officials, business representatives, and interested citizens to voice their opinions and for the Party’s guidelines to take each group’s concerns into ac-count.120Cuba has continued to introduce new programs to assist local producers in becoming more productive while also promoting ecological restoration andpreservation.121 In a shift away from the large state-run farms that characterized Cuban agriculture for much of the twentieth century, Cuba is now focused on diversifying agricultural production through a variety of both privately run and some state-controlled enterprises.122Cuban officials responsible for investigating and recommending addi-tional improvements to the Cuban agricultural system echo this call for reform and increased efficiency and productivity.123 Cuban officials point to the two primary goals that Cuba is pursuing in its efforts to improve its agricultural out-put and modernize their agricultural system; eco-restoration and preservation and urban and suburban agriculture.124 In addition, while the country is desirous of increasing its agricultural exports as a source of income, enough of the goods produced must be funneled into an official state-controlled market that can con-trol prices and ensure that food is affordable even to those with low incomes.125The first priority before any additional exports can be considered is to increase production for local consumption to the point where the country could conceiva-bly become self-sustaining for the majority of its food production needs.126 Once they are producing enough food for local consumption, then priorities may shift towards producing additional crops for export; coffee in particular is one locally produced crop that Cuba is particularly interested in increasing production for both local consumption and export.127Government officials recognize that the Cuban economy is in a relatively underdeveloped state, and future policies will need to be responsive to the state’s economic needs as well as their agricultural ones.128 If, for example, the price of corn were to skyrocket on the world market, Cuban officials indicate that if it made economic sense, they “would cover this island with corn.”129 Similar to the practices of the former Soviet Bloc, the Cuban economy is still very much orga-nized and planned by the state, and the current agricultural plan in Cuba is de-signed to cover the next five years of anticipated growth.130As for direct investment by foreign investors and producers, current poli-cies in Cuba will make that somewhat difficult for the foreseeable future, as all direct business relationships with foreign entities are currently organized and controlled by a number of governmental bodies.131 Cuban officials indicate that future reforms could conceivably open the door to direct investment and transactions between Cuban agricultural producers and foreign buyers.132 Understanding this future opportunity first requires a digression into the organizational structure employed in Cuba to manage and direct the agricultural system in Cuba. V. NEW REFORMS The current agricultural system has gone through a period of significant readjustment since the collapse of the Soviet Union. Beginning in 1993, Cuba started to move away from enormous state-run facilities and fully embraced a model of cooperative ownership that it had first introduced in the 1970s with the cooperativa de producción agropecuaria, or CPA.133 The new model, the basic unit of cooperative production, or UBPC, was introduced in September of 1993,and by 1995 there were 2855 UBPCs in operation.134 The UBPC differs from the CPA in that a UBPC operates on land that continues to be owned by the state but is provided to farmers in the form of a usufruct agreement, while a CPA is made up of lands that groups of farmers already had in their possession.135 By the endof 2007, the UBPC had far exceeded the CPA in the amount of land being farmed, with more than 2.8 million hectares of land organized under the UBPC system, compared to just under 700,000 hectares in CPAs.136 The majority of farmland in Cuba remained under state control as of the end of 2007, with more than 6 million hectares of farmland overseen by the state.137Both the UBPCs and the CPAs operate under an arrangement whereby the state provides assistance in the form of access to credit and a market for the goods produced, and in exchange the production cooperatives provide a certain quota of goods for sale and distribution by the state.138 One of the key objectives in the legislation itself is that the farms shall “be owners of the means of produc-tion and of the crop,” while still retaining ownership of the land in state hands.139Goals of this new organization were to improve efficiency and encourage more productive use of land. The goals of the Cuban Revolution continue to be em-bodied in the legislation that created these entities.140In 2008, Cuba passed what is perhaps the most substantial piece of agri-cultural legislation in decades. Named simply “Law 259,” it provides a means for almost any Cuban citizen, existing farm, or authorized agency to acquire un-used state lands and put them to better use as farmland.141 This is a substantial departure from the earlier CPA and UBCP systems that for the most part only transferred existing agricultural land controlled by the state into quasi-privatecooperatives.142 Law 259 continues the usufruct method of land distribution pio-neered by the UBPC system and allows for any interested, qualified party to ap-ply for an initial tract of a maximum of 13.42 hectares (33.16 acres), with their ownership potentially increasing to up to 40.26 hectares (99.48 acres) in the fu-ture.143 Continued operation of farmland granted under this program is contin-gent upon the land being used in a productive, sustainable manner with appropri-ate environmental conservation measures.144Even with the new reforms, the land is still technically tied to the state, and individuals who take possession of land under this program are not permitted to sell or rent the land to others, though the state will compensate landowners for the improvements they have made to the land during their term of tenancy.145The CPA, UBPC, and now Law 259 reforms Cuba put in place, along with reforms the Cuban government is discussing for the future, mean that opportunities for further U.S. involvement in Cuban agriculture are numerous. Presently, foreign companies that wish to enter into business relation-ships with Cuban counterparts must do so almost entirely via official government channels.146 Government agencies such as the Ministry of Sugar or the Ministry of Agriculture are responsible for managing trade for their respective indus-tries.147 All imports of food and other agricultural products must first enter the country via Alimport, a state-run agency that handles the entire sales process from securing contracts and arranging for payment to managing the distributionprocess.148 For the time being, the sole agency that U.S. companies wishing to engage in agricultural trade in Cuba can work with is Alimport.149 Rarely will there be any contact directly between U.S. companies and end-users in Cuba.150The process in the United States can be similarly convoluted. The U.S. Department of Commerce’s Bureau of Industry and Security oversees all busi-ness negotiations with Cuban companies, and notifications of sales must be sub-mitted through them before a license will be granted.151 Since U.S. policy still prohibits the extension of credit to any Cuban banks, all payments either have tobe paid for in cash prior to shipment or a confirmed letter-of-credit can be com-pleted with a bank located in a third country.152 In an unusual and unfortunate overlap in U.S. policy directives, goods that are paid for in cash prior to shipment are legally Cuban property though still in the United States, and potentially sub-ject to seizure on behalf of Cuban exiles within the United States who have out-standing legal and monetary claims against the Cuban government.153 Ships with goods meant for Cuba, however, may leave port as soon as payment is either received in cash or confirmed deposited in a foreign bank, a clarification made by the Department of Treasury Office of Foreign Asset Control in July 2005 in an attempt to reduce anxiety over this possibility.154José Garea Alonso, an official with the Cuban Ministry of Agriculture, indicated that recent legislation such as Law 259 is the start of what may eventu-ally lead to more direct commercial ties between Cuban organizations and foreign buyers or investors.155 At the moment, Cuba’s agricultural cooperatives are relatively small and continue to rely on the state for the bulk of their marketingopportunities.156 In the future, these cooperatives may be allowed to join together to form larger groups of linked agricultural cooperatives working together to manage their own affairs, and may include the ability to directly negotiate with foreign buyers rather than requiring an intervening hand from Alimport or anoth-er appropriate ministry.157Foreign investment in Cuban businesses has only been possible in a lim-ited form since the early 1980s, when the Cuban government introduced legisla-tion allowing for foreign entities to create a joint venture with the Cuban gov-ernment for investment purposes.158 Ultimately, the goal of this legislation was to provide an easier means for Cuba to acquire additional foreign currency to inject into its economy.159 Even with the new law, regulations prohibited any foreign participant in a joint enterprise from controlling more than 49%, though such a restriction was not in place for a partnership.160VI. NEW OPPORTUNITIES While investment in Cuban businesses and sales or purchases of Cuban products must still move through official channels under the joint venture law or other Cuban programs, the time is ripe for organizations in the United States to begin laying groundwork for closer ties with Cuban agricultural entities. Recent regulatory changes implemented by the U.S. government provide a means for individuals and businesses to begin forming the relationships with their Cuban counterparts that will lead to future trade opportunities.161As previously mentioned, recent changes in U.S. policy now allow for any individual in the United States, not simply relatives, to donate money to Cu-ban citizens, though not to exceed $500 for any three month consecutive period, with the only restriction being that the recipient is not an official in the Cuban government or the Communist Party.162 Specifically written into these new regu-lations is the idea that these remittances may be spent “to support the develop-ment of private businesses.”163 A five hundred dollar infusion of capital to sup-port a fledging business or farm can be enormously beneficial when the average monthly salary is only 448 pesos, or approximately twenty dollars.164Additional capital will enable small Cuban farms to expand operations by hiring additional help or perhaps purchasing additional farm animals. While purchasing a tractor may seem like an obvious choice for a growing farm, Medardo Naranjo Valdes of the Organoponico Vivero Alamar, a UBPC just out-side of Havana, indicated that farm animals such as oxen would remain the pre-ferred choice for the foreseeable future on the small and midsized farms that make up the majority of the newer agricultural cooperatives.165 Not only do farm animals not require gasoline or incur maintenance costs beyond perhaps an occa-sional veterinarian charge, their waste can be used as fertilizer. Apart from additional labor, funds provided to agricultural cooperatives could be put to use in developing innovative pest control techniques that do not require the use of expensive pesticides or other chemicals. The Vivero Alamar is currently experimenting with a variety of natural pest control techniques such as introducing plants that serve as natural repellents to insects and the introduction of other insects that feed on harmful pests without harming the crops.166Investment in agricultural cooperatives done in this manner will likely fail to see much return on the investment for their foreseeable future, until policies in both the United States and Cuba are changed.167 For a relatively small sum, American investors will get not only the benefit of a close relationship with a Cuban farm that will become a new source of both import and export business in the future, but potentially gain access to innovative agricultural techniques that could be used in the United States immediately.168 Because the logistical structure needed to transport goods from large ru-ral farms into city markets remains underdeveloped, urban and suburban agricul-ture makes up a growing portion of the food produced and consumed in Cuba.169 As in other countries, the population trends in Cuba have continued to shift away from rural areas to more concentrated urban and suburban areas, with about three-fourths of Cubans living in cities.170 With this shift in population has also come a shift in the country’s agricultural system. As of 2007, about 15% of all agriculture in Cuba could be classified as urban agriculture.171 Not only have agricultural practices changed, but eating habits have as well. Without the Soviet Union to provide a ready source of income and the machinery needed to engage in large-scale livestock production, vegetable consumption has increased dramat-ically.172 Nearly every urban area has direct access to a wide variety of locally grown, organic produce.173 Many of the urban farms in Cuba, including the Vivero Alamar, make use of organoponics, a system where crops are produced in raised beds of soil on land that would otherwise be incapable of supporting intensive agricultural pro-duction.174 Many of these raised beds can be constructed in a concentrated area to support a wide variety of produce, with the typical organoponic garden covering anywhere from one half to several hectares in size.175 The rise of the organoponic production method was a shift away from the earlier centralized production mod-el employed by the state. It has been supported through intensive research and development by a variety of state agencies, such as the National Institute of Agri-cultural Science, and continued development has been guided through intensive training and educational programs.176 The organoponic system is not limited in its application to Cuban urban farms, but maintains potential to be applied worldwide, including in the United States. Urban agriculture in Cuba revitalized and put to use previously abandoned and unused land. A similar approach could be applied to the United States as a means to restore blighted areas.177 Applying Cuban-derived organoponics in U.S. cities could potentially open up an enormous amount of land that was previ-ously unusable. From a business perspective, investing in an organoponic agri-cultural program in the United States is also a sound decision since the demand for local produce reached $4.8 billion in 2008 and is only expected to grow fur-ther, potentially reaching $7 billion in 2012. In an American city beset with high unemployment such as Detroit, Michigan, for example, investing in urban agriculture could potentially generate as many as five thousand new jobs.179 By utilizing Cuba’s system of organopon-ics, the need to use expensive and complex farm machinery could be significantly reduced. Already companies in the United States, such as Farmscape Gardens in southern California, recognize what Cuba’s organoponic system could achieve and have integrated it into their business practices.180 Rachel Bailin, a partner in the company, indicated that it was Cuba’s organic farming practices that helped inspire them to start a company devoted to urban agriculture.181 They have al-ready used Cuba’s organoponic farming methods to produce more than 50,000 pounds of produce since the spring of 2009.182 The potential for future growth in this industry is huge, as Farmscape Gardens’ current levels of production make it the largest urban agriculture company in the state of California.183Cuba not only offers attractive prospects for trading in the future, but methods of agriculture pioneered out of necessity have broad prospects if applied to agriculture in the United States. As the demand for locally grown produce continues to increase, a cost-effective and proven agricultural model like Cuba’s organoponic system may be just what is needed to allow for urban agriculture to flourish. VII. CONCLUSIONS The United States and Cuba have a long, complicated history that years of animosity and finger pointing have certainly done little to improve. For more than fifty years now, the United States has shunned one of its closest neighbors, but recent actions by the Obama administration indicate change is certainly a possibility. In conclusion, the future of trade relations with Cuba can be summed up as follows: First, truly open trade with Cuba is not likely to occur for many years. The political and foreign policy practices that have supported the embargo will not disappear overnight. What is more likely, though, is a continued and gradual relaxation of certain trade policies that will ultimately benefit a number of U.S. industries, agriculture included. While trade in agricultural products is currently possible on a limited scale, agricultural entities in the United States interested in trading with Cuba on a larger scale should begin their preparations now by forg-ing relationships with their Cuban counterparts. Opening the door to further trade will not happen without a concentrated and prolonged push by various in-terest groups in the United States. Second, certain companies that wish to do business in Cuba today are able to do so and should begin familiarizing themselves with the Cuban govern-mental entities such as Alimport. Barring a complete reorganization of the Cu-ban government, agencies such as Alimport will likely continue to oversee foreign trade for the foreseeable future. Forming business relationships with Cuban companies in the short-term under existing regulations will help support broader trade opportunities in the future. Finally, what Cuba has accomplished in the field of cooperative and ur-ban agricultural products is remarkable, and should serve as an inspiration to farmers and businesses in the United States as well. The Cuban organoponic system of production has great potential for a variety of urban and suburban farming activities in the United States, particularly as demand for local and organic produce continues to rise. As relations between Cuba and the United States continue to thaw in the coming years, organizations that began their preparations today will be best equipped to meet the challenges and opportunities posed by this new and growing market. Political animosities will eventually crumble in the face of the economic opportunities that closer trade relations could bring to both nations. One of the United States’ closest neighbors has been its enemy for far too long. Cuba presents a unique opportunity American business and agricultural enterprises cannot afford to overlook.

#### Access to the US market is critical to sustainability and emulation.

Kost 04 – William is part of the Economic Research Service for the USDA. (“CUBAN AGRICULTURE: TO BE OR NOT TO BE ORGANIC?” 2004, http://www.ascecuba.org/publications/proceedings/volume14/pdfs/kost.pdf)

MARKETS MAY BE CRITICAL FOR AN ORGANIC CUBA In addition to the above European markets, the successful expansion and viability of Cuba’s organic production may also depend on access to geographically close, high-income foreign markets, namely the United States and Canada. Currently, Cuban produce is not certified-organic in either of these markets. Only after Cuban products are certified for these countries could Cuba legally export produce labeled organic to these markets. Given that many technical production practices currently followed by Cuban producers are potentially compatible with U.S. certification standards and given Cuba’s prior experience in becoming Swiss-certified, Cuba could be well positioned to meet U.S. certification standards. For the U.S. organic market, in addition to a lifting of the U.S. embargo, Cuba would have to be certified by a USDA-accredited certification program that assures U.S. markets that Cuban products labeled organic meet all National Organic Program standards and regulations under the U.S. Organic Foods Production Act of 1990. If the U.S. embargo on Cuba were lifted, Cuban exports, once certified, could play a significant role in the U.S. organic market. In this current U.S. niche market, production costs are high. Opening the U.S. market would enable Cuba to exploit its significant comparative advantage in this area. This market could become a quick foreign exchange earner for Cuba. The largest barrier Cuba faces in expanding into the U.S. organic market will be meeting U.S. requirements for organic certification. Tapping the U.S. market may create sufficient price incentives for Cuban producers to take the necessary steps to meet the organic standards of other importing countries. Cuba could then expand production of organic produce geared to these specialty export markets. With sufficiently high prices for organic produce, urban labor may remain active in an organic urban gardening sector. Most likely, the viability of a vibrant organic produce production and processing sector in Cuba will depend on Cuba’s gaining access to the large, nearby U.S. market. Without such access, organic-oriented production of horticultural products in Cuba will likely remain a necessity-driven way to produce food for domestic consumption in an environment where other production approaches are just not available. The U.S. market is large and diverse. The demand for organic produce is only one portion of that market. How Cuba’s horticultural industry responds to restored U.S. trade will be a function of the relative price and cost incentives of the organic and non-organic market segments. If the organic price premiums are sufficient, Cuba has the climate, land resources, low-cost labor, and history of organic-oriented production to allow it to develop and grow its horticultural sector in that direction.

#### Resistance to industrial agriculture in Cuba will overwhelm agribusinesses.

Zunes 2K – associate professor of politics and chair of the Peace & Justice Studies Program at the University of San Francisco (Stephen, “Cuba’s New Revolution” Design/Builder, August <http://stephenzunes.org/wp-content/uploads/2010/09/Cubas-New-Revolution.pdf>)

Most of Cuba's ecological innovations were made more out of necessity than by design. However, the Cubans believe that many of these changes are here to stay, even if the availability of fossil fuels and chemical agents improve. “We will never go back,” one farmer told me “I'm sorry it took us so long to figure this out” Indeed, as a number of Cuban scientists pointed out, sooner or later all countries will have to make the transition to a more environmentally sustainable economy. “The revolution and the U S. embargo freed us from having to follow the U 8. model of development,“ says Raoul Guiterrez, who works for a tour agency. “Unfortunately, we ended up following the Soviet model, which didn’t work either. Now, we have been forced to do what we should have done from the beginning - find a Cuban model, sensitive to our country‘s cultural, economic, and environmental needs.” Environmental education is taught in every grade at every level of education. There are prime-time radio and television shows on environmental themes. There is a major cleanup of Havana Harbor, thanks to a grant from Scandinavian countries. There is a major recycling program focusing on glass, aluminum, card-- board, and paper collected from every urban neighborhood and many smaller towns as well. High school students are recruited, with the incentive of cash donations for their schools, to collect recyclable materials. There is a growing emphasis on natural medical practices, including homeopathy, Eastern traditions, and traditional Cuban medicines. Green pharmacies are in most towns and neighborhoods, and alternative medicine is a recognized specialization in Cuban medical schools. The greening of Cuba would allow for an unprecedented degree of opportunities for environmental architects, appropriate-technology specialists, organic farming consultants, and others from the United States, yet such assistance is deemed illegal by the Clinton Administration, which has threatened those willing to provide such aid with fines and jail terms. It is ironic that pressure against Cuba has increased as it has moved away from the old rigid Communist development strategies to embracing Green development strategies. Yet perhaps a Green Cuba actually is a bigger threat than a Red Cuba. The Communist model was clearly unsustainable on many levels. Yet a Green model actually serves as a viable alternative to the foreign-investment driven, capital-intensive model promoted by the United States, the World Bank, the International Monetary Fund, and the World Trade Organization. Indeed, Cuba may constitute the threat of a good example, which is perhaps the biggest threat of all.

#### Industrial agriculture is the primary factor in global warming. Catastrophic extinction is inevitable without organic agriculture.

Cummins 10 – Ronnie Cummins is the International Director of the Organic Consumers Association, 10/7 (Agriculture and Human Survival: The Road Beyond 10/10/10, http://www.commondreams.org/view/2010/10/07-9)

Despite decades of deception and mystification, a critical mass at the grassroots is waking up. A new generation of food and climate activists understands that greenhouse gas-belching fossil fuels, industrial food and farming, and our entire global economy pose a mortal threat, not just to our present health and well being, but also to human survival. Given the severity of the Crisis, we have little choice but to step up our efforts. As 35,000 climate activists at the historic global climate summit in April of 2010 in Cochabamba, Bolivia shouted, “We must change the System, not the climate.” “Changing the System,” means defending our selves, the future generations, and the biological carrying capacity of the planet from the ravages of “profit at any cost” capitalism. “Changing the System,” means safeguarding our delicately balanced climate, soils, oceans, and atmosphere from the fatal consequences of fossil fuel-induced climate change. “Changing the System” means exposing, dismantling, and replacing, not just individual out-of-control corporations like Monsanto, Halliburton, and British Petroleum, and out-of-control technologies like gene-altered crops and mountaintop removal; but our entire chemical and energy-intensive industrial economy, starting, at least for many of us, with Food Inc.’s destructive system of industrial food and farming. “Changing the system,” means going on the offensive and dismantling the most controversial and vulnerable flanks of our suicide economy: coal plants, gas guzzlers, the military-industrial complex, and industrial agriculture’s Genetically Modified Organisms (GMOs) and factory farms. Frankenfoods and Industrial Agriculture Highly subsidized GM crops - comprising 40% of U.S. cropland, and 10% of global crops - and the junk food and unhealthy processed foods and beverages derived from them, are the most profitable and strategically important components of industrial agriculture. Taxpayer subsidized GMOs and factory farms allow Food Inc. (corporate agribusiness) to poison the public and pollute the atmosphere and environment. Subsidized GM and monoculture crops - along with cheap soy, corn, and chemical additives - allow the McDonald’s, Cargills and Wal-Marts of the world to sell junk food, meat, and beverages at much lower prices than healthy, non-chemical foods. GMO crops and their companion pesticides and chemical fertilizers are the cash cows and vanguard of a global farming and food distribution system that consumes prodigious amounts of fossil fuels and emits tremendous amount of climate-destabilizing greenhouse gases. GMOs provide the ideological and technological foundation for the factory farms and mono-crop plantations that are destroying the climate, the soils, and the planet. Either we bring them down, or they will bring us down. According to Monsanto and the global war on bugs, war on biodiversity, chemical farming lobby, patented GMO seeds, crops, biofuels, animals, and trees can miraculously kill pests, reduce pesticide use, boost yields, alleviate world hunger, reduce petroleum use, and help farmers adapt to drought, pestilence, and global warming. As a growing "Millions Against Monsanto" corps understand, the Biotech Bullies are dangerous liars. Industrial agriculture, GMOs, and so-called cheap food have destroyed public health and wrecked the environment. Genetically Modified (GM) crops have neither reduced pesticide use, nor chemical fertilizer use. They kill pests, but they also give rise to superweeds and superpests. GM crops, like all industrial monoculture crops, use vast amounts of fossil fuel and water. GMO and their companion chemicals (pesticides and chemical fertilizers) destroy the greenhouse gas sequestering capacity of living soils and kill off non-patented plants, trees, and animals. Most GM crops, 90% of which are derived from Monsanto’s patented seeds, are genetically engineered to boost the sales of toxic pesticides such as Roundup, and thereby increase toxic pesticide residues in foods. GM crops do not produce higher yields, nor provide more nutritious foods. GM soybeans, the most important industrial agriculture crop, along with corn, consistently have lower yields, while chemical-intensive GM food crops contain far fewer vitamins and essential trace minerals than organic foods. Nor has gene-splicing (unlike organic farming) produced plant or tree varieties that can adapt to global warming. Nonetheless GM crops remain Food Inc.’s propaganda “poster child.” The unfortunate bottom line is that 65 years of chemical and GM agriculture, a literal World War Three on public health, rural communities, and the environment, have nearly killed us. Humans and our living environment have been poisoned, not only by pesticides, nitrate fertilizers, greenhouse gas pollution, and contaminated factory-farmed food, but also by the mutant organisms and patented chemical residues that accompany these genetically modified foods and crops. Either we make the Great Transition to a relocalized economy whose foundation is renewable energy and solar-based (as opposed to GMO and petroleum-based) organic food and fiber production, or else we are destined to burn up the planet and destroy ourselves. Despite mass media brainwashing (“Better living through chemistry… Monsanto can feed the world… GMO crops and trees can reduce fossil fuel use and climate-destabilizing greenhouse gases…”), consumers and farmers are seeing through the lies. Defying the efforts of the powerful industrial agriculture/biotech lobby, a growing number of activists and concerned citizens are connecting the dots and taking action. As a consequence Monsanto has become one of the most hated corporations on earth. A critical mass of research reveals that genetically engineered crops, now covering almost 40% of U.S. cropland (173 million acres of GM crops) and 10% of global farm acreage (321 million acres), pollute the environment, kill essential soil micro-organisms, generate superweeds and pests, decrease biodiversity, aid and abet seed monopolization, encourage massive use of toxic pesticides and chemical fertilizer, spew out massive amounts of climate-destabilizing greenhouse gases, and seriously damage animal and human health. Injecting genetically engineered hormones into dairy cows to force them to give more milk is reckless and dangerous. Monsanto’s genetically engineered Bovine Growth Hormone rBGH, now marketed by Eli Lilly, increases the risks of breast, prostate, and colon cancer for those who consume the milk. It also severely damages the health of the cows. Residue levels of Monsanto’s toxic herbicide, Roundup, found routinely in non-organic foods, destroy animal and human reproductive systems. Haphazardly ramming indeterminate amounts of patented foreign DNA, bacteria, and antibiotic-resistant genes into the genomes of already non-sustainable energy and pesticide-intensive crops and foods (corn, soy, cotton, canola, sugar beets, alfalfa) in order to increase the sales of Monsanto or Bayer's GMO companion herbicides or to facilitate monopoly control over seeds by the Gene Giants is not only non-sustainable, but criminal. Rejection of this out-of-control GM technology is a major driving force in the rapid growth of organic food and farming, as well as the growing demand for mandatory safety testing and labeling of GMOs. In the EU, where GM-tainted foods must be labeled, GMO crops are almost non-existent (although large quantities of GM animal feed are still being imported into the EU from the U.S., Canada, Brazil, and Argentina). Local and organic food production is now growing faster than GMO/industrial food and farming; improving public health and nutrition, reducing fossil fuel use and greenhouse gas pollution, sequestering billions of tons of CO2 in the soil (up to seven tons of CO2 per acre per year), and providing economic survival for a growing number of the world’s 2.8 billion small farmers and rural villagers. The growth of organic agriculture and relocalized food and farming systems are encouraging, but obviously organics are still the alternative, rather than the norm. As we enter into the Brave New World of global warming and climate chaos, many organic advocates are starting to realize that we need to put more emphasis, not just on the health and pollution hazards of GMOs; but rather we need to broaden our efforts and mobilize to abolish the entire system of industrial food and farming. As we are now learning, industrial agriculture and factory farming are in fact a primary (if not the primary) cause of global warming and deforestation. Even if were able to rip up all of Monsanto’s GMO crops tomorrow, business as usual, chemical-intensive, energy-intensive industrial agriculture is enough to kill us all. On the other hand, if we’re going to take down industrial agriculture, one of the best ways to leverage our efforts is to target the most hated corporation in the world, Monsanto. Besides contaminating our food, destroying the environment and moving, by any means necessary, to gain monopoly control over seeds and biodiversity, Monsanto and their Food Inc. collaborators are guilty of major “climate crimes.” These crimes include: confusing the public about the real causes of (and solutions to) global warming; killing the soil’s ability to sequester greenhouse gases; releasing massive amounts of greenhouse gases (CO2, methane and nitrous oxide) into the atmosphere; promoting bogus industrial corn and soy-derived biofuels (which use just as many fossil fuel, and release just as many greenhouse gases as conventional fuels); monopolizing seed stocks and taking climate-friendly varieties off the market; promoting genetically engineered trees; and last but not least, advocating dangerous geoengineering schemes such as massive GM plantations of trees or plants than reflect sunlight. The negotiators and heads of state at the December 2009 Copenhagen Climate negotiations abandoned the summit with literally no binding agreement on meaningful greenhouse gas (carbon dioxide, nitrous oxide, methane, and black carbon) reduction, and little or no acknowledgement of the major role that industrial food and farming practices play in global warming. Lulled by the world’s leaders vague promises to reduce global warming, and still believing that new technological breakthroughs can save us, the average citizen has no idea how serious the present climate crisis actually is. A close look at present (non-legally binding) pledges by the Obama Administration and other governments to reduce GHG pollution shows that their proposed, slightly modified “business as usual” practices will still result in a disastrous global average temperature increase of 3.5 to 3.9 C by 2100, according to recent studies. This will not only burn up the Amazon, the lungs of the planet, but also transform the Arctic into a region that is 10 to 16 degrees C warmer, releasing most of the region’s permafrost carbon and methane and unknown quantities of methane hydrates, in the process basically putting an end to human beings’ ability to live on the planet. We are literally staring disaster in the face. In the follow up to the Copenhagen Climate Summit this year, which is to be held in Cancun, Mexico (Nov. 29-Dec. 10) we, as members of global civil society, must raise our voices loud and clear. We must make it clear that we are years, not decades away, from detonating runaway feedback mechanisms (heating up and burning up the Amazon and melting the Arctic permafrost) that can doom us all. Industrial Food and Farming: A Deadly Root of Global Warming Although transportation, industry, and energy producers are obviously major fossil fuel users and greenhouse gas polluters, not enough people understand that the worst U.S. and global greenhouse gas emitter is “Food Incorporated,” transnational industrial food and farming, of which Monsanto and GMOs constitute a major part. Industrial farming, including 173 million acres of GE soybeans, corn, cotton, canola, and sugar beets, accounts for at least 35% of U.S. greenhouse gas emissions (EPA’s ridiculously low estimates range from 7% to 12%, while some climate scientists feel the figure could be as high as 50% or more). Industrial agriculture, biofuels, and non-sustainable cattle grazing - including cutting down the last remaining tropical rainforests in Latin America and Asia for GMO and chemical-intensive animal feed and biofuels - are also the main driving forces in global deforestation and wetlands destruction, which generate an additional 20% of all climate destabilizing GHGs. In other words the direct (food, fiber, and biofuels production, food processing, food distribution) and indirect damage (deforestation and destruction of wetlands) of industrial agriculture, GMOs, and the food industry are the major cause of global warming. Unless we take down Monsanto and Food Inc. and make the Great Transition to a relocalized system of organic food and farming, we and our children are doomed to reside in Climate Hell. Overall 78% of climate destabilizing greenhouse gases come from CO2, while the remainder come from methane, nitrous oxide, and black carbon or soot. To stabilize the climate we will need to drastically reduce all of these greenhouse gas emissions, not just CO2, and sequester twice as much carbon matter in the soil (through organic farming and ranching, and forest and wetlands restoration) as we are doing presently. Currently GMO and industrial/factory farms (energy and chemical-intensive) farms emit at least 25% of the carbon dioxide (mostly from tractors, trucks, combines, transportation, cooling, freezing, and heating); 40% of the methane (mostly from massive herds of animals belching and farting, and manure ponds); and 96% of nitrous oxide (mostly from synthetic fertilizer manufacture and use, the millions of tons of animal manure from factory-farmed cattle herds, pig and poultry flocks, and millions of tons of sewage sludge spread on farms). Black carbon or soot comes primarily from older diesel engines, slash and burn agriculture, and wood cook stoves. Per ton, methane is 21 times more damaging, and nitrous oxide 310 times more damaging, as a greenhouse gas than carbon dioxide, when measured over a one hundred year period. Damage is even worse if you look at the impact on global warming over the next crucial 20-year period. Many climate scientists admit that they have previously drastically underestimated the dangers of the non-CO2 GHGs, including methane, soot, and nitrous oxide, which are responsible for at least 22% of global warming.

#### Warming is real and anthropogenic. Reject their skeptics.

Prothero 12 – Donald R. Prothero is a Professor of Geology at Occidental College and Lecturer in Geobiology at the California Institute of Technology. (“How We Know Global Warming is Real and Human Caused”, 3/1/2012, http://www.skeptic.com/eskeptic/12-02-08/)

How do we know that global warming is real and primarily human caused? There are numerous lines of evidence that converge to this conclusion. Carbon Dioxide Increase. Carbon dioxide in our atmosphere has increased at an unprecedented rate in the past 200 years. Not one data set collected over a long enough span of time shows otherwise. Mann et al. (1999) compiled the past 900 years’ worth of temperature data from tree rings, ice cores, corals, and direct measurements of the past few centuries, and the sudden increase of temperature of the past century stands out like a sore thumb. This famous graph (see Figure 1 above) is now known as the “hockey stick” because it is long and straight through most of its length, then bends sharply upward at the end like the blade of a hockey stick. Other graphs show that climate was very stable within a narrow range of variation through the past 1000, 2000, or even 10,000 years since the end of the last Ice Age. There were minor warming events during the Climatic Optimum about 7000 years ago, the Medieval Warm Period, and the slight cooling of the Little Ice Age from the 1700s and 1800s. But the magnitude and rapidity of the warming represented by the last 200 years is simply unmatched in all of human history. More revealing, the timing of this warming coincides with the Industrial Revolution, when humans first began massive deforestation and released carbon dioxide by burning coal, gas, and oil. Melting Polar Ice Caps. The polar icecaps are thinning and breaking up at an alarming rate. In 2000, my former graduate advisor Malcolm McKenna was one of the first humans to fly over the North Pole in summer time and see no ice, just open water. The Arctic ice cap has been frozen solid for at least the past 3 million years and maybe longer3, but now the entire ice sheet is breaking up so fast that by 2030 (and possibly sooner) less than half of the Arctic will be ice covered in the summer.4 As one can see from watching the news, this is an ecological disaster for everything that lives up there, from the polar bears to the seals and walruses to the animals they feed upon, to the 4 million people whose world is melting beneath their feet. The Antarctic is thawing even faster. In February–March 2002, the Larsen B ice shelf—over 3000 square km (the size of Rhode Island) and 220 m (700 feet) thick—broke up in just a few months, a story typical of nearly all the ice shelves in Antarctica. The Larsen B shelf had survived all the previous ice ages and interglacial warming episodes for the past 3 million years, and even the warmest periods of the last 10,000 years—yet it and nearly all the other thick ice sheets on the Arctic, Greenland, and Antarctic are vanishing at a rate never before seen in geologic history. Melting Glaciers. Glaciers are all retreating at the highest rates ever documented. Many of those glaciers, especially in the Himalayas, Andes, Alps, and Sierras, provide most of the freshwater that the populations below the mountains depend upon—yet this fresh water supply is vanishing. Just think about the percentage of world’s population in southern Asia (especially India) that depend on Himalayan snowmelt for their fresh water. The implications are staggering. The permafrost that once remained solidly frozen even in the summer has now thawed, damaging the Inuit villages on the Arctic coast and threatening all our pipelines to the North Slope of Alaska. This is catastrophic not only for life on the permafrost, but as it thaws, the permafrost releases huge amounts of greenhouse gases and is one of the major contributors to global warming. Not only is the ice vanishing, but we have seen record heat waves over and over again, killing thousands of people, as each year joins the list of the hottest years on record. (2010 just topped that list as the hottest year, surpassing the previous record in 2009, and we shall know about 2011 soon enough). Natural animal and plant populations are being devastated all over the globe as their environment changes.5 Many animals respond by moving their ranges to formerly cold climates, so now places that once did not have to worry about disease-bearing mosquitoes are infested as the climate warms and allows them to breed further north. Sea Level Rise. All that melted ice eventually ends up in the ocean, causing sea level to rise, as it has many times in the geologic past. At present, sea level is rising about 3–4 mm per year, more than ten times the rate of 0.1–0.2 mm/year that has occurred over the past 3000 years. Geological data show that sea level was virtually unchanged over the past 10,000 years since the present interglacial began. A few millimeters here or there doesn’t impress people, until you consider that the rate is accelerating and that most scientists predict sea level will rise 80–130 cm in just the next century. A sea level rise of 1.3 m (almost 4 feet) would drown many of the world’s low-elevation cities, such as Venice and New Orleans, and low-lying countries such as the Netherlands or Bangladesh. A number of tiny island nations such as Vanuatu and the Maldives, which barely poke out above the ocean now, are already vanishing beneath the waves. Eventually their entire population will have to move someplace else.6 Even a small sea level rise might not drown all these areas, but they are much more vulnerable to the large waves of a storm surge (as happened with Hurricane Katrina), which could do much more damage than sea level rise alone. If sea level rose by 6 m (20 feet), most of the world’s coastal plains and low-lying areas (such as the Louisiana bayous, Florida, and most of the world’s river deltas) would be drowned. Most of the world’s population lives in coastal cities such as New York, Boston, Philadelphia, Baltimore, Washington, D.C., Miami, Shanghai, and London. All of those cities would be partially or completely under water with such a sea level rise. If all the glacial ice caps melted completely (as they have several times before during past greenhouse episodes in the geologic past), sea level would rise by 65 m (215 feet)! The entire Mississippi Valley would flood, so you could dock your boat in Cairo, Illinois. Such a sea level rise would drown nearly every coastal region under hundreds of feet of water, and inundate New York City, London and Paris. All that would remain would be the tall landmarks, such as the Empire State Building, Big Ben, and the Eiffel Tower. You could tie your boats to these pinnacles, but the rest of these drowned cities would be deep under water. Climate Deniers’ Arguments and Scientists’ Rebuttals Despite the overwhelming evidence there are many people who remain skeptical. One reason is that they have been fed lies, distortions, and misstatements by the global warming denialists who want to cloud or confuse the issue. Let’s examine some of these claims in detail: “It’s just natural climatic variability.” No, it is not. As I detailed in my 2009 book, Greenhouse of the Dinosaurs, geologists and paleoclimatologists know a lot about past greenhouse worlds, and the icehouse planet that has existed for the past 33 million years. We have a good understanding of how and why the Antarctic ice sheet first appeared at that time, and how the Arctic froze over about 3.5 million years ago, beginning the 24 glacial and interglacial episodes of the “Ice Ages” that have occurred since then. We know how variations in the earth’s orbit (the Milankovitch cycles) controls the amount of solar radiation the earth receives, triggering the shifts between glacial and interglacial periods. Our current warm interglacial has already lasted 10,000 years, the duration of most previous interglacials, so if it were not for global warming, we would be headed into the next glacial in the next 1000 years or so. Instead, our pumping greenhouse gases into our atmosphere after they were long trapped in the earth’s crust has pushed the planet into a “super-interglacial,” already warmer than any previous warming period. We can see the “big picture” of climate variability most clearly in the EPICA cores from Antarctica (see Figure 2 below), which show the details of the last 650,000 years of glacial-interglacial cycles. At no time during any previous interglacial did the carbon dioxide levels exceed 300 ppm, even at their very warmest. Our atmospheric carbon dioxide levels are already close to 400 ppm today. The atmosphere is headed to 600 ppm within a few decades, even if we stopped releasing greenhouse gases immediately. This is decidedly not within the normal range of “climatic variability,” but clearly unprecedented in human history. Anyone who says this is “normal variability” has never seen the huge amount of paleoclimatic data that show otherwise. “It’s just another warming episode, like the Mediaeval Warm Period, or the Holocene Climatic Optimum” or the end of the Little Ice Age.” Untrue. There were numerous small fluctuations of warming and cooling over the last 10,000 years of the Holocene. But in the case of the Mediaeval Warm Period (about 950–1250 A.D.), the temperatures increased by only 1°C, much less than we have seen in the current episode of global warming (see Figure 1). This episode was also only a local warming in the North Atlantic and northern Europe. Global temperatures over this interval did not warm at all, and actually cooled by more than 1°C. Likewise, the warmest period of the last 10,000 years was the Holocene Climatic Optimum (5000–9000 B.C.) when warmer and wetter conditions in Eurasia caused the rise of the first great civilizations in Egypt, Mesopotamia, the Indus Valley, and China. This was largely a Northern Hemisphere-Eurasian phenomenon, with 2–3°C warming in the Arctic and northern Europe. But there was almost no warming in the tropics, and cooling or no change in the Southern Hemisphere.7 To the Eurocentric world, these warming events seemed important, but on a global scale the effect is negligible. In addition, neither of these warming episodes is related to increasing greenhouse gases. The Holocene Climatic Optimum, in fact, is predicted by the Milankovitch cycles, since at that time the axial tilt of the earth was 24°, its steepest value, meaning the Northern Hemisphere got more solar radiation than normal—but the Southern Hemisphere less, so the two balanced. By contrast, not only is the warming observed in the last 200 years much greater than during these previous episodes, but it is also global and bipolar, so it is not a purely local effect. The warming that ended the Little Ice Age (from the mid-1700s to the late 1800s) was due to increased solar radiation prior to 1940. Since 1940, however, the amount of solar radiation has been dropping, so the only candidate for the post-1940 warming has to be carbon dioxide.8 “It’s just the sun, or cosmic rays, or volcanic activity or methane.” Nope, sorry. The amount of heat that the sun provides has been decreasing since 1949, just the opposite of the denialists’ claims. There is no evidence (see Figure 3 below) of increase in cosmic radiation during the past century.10 Nor is there any clear evidence that large-scale volcanic events (such as the 1815 eruption of Tambora in Indonesia, which changed global climate for about a year) have any long-term effect that would explain 200 years of warming and carbon dioxide increase. Volcanoes erupt only 0.3 billion tonnes of carbon dioxide each year, but humans emit over 29 billion tonnes a year11, roughly 100 times as much. Clearly, we have a bigger effect. Methane is a more powerful greenhouse gas, but there is 200 times more carbon dioxide than methane, so carbon dioxide is still the most important agent.12 Every other alternative has been looked at, but the only clear-cut relationship is between human-caused carbon dioxide increase and global warming. “The climate records since 1995 (or 1998) show cooling.” That’s a deliberate deception. People who throw this argument out are cherry-picking the data.13 Over the short term, there was a slight cooling trend from 1998–2000 (see Figure 4 below), because 1998 was a record-breaking El Niño year, so the next few years look cooler by comparison. But since 2002, the overall long-term trend of warming is unequivocal. This statement is a clear-cut case of using out-of-context data in an attempt to deny reality. All of the 16 hottest years ever recorded on a global scale have occurred in the last 20 years. They are (in order of hottest first): 2010, 2009, 1998, 2005, 2003, 2002, 2004, 2006, 2007, 2001, 1997, 2008, 1995, 1999, 1990, and 2000.14 In other words, every year since 2000 has been in the Top Ten hottest years list, and the rest of the list includes 1995, 1997, 1998, 1999, and 2000. Only 1996 failed to make the list (because of the short-term cooling mentioned already). “We had record snows in the winters of 2009–2010, and in 2010–2011.” So what? This is nothing more than the difference between weather (short-term seasonal changes) and climate (the long-term average of weather over decades and centuries and longer). Our local weather tells us nothing about another continent, or the global average; it is only a local effect, determined by short-term atmospheric and oceanographic conditions.15 In fact, warmer global temperatures mean more moisture in the atmosphere, which increases the intensity of normal winter snowstorms. In this particular case, the climate denialists forget that the early winter of November–December 2009 was actually very mild and warm, and then only later in January and February did it get cold and snow heavily. That warm spell in early winter helped bring more moisture into the system, so that when cold weather occurred, the snows were worse. In addition, the snows were unusually heavy only in North America; the rest of the world had different weather, and the global climate was warmer than average. And the summer of 2010 was the hottest on record, breaking the previous record set in 2009. “Carbon dioxide is good for plants, so the world will be better off.” Who do they think they’re kidding? The people who promote this idea clearly don’t know much global geochemistry, or are trying to cynically take advantage of the fact that most people are ignorant of science. The Competitive Enterprise Institute (funded by oil and coal companies and conservative foundations16) has run a series of shockingly stupid ads concluding with the tag line “Carbon dioxide: they call it pollution, we call it life.” Anyone who knows the basic science of earth’s atmosphere can spot the deceptions in this ad.17 Sure, plants take in carbon dioxide that animals exhale, as they have for millions of years. But the whole point of the global warming evidence (as shown from ice cores) is that the delicate natural balance of carbon dioxide has been thrown out of whack by our production of too much of it, way in excess of what plants or the oceans can handle. As a consequence, the oceans are warming18 and absorbing excess carbon dioxide making them more acidic. Already we are seeing a shocking decline in coral reefs (“bleaching”) and extinctions in many marine ecosystems that can’t handle too much of a good thing. Meanwhile, humans are busy cutting down huge areas of temperate and tropical forests, which not only means there are fewer plants to absorb the gas, but the slash and burn practices are releasing more carbon dioxide than plants can keep up with. There is much debate as to whether increased carbon dioxide might help agriculture in some parts of the world, but that has to be measured against the fact that other traditional “breadbasket” regions (such as the American Great Plains) are expected to get too hot to be as productive as they are today. The latest research19 actually shows that increased carbon dioxide inhibits the absorption of nitrogen into plants, so plants (at least those that we depend upon today) are not going to flourish in a greenhouse world. Anyone who tells you otherwise is ignorant of basic atmospheric science. “I agree that climate is changing, but I’m skeptical that humans are the main cause, so we shouldn’t do anything.” This is just fence sitting. A lot of reasonable skeptics deplore the “climate denialism” of the right wing, but still want to be skeptical about the cause. If they want proof, they can examine the huge array of data that directly points to humans causing global warming.20 We can directly measure the amount of carbon dioxide humans are producing, and it tracks exactly with the amount of increase in atmospheric carbon dioxide. Through carbon isotope analysis, we can show that this carbon dioxide in the atmosphere is coming directly from our burning of fossil fuels, not from natural sources. We can also measure oxygen levels that drop as we produce more carbon that then combines with oxygen to produce carbon dioxide. We have satellites in space that are measuring the heat released from the planet and can actually see the atmosphere get warmer. The most crucial proof emerged only in the past few years: climate models of the greenhouse effect predict that there should be cooling in the stratosphere (the upper layer of the atmosphere above 10 km (6 miles) in elevation, but warming in the troposphere (the bottom layer of the atmosphere below 10 km (6 miles), and that’s exactly what our space probes have measured. Finally, we can rule out any other culprits (see above): solar heat is decreasing since 1940, not increasing, and there are no measurable increases in cosmic radiation, methane, volcanic gases, or any other potential cause. Face it—it’s our problem. Why Do People Deny Climate Change? Thanks to all the noise and confusion over the debate, the general public has only a vague idea of what the debate is really about, and only about half of Americans think global warming is real or that we are to blame.21 As in the debate over evolution and creationism, the scientific community is virtually unanimous on what the data demonstrate about anthropogenic global warming. This has been true for over a decade. When science historian Naomi Oreskes surveyed all peer-reviewed papers on climate change published between 1993 and 2003 in the world’s leading scientific journal, Science, she found that there were 980 supporting the idea of human-induced global warming and none opposing it. In 2009, Doran and Kendall Zimmerman23 surveyed all the climate scientists who were familiar with the data. They found that 95–99% agreed that global warming is real and that humans are the reason. In 2010, the prestigious Proceedings of the National Academy of Sciences published a study that showed that 98% of the scientists who actually do research in climate change are in agreement with anthropogenic global warming.24 Every major scientific organization in the world has endorsed the conclusion of anthropogenic climate change as well. This is a rare degree of agreement within such an independent and cantankerous group as the world’s top scientists. This is the same degree of scientific consensus that scientists have achieved over most major ideas, including gravity, evolution, and relativity. These and only a few other topics in science can claim this degree of agreement among nearly all the world’s leading scientists, especially among everyone who is close to the scientific data and knows the problem intimately. If it were not such a controversial topic politically, there would be almost no interest in debating it, since the evidence is so clear-cut. If the climate science community speaks with one voice (as in the 2007 IPCC report, and every report since then), why is there still any debate at all? The answer has been revealed by a number of investigations by diligent reporters who got past the PR machinery denying global warming, and uncovered the money trail. Originally, there was no real “dissenters” to the idea of global warming by scientists who are actually involved with climate research. Instead, the forces with vested interests in denying global climate change (the energy companies, and the “free-market” advocates) followed the strategy of tobacco companies: create a smokescreen of confusion and prevent the American public from recognizing scientific consensus. As the famous memo25 from the tobacco lobbyists said “Doubt is our product.” The denialists generated an anti-science movement entirely out of thin air and PR. The evidence for this PR conspiracy has been well documented in numerous sources. For example, Oreskes and Conway revealed from memos leaked to the press that in April 1998 the right-wing Marshall Institute, SEPP (Fred Seitz’s lobby that aids tobacco companies and polluters), and ExxonMobil, met in secret at the American Petroleum Institute’s headquarters in Washington, D.C. There they planned a $20 million campaign to get “respected scientists” to cast doubt on climate change, get major PR efforts going, and lobby Congress that global warming isn’t real and is not a threat. The right-wing institutes and the energy lobby beat the bushes to find scientists—any scientists—who might disagree with the scientific consensus. As investigative journalists and scientists have documented over and over again,26 the denialist conspiracy essentially paid for the testimony of anyone who could be useful to them. The day that the 2007 IPCC report was released (Feb. 2, 2007), the British newspaper The Guardian reported that the conservative American Enterprise Institute (funded largely by oil companies and conservative think tanks) had offered $10,000 plus travel expenses to scientists who would write negatively about the IPCC report.27 We are accustomed to the hired-gun “experts” paid by lawyers to muddy up the evidence in the case they are fighting, but this is extraordinary—buying scientists outright to act as shills for organizations trying to deny scientific reality. With this kind of money, however, you can always find a fringe scientist or crank or someone with no relevant credentials who will do what they’re paid to do. The NCSE satirized this tactic of composing phony “lists of scientists” with their “Project Steve.”28 They showed that there were more scientists named “Steve” than their entire list of “scientists who dispute evolution.” It may generate lots of PR and a smokescreen to confuse the public, but it doesn’t change the fact that scientists who actually do research in climate change are unanimous in their insistence that anthropogenic global warming is a real threat. Most scientists I know and respect work very hard for little pay, yet they still cannot be paid to endorse some scientific idea they know to be false. The climate deniers have a lot of other things in common with creationists and other anti-science movements. They too like to quote someone out of context (“quote mining”), finding a short phrase in the work of legitimate scientists that seems to support their position. But when you read the full quote in context, it is obvious that they have used the quote inappropriately. The original author meant something that does not support their goals. The “Climategate scandal” is a classic case of this. It started with a few stolen emails from the Climate Research Unit of the University of East Anglia. If you read the complete text of the actual emails29 and comprehend the scientific shorthand of climate scientists who are talking casually to each other, it is clear that there was no great “conspiracy” or that they were faking data. All six subsequent investigations have cleared Philip Jones and the other scientists of the University of East Anglia of any wrongdoing or conspiracy.30 Even if there had been some conspiracy on the part of these few scientists, there is no reason to believe that the entire climate science community is secretly working together to generate false information and mislead the public. If there’s one thing that is clear about science, it’s about competition and criticism, not conspiracy and collusion. Most labs are competing with each other, not conspiring together. If one lab publishes a result that is not clearly defensible, other labs will quickly correct it. As James Lawrence Powell wrote31: Scientists….show no evidence of being more interested in politics or ideology than the average American. Does it make sense to believe that tens of thousands of scientists would be so deeply and secretly committed to bringing down capitalism and the American way of life that they would spend years beyond their undergraduate degrees working to receive master’s and Ph.D. degrees, then go to work in a government laboratory or university, plying the deep oceans, forbidding deserts, icy poles, and torrid jungles, all for far less money than they could have made in industry, all the while biding their time like a Russian sleeper agent in an old spy novel? Scientists tend to be independent and resist authority. That is why you are apt to find them in the laboratory or in the field, as far as possible from the prying eyes of a supervisor. Anyone who believes he could organize thousands of scientists into a conspiracy has never attended a single faculty meeting. There are many more traits that the climate deniers share with the creationists and Holocaust deniers and others who distort the truth. They pick on small disagreements between different labs as if scientists can’t get their story straight, when in reality there is always a fair amount of give and take between competing labs as they try to get the answer right before the other lab can do so. The key point here is that when all these competing labs around the world have reached a consensus and get the same answer, there is no longer any reason to doubt their common conclusion. The anti-scientists of climate denialism will also point to small errors by individuals in an effort to argue that the entire enterprise cannot be trusted. It is true that scientists are human, and do make mistakes, but the great power of the scientific method is that peer review weeds these out, so that when scientists speak with consensus, there is no doubt that their data are checked carefully. Finally, a powerful line of evidence that this is a purely political controversy, rather than a scientific debate, is that the membership lists of the creationists and the climate deniers are highly overlapping. Both anti-scientific dogmas are fed to their overlapping audiences through right-wing media such as Fox News, Glenn Beck, and Rush Limbaugh. Just take a look at the “intelligent-design” creationism website for the Discovery Institute. Most of the daily news items lately have nothing to do with creationism at all, but are focused on climate denial and other right-wing causes.32 If the data about global climate change are indeed valid and robust, any qualified scientist should be able to look at them and see if the prevailing scientific interpretation holds up. Indeed, such a test took place. Starting in 2010, a group led by U.C. Berkeley physicist Richard Muller re-examined all the temperature data from the NOAA, East Anglia Hadley Climate Research Unit, and the Goddard Institute of Space Science sources (see Figure 5 below). Even though Muller started out as a skeptic of the temperature data, and was funded by the Koch brothers and other oil company sources, he carefully checked and re-checked the research himself. When the GOP leaders called him to testify before the House Science and Technology Committee in spring 2011, they were expecting him to discredit the temperature data. Instead, Muller shocked his GOP sponsors by demonstrating his scientific integrity and telling the truth: the temperature increase is real, and the scientists who have demonstrated that the climate is changing are right. In the fall of 2011, his study was published, and the conclusions were clear: global warming is real, even to a right-wing skeptical scientist. Unlike the hired-gun scientists who play political games, Muller did what a true scientist should do: if the data go against your biases and preconceptions, then do the right thing and admit it—even if you’ve been paid by sponsors who want to discredit global warming. Muller is a shining example of a scientist whose integrity and honesty came first, and did not sell out to the highest bidder.

### Plan Text

#### Plan: The United States federal government should normalize its trade relations with the Republic of Cuba.

### No War

#### Contention Three is No War

#### First, miscalculation won’t happen, it wouldn’t escalate, and nuclear exchanges would be extremely limited.

Quinlan 09 – Michael Quinlan is a distinguished former British defense strategist and former Permanent Under-Secretary of State. (“Thinking About Nuclear Weapons”)

Even if initial nuclear use did not quickly end the fighting, the supposition of inexorable momentum in a developing exchange, with each side rushing to overreaction amid confusion and uncertainty, is implausible. It fails to consider what the situation of the decisionmakers would really be. Neither side could want escalation. Both would be appalled at what was going on. Both would be desperately looking for signs that the other was ready to call a halt. Both, given the capacity for evasion or concealment which modern delivery platforms and vehicles can possess, could have in reserve significant forces invulnerable enough not to entail use-or-lose pressures. (It may be more open to question, as noted earlier, whether newer nuclear-weapon possessors can be immediately in that position; but it is within reach of any substantial state with advanced technological capabilities, and attaining it is certain to be a high priority in the development of forces.) As a result, neither side can have any predisposition to suppose, in an ambiguous situation of fearful risk, that the right course when in doubt is to go on copiously launching weapons. And none of this analysis rests on any presumption of highly subtle or pre-concerted rationality. The rationality required is plain. The argument is reinforced if we consider the possible reasoning of an aggressor at a more dispassionate level. Any substantial nuclear armoury can inflict destruction outweighing any possible prize that aggression could hope to seize. A state attacking the possessor of such an armoury must therefore be doing so (once given that it cannot count upon destroying the armoury pre-emptively) on a judgement that the possessor would be found lacking in the will to use it. If the attacked possessor used nuclear weapons, whether first or in response to the aggressor's own first use, this judgement would begin to look dangerously precarious. There must be at least a substantial possibility of the aggressor leaders' concluding that their initial judgement had been mistaken—that the risks were after all greater than whatever prize they had been seeking, and that for their own country's survival they must call off the aggression. Deterrence planning such as that of NATO was directed in the first place to preventing the initial misjudgement and in the second, if it were nevertheless made, to compelling such a reappraisal. The former aim had to have primacy, because it could not be taken for granted that the latter was certain to work. But there was no ground for assuming in advance, for all possible scenarios, that the chance of its working must be negligible. An aggressor state would itself be at huge risk if nuclear war developed, as its leaders would know. It may be argued that a policy which abandons hope of physically defeating the enemy and simply hopes to get him to desist is pure gamble, a matter of who blinks first; and that the political and moral nature of most likely aggressors, almost ex hypothesis, makes them the less likely to blink. One response to this is to ask what is the alternative—it can only be surrender. But a more positive and hopeful answer lies in the fact that the criticism is posed in a political vacuum. Real-life conflict would have a political context. The context which concerned NATO during the cold war, for example, was one of defending vital interests against a postulated aggressor whose own vital interests would not be engaged, or would be less engaged. Certainty is not possible, but a clear asymmetry of vital interest is a legitimate basis for expecting an asymmetry, credible to both sides, of resolve in conflict. That places upon statesmen, as page 23 has noted, the key task in deterrence of building up in advance a clear and shared grasp of where limits lie. That was plainly achieved in cold-war Europe. 11 vital interests have been defined in a way that is clear, and also clearly not overlapping or incompatible with those of the adversary, a credible basis has been laid for the likelihood of greater resolve in resistance. It was also sometimes suggested by critics that whatever might be indicated by theoretical discussion of political will and interests, the military environment of nuclear warfare—particularly difficulties of communication and control—would drive escalation with overwhelming probability to the limit. But it is obscure why matters should be regarded as inevitably so for every possible level and setting of action. Even if the history of war suggested (as it scarcely does) that military decision-makers are mostly apt to work on the principle 'When in doubt, lash out', the nuclear revolution creates an utterly new situation. The pervasive reality, always plain to both sides during the cold war, is 'If this goes on to the end, we are all ruined'. Given that inexorable escalation would mean catastrophe for both, it would be perverse to suppose them permanently incapable of framing arrangements which avoid it. As page 16 has noted, NATO gave its military commanders no widespread delegated authority, in peace or war, to launch nuclear weapons without specific political direction. Many types of weapon moreover had physical safeguards such as PALs incorporated to reinforce organizational ones. There were multiple communication and control systems for passing information, orders, and prohibitions. Such systems could not be totally guaranteed against disruption if at a fairly intense level of strategic exchange—which was only one of many possible levels of conflict— an adversary judged it to be in his interest to weaken political control. It was far from clear why he necessarily should so judge. Even then, however, it remained possible to operate on a general fail-safe presumption: no authorization, no use. That was the basis on which NATO operated. If it is feared that the arrangements which a nuclear-weapon possessor has in place do not meet such standards in some respects, the logical course is to continue to improve them rather than to assume escalation to be certain and uncontrollable, with all the enormous inferences that would have to flow from such an assumption. The likelihood of escalation can never be 100 per cent, and never zero. Where between those two extremes it may lie can never be precisely calculable in advance; and even were it so calculable, it would not be uniquely fixed—it would stand to vary hugely with circumstances. That there should be any risk at all of escalation to widespread nuclear war must be deeply disturbing, and decision-makers would always have to weigh it most anxiously. But a pair of key truths about it need to be recognized. The first is that the risk of escalation to large-scale nuclear war is inescapably present in any significant armed conflict between nuclear-capable powers, whoever may have started the conflict and whoever may first have used any particular category of weapon. The initiator of the conflict will always have physically available to him options for applying more force if he meets effective resistance. If the risk of escalation, whatever its degree of probability, is to be regarded as absolutely unacceptable, the necessary inference is that a state attacked by a substantial nuclear power must forgo military resistance. It must surrender, even if it has a nuclear armoury of its own. But the companion truth is that, as page 47 has noted, the risk of escalation is an inescapable burden also upon the aggressor. The exploitation of that burden is the crucial route, if conflict does break out, for managing it to a tolerable outcome—the only route, indeed, intermediate between surrender and holocaust, and so the necessary basis for deterrence beforehand. The working out of plans to exploit escalation risk most effectively in deterring potential aggression entails further and complex issues. It is for example plainly desirable, wherever geography, politics, and available resources so permit without triggering arms races, to make provisions and dispositions that are likely to place the onus of making the bigger and more evidently dangerous steps in escalation upon the aggressor who wishes to maintain his attack, rather than upon the defender. (The customary shorthand for this desirable posture used to be 'escalation dominance'.) These issues are not further discussed here. But addressing them needs to start from acknowledgement that there are in any event no certainties or absolutes available, no options guaranteed to be risk-free and cost-free. Deterrence is not possible without escalation risk; and its presence can point to no automatic policy conclusion save for those who espouse outright pacifism and accept its consequences. Accident and Miscalculation Ensuring the safety and security of nuclear weapons plainly needs to be taken most seriously. Detailed information is understandably not published, but such direct evidence as there is suggests that it always has been so taken in every possessor state, with the inevitable occasional failures to follow strict procedures dealt with rigorously. Critics have nevertheless from time to time argued that the possibility of accident involving nuclear weapons is so substantial that it must weigh heavily in the entire evaluation of whether war-prevention structures entailing their existence should be tolerated at all. Two sorts of scenario are usually in question. The first is that of a single grave event involving an unintended nuclear explosion—a technical disaster at a storage site, for example, or the accidental or unauthorized launch of a delivery system with a live nuclear warhead. The second is that of some event—perhaps such an explosion or launch, or some other mishap such as malfunction or misinterpretation of radar signals or computer systems—initiating a sequence of response and counter-response that culminated in a nuclear exchange which no one had truly intended. No event that is physically possible can be said to be of absolutely zero probability (just as at an opposite extreme it is absurd to claim, as has been heard from distinguished figures, that nuclear-weapon use can be guaranteed to happen within some finite future span despite not having happened for over sixty years). But human affairs cannot be managed to the standard of either zero or total probability. We have to assess levels between those theoretical limits and weigh their reality and implications against other factors, in security planning as in everyday life. There have certainly been, across the decades since 1945, many known accidents involving nuclear weapons, from transporters skidding off roads to bomber aircraft crashing with or accidentally dropping the weapons they carried (in past days when such carriage was a frequent feature of readiness arrangements—it no longer is). A few of these accidents may have released into the nearby environment highly toxic material. None however has entailed a nuclear detonation. Some commentators suggest that this reflects bizarrely good fortune amid such massive activity and deployment over so many years. A more rational deduction from the facts of this long experience would however be that the probability of any accident triggering a nuclear explosion is extremely low. It might be further noted that the mechanisms needed to set off such an explosion are technically demanding, and that in a large number of ways the past sixty years have seen extensive improvements in safety arrangements for both the design and the handling of weapons. It is undoubtedly possible to see respects in which, after the cold war, some of the factors bearing upon risk may be new or more adverse; but some are now plainly less so. The years which the world has come through entirely without accidental or unauthorized detonation have included early decades in which knowledge was sketchier, precautions were less developed, and weapon designs were less ultra-safe than they later became, as well as substantial periods in which weapon numbers were larger, deployments more widespread and diverse, movements more frequent, and several aspects of doctrine and readiness arrangements more tense. Similar considerations apply to the hypothesis of nuclear war being mistakenly triggered by false alarm. Critics again point to the fact, as it is understood, of numerous occasions when initial steps in alert sequences for US nuclear forces were embarked upon, or at least called for, by indicators mistaken or misconstrued. In none of these instances, it is accepted, did matters get at all near to nuclear launch—extraordinary good fortune again, critics have suggested. But the rival and more logical inference from hundreds of events stretching over sixty years of experience presents itself once more: that the probability of initial misinterpretation leading far towards mistaken launch is remote. Precisely because any nuclear-weapon possessor recognizes the vast gravity of any launch, release sequences have many steps, and human decision is repeatedly interposed as well as capping the sequences. To convey that because a first step was prompted the world somehow came close to accidental nuclear war is wild hyperbole, rather like asserting, when a tennis champion has lost his opening service game, that he was nearly beaten in straight sets. History anyway scarcely offers any ready example of major war started by accident even before the nuclear revolution imposed an order-of-magnitude increase in caution. It was occasionally conjectured that nuclear war might be triggered by the real but accidental or unauthorized launch of a strategic nuclear-weapon delivery system in the direction of a potential adversary. No such launch is known to have occurred in over sixty years. The probability of it is therefore very low. But even if it did happen, the further hypothesis of its initiating a general nuclear exchange is far-fetched. It fails to consider the real situation of decision-makers, as pages 63-4 have brought out. The notion that cosmic holocaust might be mistakenly precipitated in this way belongs to science fiction.

#### Second, nuclear weapons are inevitable and structural nuclearism makes war obselete.

Martin 13 – Susan Martin is the Professor Prof IR at King’s College London. (“The Continuing Value of Nuclear Weapons: A Structural Realist Analysis”, Contemporary Security Policy, Volume 34, Issue 1, April 2013, GBS-JV)

The argument presented here is embedded in a structural realist understanding of international politics. Structural realism emphasizes the constraints that the anarchic nature of the international system imposes on states. Kenneth Waltz argues that because of anarchy, states exist in a situation of pervasive insecurity. The constant possibility of attack that exists in anarchy compels states to seek security, to provide as best they can for their own defence.9 As Avery Goldstein has explained, ‘Competition among states coexisting in a condition of insecurity . . . encourages each to exploit the most strategically effective forms of military power it is able to deploy’.10 States who fail to do this, or who do this less well than others, may pay costs for doing so.11 Structural realism thus rejects the notion that weapons are, as Alexander Wendt said in relation to anarchy, what states make of them.12 The material characteristics of a weapon are an important determinant of its strategic effectiveness, and weapons cannot be stripped of their military value by changes in how we think about or act in relation to them. Nuclear weapons will continue to have value as long as states are constrained by the competitive nature of an insecure international system. Thus, the argument presented here is firmly in the camp of what Ken Booth and Nicholas Wheeler have called ‘structural nuclearism’. The material reality of nuclear weapons imposes two limits: first, on the existence of a nuclear world; and second, on the role that nuclear weapons play in this world. The first point is widely acknowledged: there is no way to erase nuclear weapons from the world. As Schelling argues, a world of former nuclear powers is really just a world of latent nuclear powers.14 Even if the weapons themselves are dismantled, the knowledge of their possibility will continue to influence international politics. Second, because of their material characteristics, nuclear weapons are able to serve as an effective strategic deterrent (and are not very useful in other roles).15 To see this, it is necessary to examine what is required for a weapon to serve as a deterrent. Deterrence can be defined as an attempt to stop someone from doing something by threatening or frightening them; strategic deterrence refers to the deterrence of an attack upon a country’s vital interests.16 In its pure form, deterrence simply requires the ability to impose costs on the state to be deterred, but for deterrence to be effective, the ability to impose this punishment must exist no matter what counter action is taken.17 If the state to be deterred can eliminate or significantly lessen the deterrer’s ability to impose punishment, the deterrent threat is unlikely to succeed. This suggests that to serve as an effective strategic deterrent, a weapon must have immense destructive power, in order to impose costs that outweigh the benefits that could be gained through an attack. It also suggests that the weapon must have the ability to overcome defences, so that the potential aggressor cannot block the threatened retaliation, and that the deterrent force must be invulnerable to pre-emption. Together these three characteristics ensure that retaliation can be inflicted no matter what evasive action the aggressor takes. A fourth requirement for an effective deterrent weapon can also be identified: the ability of the weapon to impose costs must be predictable and clear, in order to minimize the danger of miscalculation and wishful thinking (the ‘crystal ball’ effect). If a potential aggressor can convince itself that the weapon may not work, then deterrence is more likely to fail.18 Nuclear weapons possess these characteristics; in their essence, nuclear weapons are deterrent weapons. Most obviously, the destructive potential of nuclear weapons is unmatched by any other weapon. The Office of Technology Assessment reports that a single missile carrying a fusion bomb of one megaton TNT equivalence would cause approximately 570,000 to 1,900,000 deaths.19 This overwhelming destructive power complicates any attempt by an aggressor to ward off a retaliatory blow through defence or pre-emption, as even a small margin of error entails the prospect of suffering immense destruction. It also means that it is very difficult to miscalculate the costs of nuclear use; the destructive power of nuclear weapons makes it very difficult for an aggressor to convince itself that it could profit from a war that might trigger nuclear retaliation. The destructive power of nuclear weapons is part of their essence. While smaller, less destructive nuclear weapons have been made, the potential threat of escalation is inherent in the very possibility of more destructive versions. This limits the ability of nuclear weapons to serve as anything other than a strategic deterrent.

#### Third, everyone is rational. Your definition of rationality should not be based on intermittent tactics, but as a function of the end goal. Even the most monstrous leaders were rational because they realized the cost of war.

Tepperman 09 – Jon Tepperman is the Managing Editor of Foreign Affairs. (“Why Obama Should Learn to Love the Bomb” Newsweek, 8/30/09, GBS-JV, we don’t endorse any ableist language in this evidence)

A growing and compelling body of research suggests that nuclear weapons may not, in fact, make the world more dangerous, as Obama and most people assume. The bomb may actually make us safer. In this era of rogue states and transnational terrorists, that idea sounds so obviously wrongheaded that few politicians or policymakers are willing to entertain it. But that's a mistake. Knowing the truth about nukes would have a profound impact on government policy. Obama's idealistic campaign, so out of character for a pragmatic administration, may be unlikely to get far (past presidents have tried and failed). But it's not even clear he should make the effort. There are more important measures the U.S. government can and should take to make the real world safer, and these mustn't be ignored in the name of a dreamy ideal (a nuke-free planet) that's both unrealistic and possibly undesirable. The argument that nuclear weapons can be agents of peace as well as destruction rests on two deceptively simple observations. First, nuclear weapons have not been used since 1945. Second, there's never been a nuclear, or even a nonnuclear, war between two states that possess them. Just stop for a second and think about that: it's hard to overstate how remarkable it is, especially given the singular viciousness of the 20th century. As Kenneth Waltz, the leading "nuclear optimist" and a professor emeritus of political science at UC Berkeley puts it, "We now have 64 years of experience since Hiroshima. It's striking and against all historical precedent that for that substantial period, there has not been any war among nuclear states." To understand why—and why the next 64 years are likely to play out the same way—you need to start by recognizing that all states are rational on some basic level. Their leaders may be stupid, petty, venal, even evil, but they tend to do things only when they're pretty sure they can get away with them. Take war: a country will start a fight only when it's almost certain it can get what it wants at an acceptable price. Not even Hitler or Saddam waged wars they didn't think they could win. The problem historically has been that leaders often make the wrong gamble and underestimate the other side—and millions of innocents pay the price. Nuclear weapons change all that by making the costs of war obvious, inevitable, and unacceptable. Suddenly, when both sides have the ability to turn the other to ashes with the push of a button—and everybody knows it—the basic math shifts. Even the craziest tin-pot dictator is forced to accept that war with a nuclear state is unwinnable and thus not worth the effort. As Waltz puts it, "Why fight if you can't win and might lose everything?" Why indeed? The iron logic of deterrence and mutually assured destruction is so compelling, it's led to what's known as the nuclear peace: the virtually unprecedented stretch since the end of World War II in which all the world's major powers have avoided coming to blows. They did fight proxy wars, ranging from Korea to Vietnam to Angola to Latin America. But these never matched the furious destruction of full-on, great-power war (World War II alone was responsible for some 50 million to 70 million deaths). And since the end of the Cold War, such bloodshed has declined precipitously. Meanwhile, the nuclear powers have scrupulously avoided direct combat, and there's very good reason to think they always will. There have been some near misses, but a close look at these cases is fundamentally reassuring—because in each instance, very different leaders all came to the same safe conclusion. Take the mother of all nuclear standoffs: the Cuban missile crisis. For 13 days in October 1962, the United States and the Soviet Union each threatened the other with destruction. But both countries soon stepped back from the brink when they recognized that a war would have meant curtains for everyone. As important as the fact that they did is the reason why: Soviet leader Nikita Khrushchev's aide Fyodor Burlatsky said later on, "It is impossible to win a nuclear war, and both sides realized that, maybe for the first time." The record since then shows the same pattern repeating: nuclear-armed enemies slide toward war, then pull back, always for the same reasons. The best recent example is India and Pakistan, which fought three bloody wars after independence before acquiring their own nukes in 1998. Getting their hands on weapons of mass destruction didn't do anything to lessen their animosity. But it did dramatically mellow their behavior. Since acquiring atomic weapons, the two sides have never fought another war, despite severe provocations (like Pakistani-based terrorist attacks on India in 2001 and 2008). They have skirmished once. But during that flare-up, in Kashmir in 1999, both countries were careful to keep the fighting limited and to avoid threatening the other's vital interests. Sumit Ganguly, an Indiana University professor and coauthor of the forthcoming India, Pakistan, and the Bomb, has found that on both sides, officials' thinking was strikingly similar to that of the Russians and Americans in 1962. The prospect of war brought Delhi and Islamabad face to face with a nuclear holocaust, and leaders in each country did what they had to do to avoid it. Nuclear pessimists—and there are many—insist that even if this pattern has held in the past, it's crazy to rely on it in the future, for several reasons. The first is that today's nuclear wannabes are so completely unhinged, you'd be mad to trust them with a bomb. Take the sybaritic Kim Jong Il, who's never missed a chance to demonstrate his battiness, or Mahmoud Ahmadinejad, who has denied the Holocaust and promised the destruction of Israel, and who, according to some respected Middle East scholars, runs a messianic martyrdom cult that would welcome nuclear obliteration. These regimes are the ultimate rogues, the thinking goes—and there's no deterring rogues. But are Kim and Ahmadinejad really scarier and crazier than were Stalin and Mao? It might look that way from Seoul or Tel Aviv, but history says otherwise. Khrushchev, remember, threatened to "bury" the United States, and in 1957, Mao blithely declared that a nuclear war with America wouldn't be so bad because even "if half of mankind died … the whole world would become socialist." Pyongyang and Tehran support terrorism—but so did Moscow and Beijing. And as for seeming suicidal, Michael Desch of the University of Notre Dame points out that Stalin and Mao are the real record holders here: both were responsible for the deaths of some 20 million of their own citizens. Yet when push came to shove, their regimes balked at nuclear suicide, and so would today's international bogeymen. For all of Ahmadinejad's antics, his power is limited, and the clerical regime has always proved rational and pragmatic when its life is on the line. Revolutionary Iran has never started a war, has done deals with both Washington and Jerusalem, and sued for peace in its war with Iraq (which Saddam started) once it realized it couldn't win. North Korea, meanwhile, is a tiny, impoverished, family-run country with a history of being invaded; its overwhelming preoccupation is survival, and every time it becomes more belligerent it reverses itself a few months later (witness last week, when Pyongyang told Seoul and Washington it was ready to return to the bargaining table). These countries may be brutally oppressive, but nothing in their behavior suggests they have a death wish.

#### Fourth, nuclear war doesn’t cause extinction.

Cook 10 – Nigel B. Cook has a Ph.D. in Computer Programming and a B.A. in Physics. (“The Effects of Nuclear Weapons”, <http://glasstone.blogspot.com/>, (His blog is dedicated to articles on nuclear weapons), 2/13/10)

A nuclear winter can't happen because nuclear weapons can't burn brick, steel and concrete buildings. The 9/11 attacks on the Twin Towers were aircraft with a lot of aviation fuel, which burned inside the buildings. A nuclear bomb doesn't deposit aviation fuel inside buildings, and anyway, buildings shadow one another from the thermal pulse before the blast arrives (by which time the thermal pulse is generally over). If the thermal pulse is strong, you get immediate surface ablation which causes a smoke screen that stops further heating and prevents fires. The only way you get ignition is by having (1) large windows with a direct line-of sight to the fireball (no intervening buildings) with no blinds and rooms filled with junk like old papers, magazines, and easily inflammable old-type furnishings (not banned by modern fire safety standards) of the 1953 "Encore" nuclear test type, or rooms again with an unobstructed line of sight to the fireball with black-colored World War II air raid "black out" curtains (which were used in Hiroshima and Nagasaki, to stop city house lights being used to guide American bombers to targets in night-time air raids, something no longer done!) which can ignite easily, or (2) easily overturned charcoal cooking stoves inside thousands of wooden houses filled with paper screens and bamboo inflammables, as in Hiroshima and Nagasaki at the breakfast time and lunch time attacks. The worst firestorm of WWI was in Hamburg in a medieval crowded part of wooden multistory buildings and killed 5% of the population at risk, although CND and other propaganda from Ted Postol and others claims that the entire population was killed. You can't have that happen again: the wooden buildings were replaced with brick and concrete. Although it is possible for some fires to ignite inside buildings containing some wooden furnishings and non-fire resistant bedding and sofas, the non-wooden buildings don't cause anything like the same risks of either firespread or the intensity of burning required for firestorms that wooden houses give. The firestorm in Hiroshima was lethal because the population was in shock from the explosion and survivors outdoors (due to no "duck and cover", just watching the bomb fall and getting facial burns and blast debris/displacement injury in addition to INR), were generally injured and unable to rescue people trapped under easily-collapsed wooden buildings. Before they burned, many taking 30 minutes to 2 hours to ignite! This situation won't occur again. The centers of even American cities generally don't contain wooden houses anymore: British and most European cities haven't had wooden houses built for centuries. American wooden houses are generally now in suburbs on the periphery of cities and are unlikely to be within reach of the thermal effects of modern MIRVed missile warheads (100-300 kt yield range). The TTAPS nuclear winter people including Sagan were debunked in the 1980s. First, modern cities of brick and concrete can't be ignited or burn with the intensity of predominantly wooden buildings in Hiroshima: so you don't get a firestorm. There's not enough smoke to cause a nuclear winter. Sagan and another guy wrote another article and also their 1989 book called "A Path Where No Man Thought", denying the debunkers by claiming that nuclear weapons would all be used against oil refineries and forests, and the burning oil and trees would produce the soot needed for nuclear winter. Again, there is evidence that this is a lie: the forests imported to the Nevada test site and naturally on Bikini Atoll islands and Eniwetok Atoll islands were filmed receiving massive thermal radiation and just "smoked" during the thermal flash. The smoke shielded thermal radiation. There was no firestorm! The vegetation shadows and thus protects the fine kindling underbrush from thermal radiation. I've blogged this in detail. Some British tests in Australia and over Christmas and Malden islands caused isolated fires in dry vegetation, but this was the exception and not the rule. Most of the data given for ignition in the 1957 edition of Glasstone's "Effects of Nuclear Weapons" was wrong (as Glasstone acknowledged in the Preface to the February 1964 reprinted edition), because experimenters had exposed dried forest kindling to thermal radiation. In fact, there is almost always some equilibrium moisture in it, which dramatically increases the thermal energy needed for sustained ignition (not just temporary flaming/smoking which only lasts for the duration of the thermal pulse). Oil and gas tanks were ignited by the Texas City ship explosion in 1947, but that was from hot fragments of an exploding ship full of chemical explosive. Nuclear weapons produce thermal flash and blast, and the thermal flash merely scorches the paint on the outside of the oil or gas tank. When the blast arrives after the thermal flash subsides, it may damage the oil or gas tank, but doesn't ignite it. This is confirmed by nuclear test data from 1955. In addition, Saddam's army ignited all of the oil fields in Kuwait in the early 1990s, and we're still alive: in Hiroshima the soot from the firestorm fell out as the "black rain" (which wasn't significantly radioactive, since the black rain from the firestorm fell an hour after the detonation, when radioactive mushroom cloud had been blown miles downwind, leaving only trivial diffusive airborne activity in the target area). The "black rain" at Hiroshima tells you what happens to soot in the atmosphere after a firestorm: it rapidly gets washed out in rain. Even if that doesn't happen, it won't form a stable, uniform cloud; turbulent instabilities will prevent soot from freezing the whole planet. So there is no firestorm, no nuclear winter, and the whole thing is a lie.