NAVAL POSTGRADUATE SCHOOL
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UNITED STATES LAND BORDER SECURITY POLICY: THE NATIONAL SECURITY IMPLICATIONS OF 9/11 ON THE "NATION OF IMMIGRANTS" AND FREE TRADE IN NORTH AMERICA

by

Nathan R. Butikofer

September 2003

Thesis Advisor: Harold Trinkunas
Second Reader: Paul Stockton

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The 9/11 terrorist attacks spawned heated debates about border security roles in preventing terrorism. The United States is generally known as a "nation of immigrants," welcoming those seeking economic and religious freedom. This thesis explores the effects of three policy options (increased manpower/financial resources for border inspection agencies, technology, and private sector-government cooperation) on the prevention of terrorism within U.S. borders. It also explores the effects of those policy options on trade flows and the movement of legitimate people across international borders. Scope is limited to land border security policy from 1990-2003. Three case studies are included: (1) the Border Patrol's "prevention through deterrence" strategy, which began in 1994 and benefited from a monumental increase in manpower/financial resources to the INS; (2) an analysis of which border technology options are the most secure and inexpensive means of preventing illegal immigration, stopping the introduction of contraband into the United States, and maintaining legitimate flows of commerce/people that have increased since the passage of NAFTA; and (3) an analysis of why private sector-governmental partnerships that both increase transportation security while lowering border wait times developed on the U.S.-Canadian border but not on the U.S.-Mexican border. Implications are drawn for U.S. policy-makers.

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UNITED STATES LAND BORDER SECURITY POLICY: THE NATIONAL SECURITY IMPLICATIONS OF 9/11 ON THE "NATION OF IMMIGRANTS" AND FREE TRADE IN NORTH AMERICA

Nathan R. Butikofer
Lieutenant, United States Navy
B.A., Utah State University, 1993
M.A., Utah State University, 1995

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September 2003

Author: Nathan R. Butikofer

Approved by: Harold Trinkunas
Thesis Advisor

Paul N. Stockton
Second Reader

James J. Wirtz
Chairman, Department of National Security Affairs

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ABSTRACT

The 9/11 terrorist attacks spawned heated debates about border security roles in preventing terrorism. The United States is generally known as a "nation of immigrants," welcoming those seeking economic and religious freedom. This thesis explores the effects of three policy options (increased manpower/financial resources for border inspection agencies, technology, and private sector-government cooperation) on the prevention of terrorism within U.S. borders. It also explores the effects of those policy options on trade flows and the movement of legitimate people across international borders. Scope is limited to land border security policy from 1990-2003. Three case studies are included: (1) the Border Patrol's "prevention through deterrence" strategy, which began in 1994 and benefited from a monumental increase in manpower/financial resources to the INS; (2) an analysis of which border technology options are the most secure and inexpensive means of preventing illegal immigration, stopping the introduction of contraband into the United States, and maintaining legitimate flows of commerce/people that have increased since the passage of NAFTA; and (3) an analysis of why private sector-governmental partnerships that both increase transportation security while lowering border wait times developed on the U.S.-Canadian border but not on the U.S.-Mexican border. Implications are drawn for U.S. policy-makers.

KEYWORDS: border security, illegal immigration, NAFTA, free trade, Mexico, Canada, Customs, Border Patrol, INS, terrorism, explosives and radiation detection, SENTRI, VACIS, biometrics, C-TPAT

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I. INTRODUCTION

A. PURPOSE

The purpose of this thesis is to determine the most cost-effective, reliable ways to provide land border enforcement that protects against the land entry of illegal contraband or persons without affecting free trade and the economic flow of goods and services across U.S. land borders with Canada and Mexico. The intended audience includes policy makers in the new Department of Homeland Security (DHS), with emphasis on agencies in the Directorate of Border & Transportation Security. Policy recommendations may apply to military advisors working in the Northern Command (NORTHCOM)—particularly the National Guard and Reserves—if military assets will be used to supplement local and federal agencies dealing with homeland and/or border security.

Major questions include: (1) Does current land border security policy protect U.S. citizens from terrorist acts occurring *within U.S. borders* and if not, what can be done to improve policy such that both national security and free trade in North America can coexist? (2) Historically, what was U.S. illegal immigration and land border transportation policy, what are the current U.S. proposals for land border security policy reform, and what theoretical literature applies to those proposals? (3) Did an increase in financial/manpower resources from 1994-2003 along the U.S.-Mexico border stop illegal immigration and if so, will increasing border security spending protect against terrorism? (4) From 1990-2003, what technological option(s) developed that will be most cost-effective, will provide increased security, and will not negatively impact the flow of legitimate goods and/or people

across the U.S.-Canadian and U.S.-Mexican borders? (5) Why did a cooperative, pre-clearance strategy between governments and the private sector develop post-9/11 in Canada and the United States, but stall along the southern border with Mexico?

B. IMPORTANCE

1. Introduction/Overview/Major Questions

The United States has always been a nation with relatively open borders. The United States is known as a nation that welcomes those seeking political and economic freedom.[1] However, the recent terrorist attacks on September 11, 2001 had profound effects on the way Congress, the Bush administration,[2] and many Americans view U.S. border security policy. After 9/11, illegal immigration issues suddenly became a higher priority issue. Moreover, 9/11 focused attention on the already increasing number of illegal immigrants crossing our borders and in some cases even caused a public backlash against traditional U.S. land border transportation security and immigration policies.[3]

The terrorist attacks on the WTC and the Pentagon were a watershed event for many reasons. First, the sheer number of lives lost (2,792 in NYC; 224 at the Pentagon and Shanksville, PA; 343 firefighters; 23 policemen; and 37 NYC/NJ Port Authority officers)[4] was larger than any other single terrorist attack committed on U.S. soil since Pearl Harbor in 1941. Second, it was an international event because many of the victims were from countries outside the United States. Third, it was a wake-up

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1 Kennedy, J.F. *A Nation of Immigrants.* New York: Harper & Row. 1964.

2 Ernsberger Jr., R. "Fortress America: The United States is Toughening Up its Borders." Newsweek (International Edition), 12 November 2001.

Boudreaux, R. "Mexico Tries to Spur Talks on Migration: The legalization issue crept into a high-level meeting on border security and crossings." Los Angeles Times (Home Edition), 25 April 2003, p. A3 (main news section).

3 Bokelmann, 2001.

4 Hirschkorn, 30 May 2003, p. 1.

call of sorts for the foremost military power in the world, which had not been attacked on such a grand scale since Pearl Harbor in 1941. For these and many other reasons, 9/11 was the modern equivalent of the "date which will live in infamy."[5]

However, 9/11 was a defining moment for the United States for other important reasons as well. The aftermath of 9/11 spawned debates in such diverse subjects as the economy,[6] counter-terrorism,[7] inter-agency cooperation,[8] international cooperation against terrorism,[9] current immigration policy,[10] border security policy,[11] and airport security.[12] These subjects are not intended to be an all-inclusive list, but such a list does help reveal the far-reaching effects that 9/11 has had on politics in this country. The scope of this thesis is limited to only one of these diverse subjects: land border security policy, specifically as it relates to illegal immigration and the transportation of goods across international land borders.

Given the enormous impact 9/11 had on nearly every citizen in the United States and throughout the world, the eventual policy decisions about post-9/11 land border security made by the executive, legislative, and judicial branches of the United

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5 Roosevelt, p. 1.

6 Hilsenrath, p. A-2; Ip, p. A-1.

Wisdom, S. "The old rules are gone." Windsor Star, CanWest Global Communications Corporation, 29 October 2001, p. A6.

7 Anderson, p. A-13; Toner, p. A-1.

8 Hearst News Service, p. A-20; McCutcheon, p. 1.

9 Shuman, pp. 53, 57-59; Sullivan, p. A-12.

10 See Wassem, 15 April 2002, to review the debate on visa policy. See Siskin, 22 April 2002, to review immigration policy in general. See Holland, 15 April 2002, pp. 24-32 for a discussion about visa issuance, identification of immigrant status, tracking and enforcing visa restrictions, and deportation procedures.

11 Camarota, pp. 42-45.

12 Flint, p. 7; Loh, p. 94; Hutchinson, pp. 48-53.

States will have significant consequences. The land border security policy decisions made today are not trivial matters. They heavily impact different societal groups in the United States, Canada, and Mexico. Specifically, the post-9/11 border security institutions and policies created by Congress and the executive branch will have lasting consequences in a variety of controversial topics with both domestic and international implications. Two examples of domestic considerations include an open vs. closed society and more efficient security measures vs. civil rights and privacy.[13] Two examples of international considerations include more transnational immigration from Mexico vs. less transnational immigration from Mexico[14] and the balance between increased trade flows (i.e., healthy macroeconomies) vs. tighter border checks on the Canadian and Mexican borders (i.e., secure international land borders).[15]

Important ties with Canada and Mexico characterize the U.S. economy. In the decade of the 1990s, the North American Free Trade Agreement (NAFTA) was signed, ensuring a continuous (if not increased) flow of goods across the Canadian and Mexican borders. The value of U.S. trade with its NAFTA partners has exploded from $233 billion in 1990 to $380 billion in 1995 to $653 billion in 2000, a 180% overall change from 1990 to 2000. Before NAFTA, the U.S. conducted over one-fourth of its total trading with Canada and Mexico, but that number grew to nearly one-third by the year 2000 (see figure 1). Clearly, Canada and Mexico are important to the U.S. economy.

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[13] Ernsberger Jr., 12 November 2001.

[14] Barone, "South of the Border." U.S. News & World Report, 133:5, 05 August 2002, p. 34; Boudreaux, 25 April 2003, p. A3.

[15] Wisdom, 29 October 2001, p. A6; Ernsberger Jr., 12 November 2001.

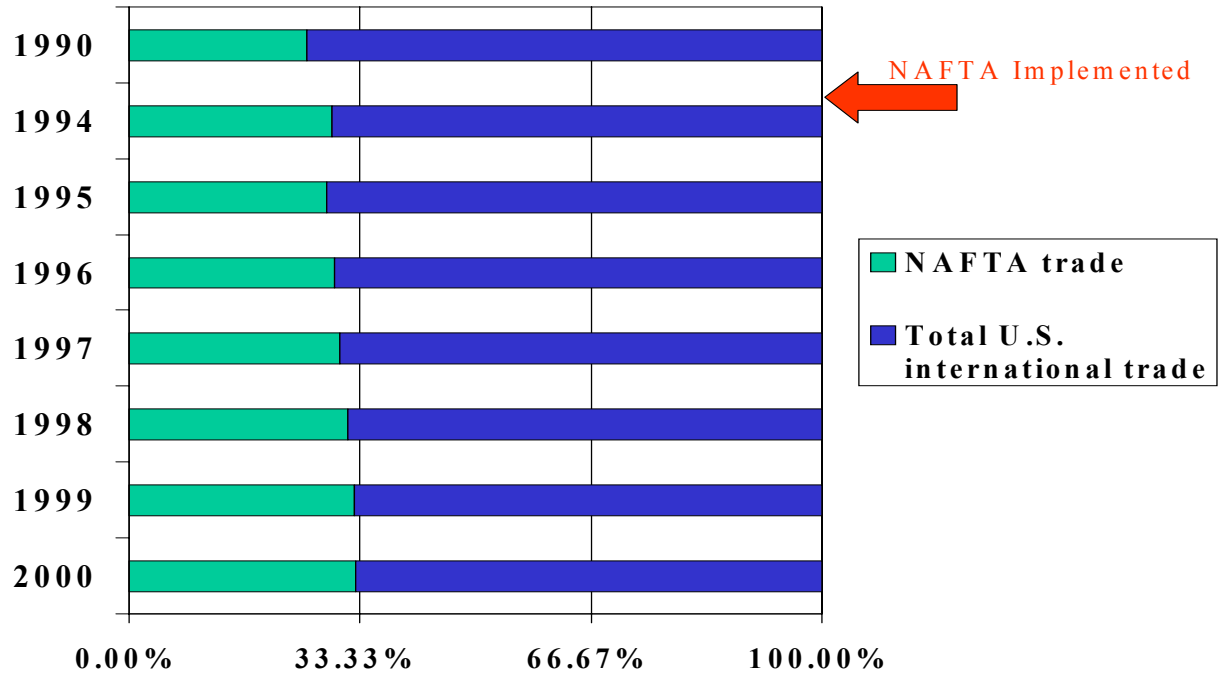

Figure 1. Value of U.S. trade with NAFTA countries as a percentage of total U.S. international trade

From: BTS 01-07: U.S. Department of Transportation Bureau of Transportation Statistics. "North American Trade and Travel Trends." p. 2, 4, Washington, DC: 2001.

Canada has been the primary trading partner with the United States for decades. Mexico is the major Latin American trading partner with the United States and ranks only behind Canada in volume of imports and exports, surpassing Japan in 1999.[16] Therefore, there are several domestic interest groups and organizations with key economic interests in maintaining a free, uninterrupted flow of goods and services across the Mexican and Canadian borders.[17] It should come as no surprise that Canadians

[16] BTS 01-07, 2001, p. 3.

[17] Chinni, D. "Security, Commerce Vie on U.S.-Canada Border." Christian Science Monitor. 11 December 2002. [http://news.findlaw.com/csmonitor/s/20021211/11dec2002091843.html]. Accessed 06 Feb 2003.

Canadian-American Border Trade Alliance. "The Canada/United States Accord on our Shared Border—A Call to Action for 2001 and Beyond." 25 February 2001. [http://www.canambta.org/html/2001_accord.htm]. Accessed 30 August 2003.

and Mexicans also have their own political interests in mind when the topic of U.S. land border security policy is raised.[18]

In the aftermath of 9/11, it has become imperative to ask some important questions: Does current border security policy constitute a threat to national security? If so, how can secure borders and free, unimpeded trade across U.S. land borders (both of which are in the interests of the United States) coexist? The answers to these questions entail some controversy. While everyone living in the United States obviously wants to feel safe, not everyone (i.e., some U.S. domestic interest groups, U.S. local and federal agencies, and the Canadian and Mexican governments) agrees on how open U.S. borders should be to foreign visitors and to the flow of commerce across international borders. For example, after 9/11, Rep. Tom Tancredo advocated increased security (i.e., the military) on the border[19] while Rep. Chris Cannon continued to advocate a traditional, "open" immigration policy.[20]

This thesis explores a variety of different ways to solve the dilemma of necessarily increasing border security measures in the post-9/11 era versus maintaining open trade flows and the unrestricted movement of legitimate traffic and people. Perhaps these questions are best answered by analyzing U.S. policy in

Jackson, M. "Business assured border traffic will continue to flow: Homeland reps suggest the use of commuter passes." San Diego Business Journal, 24:12, 24 March 2003, p. 3.

Trickett, B. "The high cost of security; long waits hurt those least able to afford it." San Diego Union-Tribune, 25 October 2001, p. B13.

Wisdom, 29 Octoberr 2001, p. A6.

[18] Boudreaux, 25 April 2003, p. A3; Barone, M. 2002.

[19] Anonymous. "Border cooperation beats militarization; Canadian, Mexican, and U.S. governments can preserve security without calling out the troops." San Antonio Express-News, 30 June 2002, p. 2G (editorial section).

[20] www.washtimes.com/national/20020619-504434.htm

the 1990s. What was U.S. land border security policy from 1990-2003 and was it linked to national security? What solutions were proposed from 1990-2003? Which policy reform proposals affect national security and/or domestic trade in a positive way or negative way? These questions help to answer the golden question: what policies ensure that both national security and free trade in North America can coexist?

2. Methodology and Argument

Most U.S. military conflicts have been fought elsewhere (e.g., Europe, Pacific Ocean, Vietnam, and Kuwait). U.S. policy after WWII has been to promote regional stability in order to prevent conflicts from reaching U.S. shores.[21] The recognized contemporary term for these conflicts is "homeland defense."[22] But what happens when the threat reaches the American homeland, such as it did in 1942 and again in 2001? While the nature of the foreign threat is different—in the WWII era the threat was perceived to be foreign states while the current terrorist threat elusively crosses state boundaries—both eras represent times when national security was a big issue.[23]

Conventional wisdom is that there are problems with border security policy and the organizations that carry them out, particularly post-9/11.[24] The debate does not seem to be over the existence of a problem with border security, but rather how to solve this problem in the current era of globalization—that is, how to simultaneously secure the border against terrorism yet still maintain an attitude of "openness" to legal foreign

[21] Joint Chiefs of Staff. "Shape Respond, Prepare Now: A Military Strategy for a New Era." National Military Strategy of the United States of America, 1997, pp. 1-3, 7-8.

[22] Lawler, B., October 2002.

[23] Ibid, October 2002.

[24] Camarota, December 2001 & Fall 2002; Krouse & Perl, June 2001; McLaughlin, March 2002.

visitors who mean America no harm and keep the flow of legitimate goods and services flowing such that our economy is not damaged.[25] The debate has focused on the following solutions: (1) additional manpower on land borders and/or increasing funds for the agencies with land border security functions;[26] (2) organizational changes (e.g., centralization of authority over agencies who perform border security functions and separation of "service" from enforcement functions to improve transparency, accountability, and inter-agency cooperation;[27] (3) technology (examples include, but are not limited to a computerized entry-exit tracking system, biometric I.D. cards, radiation and explosives detection devices at land ports, and dedicated lanes for pre-screened, low-risk travelers); and (4) cooperation (i.e., improved cooperation among intelligence services, border security agencies, and governments of North American countries and other allied nations;[28] improved interagency cooperation within the United States; improved cooperation among governmental agencies and the private sector;[29]

These questions can be answered by studying three proposed solutions (i.e., increasing manpower/financial resources to border security agencies, using border technology, and engaging in cooperative partnerships between the trade industry and the

[25] Lawler, 2002.

[26] Camarota, December, 2001.

[27] Camarota, December 2001; New York Times Editorial Desk, February 2002; Mitchell, January 2002.

INS Reform and Border Security Act of 1999: Hearing before the Subcommittee on Immigration of the Committee on the Judiciary, U.S. Senate, 106th Cong., pp. 1-6, 10, 14, 23-26, 30, 51 (23 September 1999).

[28] Sullivan, March 2002; Camarota, Fall 2002; Krouse, June 2001; Ernsberger Jr., November 2001.

[29] Sullivan, March 2002; Camarota, December 2001; Krouse, June 2001; McLaughlin, March 2002; Ernsberger Jr., November 2001.

federal government) during the time period 1990-2003. This time period involved significant threats to national security. The Oklahoma City bombings, the 1993 World Trade Center bombings, and the attacks on the WTC and Pentagon in September 2001 all occurred during this time period. Since 9/11, many comparisons are made to the Japanese attack on Pearl Harbor. The only national security threat that seems to compare to 9/11 in its magnitude and far-reaching implications is what happened on December 7, 1942, yet the threat in 1942 was an external state. This thesis compares a time period in U.S. history (1990-2003) in which international terrorism, a transnational threat composed of non-state actors, was a primary threat.

The initial hypotheses of this thesis in March 2002 were as follows: First, border security before 9/11 constituted a national security threat. Second, current land border security measures were inadequate in preventing illegal immigration along U.S. land borders. Third, proposals to completely seal off U.S. borders (border militarization, fence lines, and 100% I.D. checks and container inspections) were either not feasible due to domestic trade flow pressures or not cost-effective. By lack of feasibility, the argument was that propositions to completely seal off U.S. land borders ran counter to the economically liberal forces and globalization characterizing the world economy. Furthermore, propositions to completely seal off the border damage the U.S. relationship with Canada/Mexico, are contradictory in nature to NAFTA (which the United States signed and ratified during the 1990s) and will impede the passage of the Free Trade Area of the Americas (FTAA) in 2005. Fourth, proposals such as biometric tracking, entry-exit tracking, the EZ-Pass System, additional computer data-bases, and more high-tech sensors along the Mexican border were good technological

solutions and improved security, but perhaps were not financially cost-effective options.

3. Scope and Data Sources

Since the project began in March 2002, the number of independent variables narrowed to three: increased manpower/financial resources for border agencies; border technology; and cooperation between international governments and the private sector. This does not mean that factors like interagency cooperation, intelligence sharing, and possibly other variables are not important. However, the scope of the thesis prevented study of these important variables.

This thesis is series of case studies focusing on U.S. border security policies along the U.S.-Mexican and U.S.-Canadian land borders from 1990-2003. There are three basic ways that people and cargo enter the United States: by sea, air, and land.[30] This thesis examines U.S. border security as it relates to humans and commerce crossing U.S. land borders with Mexico and Canada and its impact on national security and free trade. U.S. policymakers have concentrated almost exclusively on aircraft safety and airport security post-9/11, but they ought to be spending at least an equal amount of time thinking about U.S. land borders, for reasons discussed below.

Airport security, protection against illegal entry of goods and people from the sea, and seaport security are not examined in this thesis. Since a large proportion of legitimate traffic enters the United States through land international ports of entry[31] (see figures 2 and 3), focusing exclusively on land border security as it relates to the entry of commerce and human migration covers the bulk of the debate. While air and sea

[30] www.whitehouse.gov/homeland/book/sect3-1.pdf

[31] www.whitehouse.gov/homeland/book/sect3-1.pdf

transport are obviously key questions in the homeland security formula, they are both outside the scope of this thesis.

To reiterate, this thesis will examine U.S. border security as it pertains to land borders only. Why focus exclusively on land borders? One reason is that airports are essentially chokepoints. Immigration and border security officials can relatively easily enforce pertinent border enforcement laws at airports compared to the long and wide-open land borders of the United States. The fact that airports are confined in terms of space (i.e., a chokepoint) means that information about arriving visitors (be they legal immigrants or illegal terrorists) can be obtained beforehand (when local agencies and airlines cooperate effectively) and enforced. By contrast, sea borders and land borders are not chokepoints, but are long and wide. For example, the U.S.-Mexican border is 2,000 miles long and the U.S.-Canadian border is 5,525 miles long.

Another reason to focus on land borders is because of the enormous opportunity for smugglers and terrorists to take advantage of the currently overtaxed land ports of entry. Border inspectors simply cannot deal with the overwhelming amount of commercial traffic at land borders (see figures 2 and 3), given the current border regime strategy. Pre-NAFTA volumes were large in and of themselves, but post-NAFTA volumes are staggering and continue to expand every year.

Statistical data indicates that if the United States wants to secure its homeland from terrorism, a long, hard look at land borders is warranted. It is estimated that 500 million people enter the country by land legally each year of which 330 million are non-citizens.[32] In some remote areas along the northern

[32] www.whitehouse.gov/homeland/book/sect3-1.pdf

border with Canada, the only protection against illegal movement of goods and humans is orange traffic cones.[33] The number of inspections of people entering the United States though land ports dwarfs all other modes of entry (see figure 2).

The amount of commerce that crosses our borders is equally staggering: $1.35 trillion in imports and $1 trillion in exports crossed our borders in 2001.[34] Furthermore, despite the rhetoric about how tight security became after 9/11, Customs only inspects 2% of the containers that cross U.S. land borders.[35] Combine that statistic with the fact that trucks carry most of the value of commercial cargo across NAFTA borders (see figures 3 and 4) and one begins to see that land borders provide an ideal place to hide contraband and illegal immigrants. Finally, number of people and vehicles at the San Diego/Tijuana border crossing is expected to double by 2020.[36] Clearly, terrorists, smugglers, illegal immigrants, and other transnational threats could potentially exploit this sheer volume of human and cargo traffic at land borders to perform terrorist acts within the United States.

[33] Volpe Center. "Volpe Engineers Use Biometrics to Help Ease Border Crush." [http://www.volpe.dot.gov/infosrc/journal/spring97/biomet.html]. Spring 1997. Accessed 22 August 2003.

[34] www.whitehouse.gov/homeland/book/sect3-1.pdf

[35] Messina, I. "A closer look: Customs steps up use of gamma-ray technology to inspect containers at ports." Journal of Commerce, 05 August 2002, p. 25.

[36] Lindquist, D. "Border wait to grow far worse, local officials say." San Diego Union-Tribune, 03 October 2002, p. A-1 (news section).

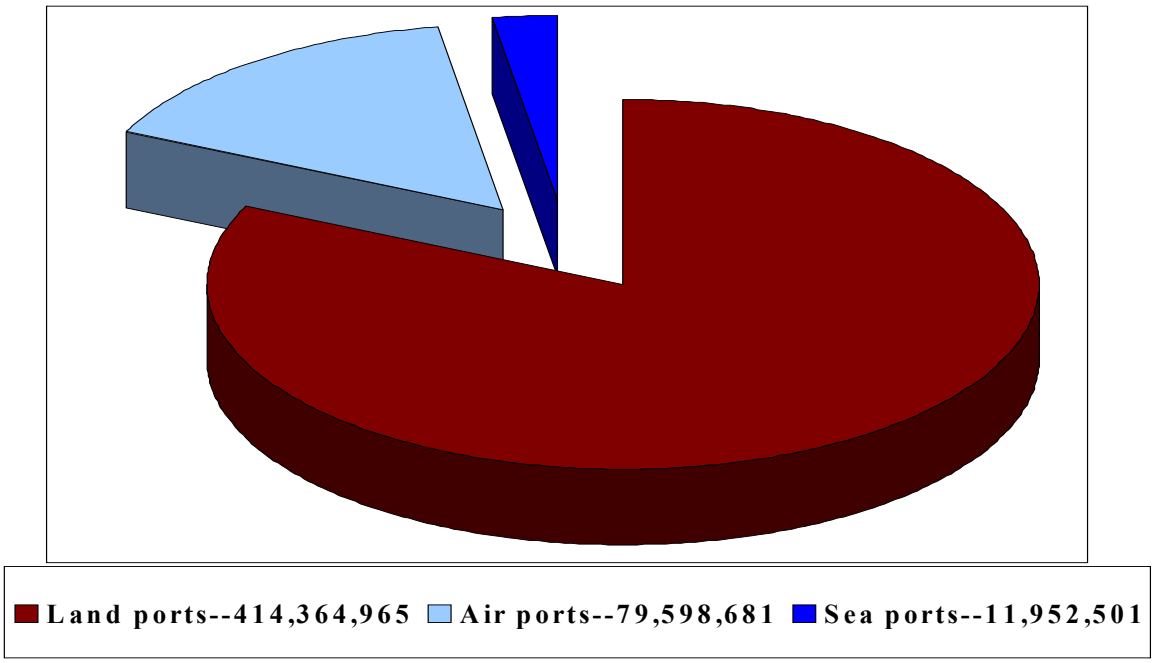

Figure 2. Inspections processed at land/sea/air ports (2001).

From: GAO 03-174: General Accounting Office, *Technology Assessment: Using Biometrics for Border Security*. Washington DC, November 2002, p. 23.

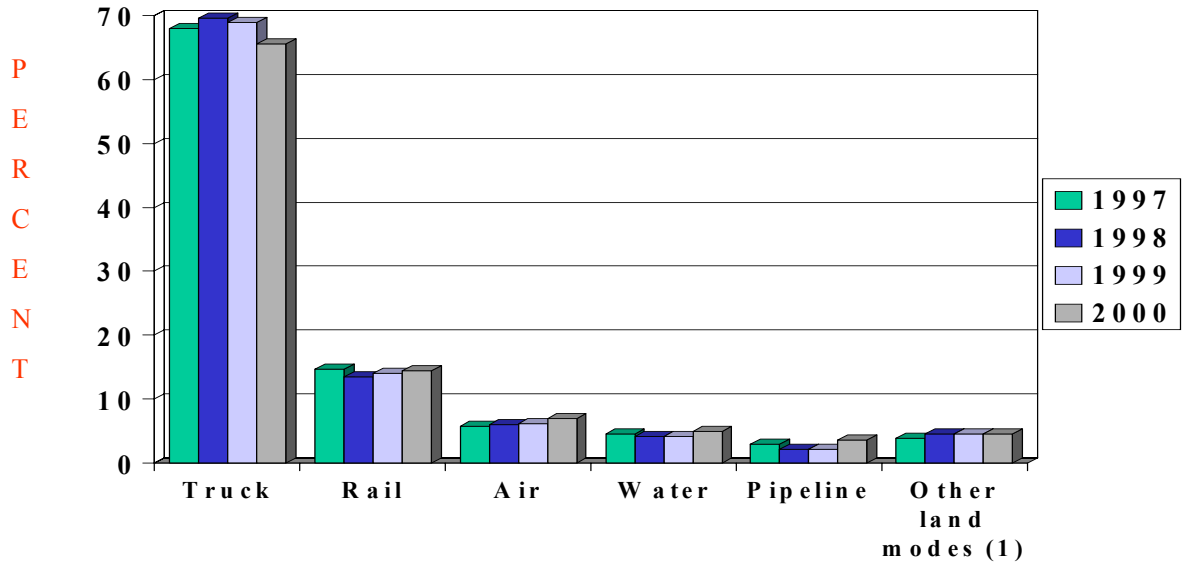

Figure 3. Modal shares of U.S. merchandise trade with NAFTA partners by value: 1997-2000.

From: BTS 01-07: U.S. Department of Transportation Bureau of Transportation Statistics. "North American Trade and Travel Trends." p. 6-7, Washington, DC: 2001.

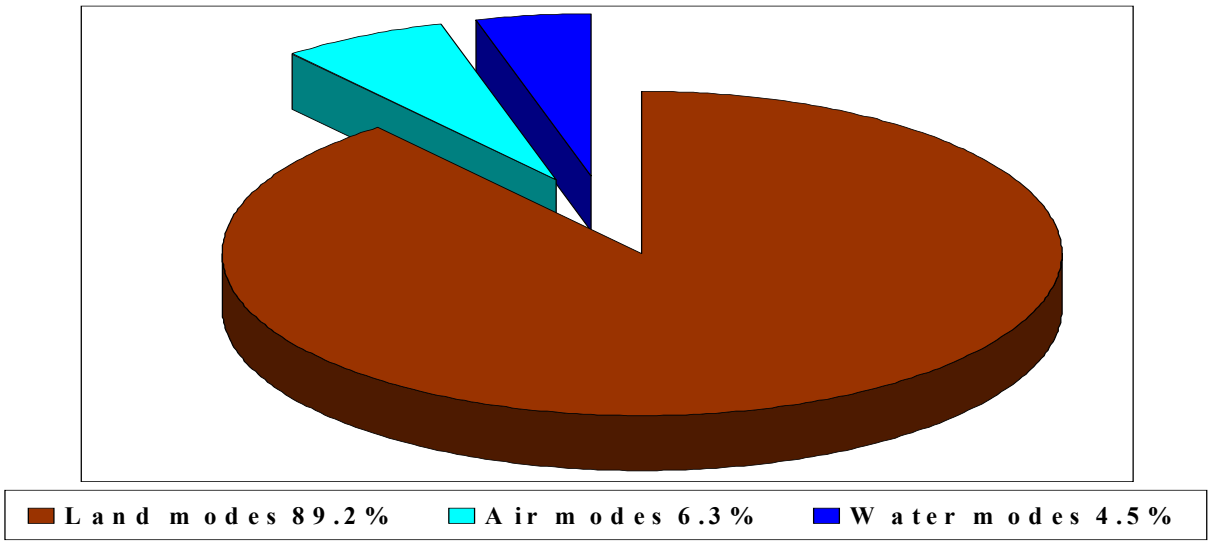

Figure 4. Average land modal share by value of U.S. merchandise trade with NAFTA partners as compared to air and water modes (average percent over the years 1997-2000).

After: BTS 01-07: U.S. Department of Transportation (Bureau of Transportation Statistics). "North American Trade and Travel Trends." p. 7, Washington, DC: 2001.

Despite these statistics, U.S. policy-makers have focused ad nauseum on airport security. Certainly, airport security is important, as is security at the nation's seaports. Nevertheless, given the sheer volume of traffic and sizeable area of responsibility over which land border inspectors preside, U.S. land borders deserve closer scrutiny. Besides, a number of successful initiatives (e.g., the Container Security Initiative,[37] INSPASS,[38] CANPASS,[39] and legislation mandating 100% baggage screening at airports) are already underway, but significant challenges remain at land border ports.

[37] CSI is an initiative that stations U.S. inspectors overseas to inspect containers at original loading points, electronically sealing the contents, and then tracking the shipment until it reaches U.S. ports.

[38] INSPASS is a system whereby U.S. immigration officials prescreen frequent flyers and issue biometric I.D. cards for quicker, more secure immigration processing at a select few U.S. airports.

[39] CANPASS is the Canadian version of INSPASS.

Data sources may include, but are not limited to the following: newspaper articles (e.g., New York Times and Washington Post); journal articles; INS statistical reports; official reports from the Departments of State, Commerce, Justice, and Transportation; federal governmental statistical documents; and others.

4. Chapter by Chapter Summary

The title of Chapter II is "Traditional and Contemporary Thought on Border Security." Chapter II provides a framework for the independent variables to be studied in succeeding chapters. The terms *border, border security, homeland security, and homeland defense* are carefully defined. A major proposition in chapter II is that the primary threats to states in the Western Hemisphere after the end of the Cold War in 1989 are not other states, but rather shared, transnational problems that elusively cross state boundaries. This proposition has profound implications for how a border security framework should be constructed in the 21st century. Contemporary theory on border security is also reviewed.

The primary intent of this chapter is to summarize the results of a literature review about current border security theory in North America. As the threats to states in North America have changed from primarily other states to primarily transnational threats (e.g., terrorism, illegal immigration, drug trafficking, and organized crime), the concept of what a border is has also changed. The literature review will focus on how the definition of international borders has changed over time in North America.

Chapter III examines the impact of increased funding/personnel solutions on the prevention of illegal

immigration from 1994-2003 and their effects on national security. For example, has illegal immigration increased or decreased in the 1990s? If illegal immigration is rising, is it a national security risk or a minor problem of lesser priority? How is the "prevention through deterrence" strategy different from previous border patrol strategy? Did manpower and financial resources increase for the border patrol from 1994-2003? What effect did that have on stopping illegal immigration and/or improving trans-border trade flows?

Chapter IV attempts to make sense of the incredibly large amount of technology currently being used to address the North American transnational threats of terrorism, drug trafficking, illegal immigration, and human smuggling. It details the cooperative technological options for border security that are currently under investigation. Technology analyzed includes radiation and explosive detection, the Vehicle and Cargo Inspection System (VACIS), the Secure Electronic Network for Traveler's Rapid Inspection (SENTRI), and biometrics.

Chapter V analyzes why a pre-clearance strategy to simultaneously improve land transportation security while reducing border wait time for trucks/autos on the U.S.-Canadian border emerged between government and the private sector. It also analyzes why such a strategy has not fully developed along the U.S.-Mexico border. The answers to several questions help determine possible barriers to future trade-governmental partnerships against terrorism. First, who were the international and domestic actors involved and how did their preferences develop? Second, how did the institutional context shape the outcomes? Third, why was an agreement reached with Canada and why did a functional agreement with Mexico fail?

Chapter VI summarizes the major findings of each of the case studies. It draws conclusions about the proposals (increased funding/personnel solutions; technological solutions; or cooperation between the private sector and governments) studied and their impact on border security. Implications for policy are drawn and suggestions for further research are made.

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II. TRADITIONAL VS. CONTEMPORARY THOUGHT ON BORDER SECURITY

A. DEFINITIONS OF TERMS

1. What Is a Border and What Are Its Limits?

The traditional, Westphalian concept of borders can be summarized in a few sentences. First, borders should be clearly defined and drawn on maps. Second, borders should be accepted by all parties in treaties and authorized by the international community. Third, any unclaimed territory (as delineated by internationally accepted maps) should eventually be resolved by the international community and incorporated into a new internationally sanctioned map.[40]

Recently, some scholars have redefined traditional concepts of borders. Many of these authors challenge the traditional, Western, industrialized, and developed world's concept of borders as an international line with definitive boundaries. The common denominator in these arguments is the idea that the traditional definition of *borders* is mistaken.

For example, some argue that word *border* was never properly defined in some regions. One author argues that Western concepts of the term *border* are foreign to some Asian cultures and were imposed upon them by European world powers in the 18th and 19th centuries. He presents evidence that before Europe's colonization of Asia, Asian territory was marked by the following characteristics: diffuse populations; a federalized governmental structure vice a centralized one; and a "ethnic complexity" of tribes who migrated at will without political repercussions. In essence, he argues that clearly marked

[40] Solomon, R.L., "Boundary Concepts and Practices in Southeast Asia," World Politics, 23:1, October 1970, pp. 1-2.

boundaries (ratified and accepted by international law) exist in the minds of the Western world, but in practice, may not exist in the minds of the people who live within those boundaries.[41]

Others argue that traditional concepts of borders are outdated. They claim that globalization increasingly links countries together. Some neighboring countries are so integrated that regional economic blocks have emerged (e.g., the European Union, MERCOSUR, NAFTA). In the Western Hemisphere, this phenomenon was initiated by a shift in U.S.-Latin American relations precipitated by the end of the Cold War, a guarded warming in Latin America to the practices of economic neoliberalism, and the Enterprise for the Americas Initiative (EAI). Since the EAI was perceived as an invitation from the United States, instead of a unilateral measure addressing only U.S. interests, Latin America embraced it. The EAI replaced financial aid packages with regional trade initiatives to solve Latin America's seemingly continuous macroeconomic problems.[42]

One of the purposes of regional blocks is to provide collective benefits to the population of the entire region. To one degree or another, economic blocks have been transformed into political entities and collective security arrangements. For example, the EU is no longer just an economic block, but has passed legislation that has security implications for the countries involved. Some of these security issues deal

[41] Solomon, October 1970, pp. 1-15.

[42] Franko, P.M. Toward a New Security Architecture in the Americas: The Strategic Implications of the FTAA. 1st ed. Washington, D.C.: Center for Strategic and International Studies. pp. 1-2. 2000.

specifically with perceived border threats such as illegal migration and organized crime from the EU's eastern boundaries.[43]

The argument that traditional, industrialized definitions of borders do not apply to some cultures may have merit, but does not apply to the scope of this thesis. This thesis applies to the Western Hemisphere, a region where Western concepts of territoriality have always applied (even since colonial times). Even in Latin America (consistently labeled as the *developing world* or *third world)* the concept of a clearly defined territory over which one central, sovereign authority rules is accepted.

However, the second argument, which postulates that our integrated, globalized world requires a fresh look at how we define our borders, has merit for the purposes of this thesis. In fact, the need to redefine our borders is a central thread running throughout the tapestry of chapters IV and V. If economic integration and globalization are slowly eroding state sovereignty, slowly developing international institutions that are replacing the "anarchy"[44] of international relations, and suggesting new approaches to border security practices, then integrated, cooperative approaches to border security that focus on risk management techniques are likely relevant.

2. Historical vs. Contemporary Border Security

Understanding what border security means in today's world necessarily involves understanding both the historical and

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[43] Anderson, M. "Border Regimes and Security in an Enlarged European Community: Implications of the Entry into Force of the Amsterdam Treaty." EUI working paper No. 2000/8. Florence, Italy: European University Institute (Robert Schuman Centre for Advanced Studies). February 2000, pp. 1-34.

Bigo, D. "Border Regimes and Security in an Enlarged European Community Police Cooperation with CEECs: Between Trust and Obligation." EUI working paper No. 2000/65. Florence, Italy: European University Institute (Robert Schuman Centre for Advanced Studies). December 2000, pp. 1-31.

[44] Waltz, K.N. "Political Structures." In Keohane, R.O. (ed.), NeoRealism and its Critics, pp. 81-87, New York: Columbia University Press. 1986.

contemporary threats to states. Threats to states have changed at different time periods in history, including during state formation,[45] after states became the primary means of political organization,[46] and in the latter part of the 20th century.[47] What are governments trying to protect their borders against? What border security requirements existed historically and do those requirements still exist?

The modern emphasis in political science and comparative politics on the legitimate use of force by centralized governments leads one to believe that border security historically was a military task to prevent invasion by other countries. Indeed, the colonial heights of power of Spain, France, and Great Britain establish this point. Two world wars were fought (at least partially) to stop Germany and Japan from expanding her borders (and her pool of economic resources) at the expense of others. The Mexican-American War broke out (at least partially) because U.S. citizens wanted to expand west while Mexico wanted to protect its territorial borders.

Therefore, b*order security* historically meant protection against invasion by other states[48] as an integral part of creating a strong state. Most national security studies in the 1980s defined U.S. national security in terms of "military action" by "subversive ideologies and States" and U.S. "military

[45] Military force played a key role at this time. In fact, state-making was an accidental outcome of kings and nobles attempting to monopolize violence in their respective spheres of influence. The line between legitimate and illegitimate violence was gray in the Middle Ages, as was a territorial noble's or merchant's loyalty to kings/rulers. Eventually, kings overcame nobles in the quest for a legitimate monopoly on force in their overlapping areas of influence (Tilly, 172-75).

[46] Other states were the primary threats during this time period.

[47] Transnational threats (e.g., terrorism, illegal immigration, and drug trafficking) now threaten states as much or more than other states do.

[48] Solomon, R.L., October 1970, p. 7.

mobilization and warfare strategies."[49] The authors of these studies[50] were probably justified, given the existence of the Cold War. However, even after the Cold War, some authors continue to define national security too narrowly,[51] without serious discussion of transnational social and economic problems, such as illegal immigration.

To reiterate, when states were invented as political entities, border security was generally a military function. This does not mean that militaries no longer perform this function. That function still applies today. A state's armed forces are still a tool by which governments exercise the legitimate use of force over a clearly defined area. Borders are still clearly and visibly marked on maps. However, it is clear that today there is a difference between protecting one's borders from invasion by another state and protecting one's borders from non-state sponsored terrorism, illegal immigration, drug trafficking, human smuggling, organized crime, and other transnational threats. In short, *border security* today means protecting against more than just invading armies or navies.

Most industrialized countries control their international borders for three additional reasons. First, to enforce the entry of unwanted foreign nationals (e.g., criminals, drug traffickers, terrorists) into their country, based on their own

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[49] Holland, K.M., 15 April 2002, pp. 6, 8.

[50] Kaufman, D.J., McKitrick, J., & Leney, T.J (eds.). U.S. National Security: A Framework for Analysis. MA: Lexington Books. 1985.

Schoultz, L. National Security and Untied States Policy toward Latin America. New Jersey: Princeton University Press. 1987.

[51] Perry, W. "The Inter-American Security Agenda," Journal of Interamerican Studies and World Affairs, 36:3, Fall 1994.

Wolpin, M.D. "Permissive Immigration vs. 'Global Peace' in the 21st Century," The Journal of Social, Political, and Economic Studies, 23:3, Fall 1998.

laws. Second, to provide a means by which to collect tariffs, identify and punish people who circumvent customs laws, and confiscate illegal goods and contraband. Third, to prevent contaminated, unhealthy, or polluted vegetation and/or animals from spreading disease. In short, border security is the means by which industrialized countries stop unauthorized entry of persons, provide customs control, and enforce applicable phytosanitary and veterinary laws.[52]

When the term *border security* is used in this thesis, it either refers to one of the latter three processes or the prevention/deterrence of terrorism within U.S. borders, not military defense from invasion by another country's armed forces. The terms *national security*, *homeland security,* and *homeland defense* have been used somewhat loosely. The definitions proposed by Bruce Lawler of the Department of Homeland Security are used here. *Homeland security* is the collective efforts of federal, state, and local agencies to protect against terrorist threats. *Homeland defense* are military actions designed to protect the homeland from other states and state-sponsored terrorist groups.[53] The services provided by federal inspection agencies mentioned in this thesis, such as U.S. Customs and the Border Patrol, fit into the category of homeland security. Conversely, the services provided by U.S. armed forces fit into the category of homeland defense.

3. The Effects of Integration and Globalization

Certain historical forces ensured the emergence of the modern, sovereign state. Other modern forces are possibly changing our definitions of the border and border security.

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[52] No author, 21 January 2003. [http://www.weekly.vitrum.si]. Accessed 15 March 2003.

[53] Lawler, October 2002.

What are these forces? What is causing some scholars to redefine international borders? This section briefly describes the processes inherent in the development of the modern state[54] and the possible future disintegration of the modern state.[55] It is important to understand these forces for one to make intelligent land border security policy choices.

Increasingly, states seem to be less in control of the policies affecting their constituents and other internationally accepted institutions seem to be more in control of setting the agenda. Most states seem to accept the notion that the United Nations must be consulted before a country can use military force. NGOs (e.g., Human Rights Watch and Greenpeace) use their organizational strength and reach to restrict the power of national leaders to ignore human rights or environmental agendas. The IMF holds the economic future of many developing countries in their hands by requiring an accepted economic ideology before lending money. The OAS compels Latin American countries to accept democracy and shun authoritarian tendencies. There is an ongoing debate about whether the international community should allow alleged war criminals to be tried by their own country or in an *International Criminal Court.*

What forces are at work here? What is the source of all these international organizations that limit the sovereignty of the traditional state? The answer can be narrowed down to *globalization* and increased *international integration*.

Globalization is a common term today, but it has been defined rather broadly. The definition used here assumes a

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54 Spruyt, H. "The Victory of the Sovereign State." The Sovereign State and its Competitors. Princeton: Princeton University Press. 1994.

55 Ohmae, K. "Development in a Borderless World." The Borderless World. New York: Harper Perennial. 1990. pp. 172-192.

heavy emphasis on economic integration. Globalization is defined as "the rising share of economic activity that takes place between people who live in different countries rather than in the same country."[56] The key factor in explaining globalization is economic. The international rise in economic activity can be measured in four ways: foreign direct investment (FDI); international capital flows among countries; the flow of people and/or labor across national boundaries (immigration); and international trade in goods and services.[57]

Globalization is not new.[58] For example, there is evidence that international capital flows are actually below historic 50-year trends previous to 1950. Immigration, while clearly on the rise, still does not match previous historical patterns.[59] Global commerce, trade, and investment were increasing at lightning speed in the early 1900s as well. Great Britain, at the peak of its colonization efforts, was recognized as the world's greatest sea power and found itself at the cornerstone of this early 20th century free-market system.[60]

If globalization existed already in the 20th century, what is different about 21st century globalization? One factor probably sets today's globalization apart from previous ones—the degree of integration. The world has become a smaller place because of how interwoven and connected it is. Friedman correctly points out that our world today is increasingly

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56 Ziblatt, August 2002.

57 Ziblatt, August 2002.

58 Wilensky, H.L. "Globalization: Does it Subvert Job Security, Labor Standards, and the Welfare State?" Rich Democracies. Berkeley: University of California Press. 2002. pp. 638-39; Ziblatt, August 2002.

59 Wilensky, 2002, p. 638-39

60 Ziblatt, August 2002.

characterized by the word "web."[61] Whether this word refers to the Internet, the increasingly connected financial institutions and firms in the world today, or shared transnational regional threats (e.g., terrorism, illegal immigration, drug trafficking) it is clear that our world is more integrated.[62]

Friedman describes three balance-of-power relationships in our "new international system:"[63] the traditional relationships between nation-states; global markets and nation-states; and individuals and nation-states. International relations have always been around in modern politics. However, global markets and individuals, as a result of the recent explosion in world integration and information sharing, are increasingly playing a larger role in shaping the world. Examples include: (1) long-term capital management, whose financial business compares to a foreign country; and (2) Osama Bin Laden, an **individual** who is essentially at war with a **country**.[64] Nation-states are not the primary actors on the world stage anymore.

Furthermore, the fall of communism meant that capitalism and the free-market system (which go hand-in-hand with globalization) became the **only** choice.[65] The root assumption for this is that state-centered economic ideology may claim to distribute income more equitably, but they cannot generate income as efficiently.[66] In fact, communism and all its ideological variants cannot generate income at all in the

61 Friedman, T. "The New System." The Lexus and the Olive Tree. New York: Anchor Books. 2000. p. 8.

62 Gilpin, R. "The Second Great Age of Capitalism." The Challenge of Global Capitalism. Princeton: Princeton University Press. 2000. pp. 15-20; Friedman, 2000, p. 8; Ohmae, 1990, pp. 172-75.

63 Ibid, p. 6.

64 Ibid, pp. 13-15.

65 Ohmae, 1990, p. 186; Friedman, 2000, pp. 101-11.

66 Friedman, 2000, pp. 101-11.

interwoven, connected, competitive system in which the world now lives.[67] Countries that resist the free-market system today simply get left behind.[68]

Globalization has limited the economic and political choices of sovereign states. Brazil's economic woes recently required a $30 billion loan from the IMF. The loan was granted with strict budgetary limits that epitomize the neo-liberal economic rules. Cast this scenario against the backdrop of the 2002 Brazilian presidential elections, in which two left-leaning candidates, who both campaigned on an increased social spending agenda, led the polls. Naturally, this difference led to complaints about how IMF rules restrict Brazil's sovereignty.[69]

Friedman's analogy of the "golden straitjacket"[70] is accurate, albeit rigid. Most states can still shape their economic destinies. Wilensky would probably consider Friedman's analogy an overstatement: "Political, economic, demographic, and social structures . . . overwhelm the external pressures and shocks as sources of national policies and performances."[71]

Nevertheless, increasingly there do seem to be limits and constraints on policy-making. The scope of the debate ranges widely. There are those who predict a complete revolution in the international system in which globalization is the gravedigger of sovereign states.[72] Yet some still believe that "the nation-state remains the ultimate object of allegiance;

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67 Ohmae, 2000, p. 186.

68 Ibid; Friedman, 2000, pp. 102-103.

69 Rohter, L. "Brazilians Find a Political Cost for I.M.F. Help," New York Times, 11 August 2002, pp. 1-4.

70 Friedman, 2000, p. 101.

71 Wilensky, 2002, p. 640.

72 Ohmae, 1990, pp. 172-92; Ziblatt, August 2002.

national institutions and policies continue to make a big difference for real welfare."[73] Nevertheless, the literature does accept the notion that globalization has resulted in a more integrated world and that states probably have less sovereignty entering the 21st century than they did entering the 20th century.

In summary, the two most important developments of globalization affecting border security are: (1) the scope of primary actors in the international system today is more complex and variegated than a system only involving nation-states; and (2) capitalism has become the major macroeconomic system of choice,[74] resulting in increased economic integration and by extension, security integration. Both of these developments converge on two implications: (1) globalization has limited the effectiveness of the nation-state in unilaterally shaping its own border security practices against transnational threats; and (2) transnational threats (e.g., terrorism, illegal immigration, drug trafficking, and global organized crime) are more of a concern than other states in today's world and they require joint solutions.

This does not mean that states will disappear in the near future or that states can no longer exert authority over their border security practices. This overemphasizes the effects of globalization and ignores the fact that states are still major players in both internal and external affairs.[75] However, if integration has become the norm, then integrated, cooperative approaches to border security are vital to addressing terrorism and homeland security issues.

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[73] Wilensky, 2002, p. 669.

[74] Friedman, 2000, pp. 13-16, 101-111.

[75] Wilensky, H.L., 2002, pp. 637-39.

Most of the recent border security literature advocates re-conceptualizing the way we view borders. Stephen Flynn, Demetrious Papademetriou, Deborah Meyers, and CIC-Canada promote the idea that the current era of globalization necessitates a change in the concept of borders. There are two significant ways that the border is being redefined in North America.

First, the prevailing argument is that traditional definitions of the term *border* are outdated and do not adequately address the global nature of terrorism, given the present level of globalization.[76] This argument proposes that the most salient threats to North America are "borderless networks" emanating "from everywhere and nowhere" outside of North America. It also proposes that bilateral border security cooperation between Canada and the United States (with eventual inclusion of Mexico in a multilateral border security regime) is the proper way to address those threats.[77]

Second, there is an argument that the actual, physical location of international borders is not the place to enforce border security. Filtering illegal immigrants and contraband from legal citizens/visitors and legitimate goods at international borders actually contributes to the problem. Proponents argue that the concept of borders must be pushed out and away from North American international land and sea borders. Advocates say this will create additional time and additional mechanisms by which to filter out the bad from the good.[78]

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[76] Haynal, G. "Interdependence, Globalization, and North American Borders." http://www.maxwell.syr.edu/campbell/Governance_Symposium/security.htm. 18 January 2002. pp. 53, 67. Accessed 27 February 2003.

[77] Haynal, 2002, pp. 53-54.

[78] Flynn, S.E. "Transforming Border Management in the Post-September 11 World." [http://www.maxwell.syr.edu/campbell/Governance_Symposium/security.htm]. 18 January 2002. pp. 37-49. Accessed 27 February 2003.

Flynn equates the current mentality of searching all goods and people at ports of entry to searching for a "needle-in-a-haystack."[79] His solution is not to inspect everyone and everything at international land borders. Rather, determine in advance what is legitimate (i.e., low-risk) and suspect (i.e., high risk) through the use of shared international technologies and practices at locations as far away from the physical border as possible. Then, communicate this information electronically to border inspection agencies and only inspect the high-risk people and goods at the physical borders. To steal Flynn's analogy, "the goal must be to limit the size of the haystack in which there are most likely to be illicit and dangerous needles."[80] This is what the term *risk management* when used in discussions about border security means.

Pushing the border out is not just a theoretical concept. Most policy makers are convinced of the value of this redefinition of the border as well. Admiral James Loy, commandant of the Coast Guard, has said that "the border of the future must be pushed outward . . . We need to press our borders all the way to the cargo's origin."[81]

B. HISTORICAL OVERVIEW OF CONTEMPORARY U.S. BORDER SECURITY POLICY

More organizations than just the enforcement arm of the INS (i.e., the Border Patrol) play a role in preventing illegal immigration. Sometimes the INS (and in particular the Border

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Beardsworth, R. "Border & Transportation Security." CS 4920: Homeland Security Research Seminar. Monterey, CA: Naval Postgraduate School. April 2003; Lawler, October 2002.

79 Flynn, 2002, p. 40.

80 Flynn, 2002, p. 41.

81 Bartelme, T. "Senators get lesson in Charleston port security; Commerrce panel hears testimony from federal officials, port security experts." Post and Courier (Charleston SC), 20 February 2002, p. 1A.

Patrol) is falsely blamed for most failures to prevent illegal immigration into the United States. By law, the prevention of illegal immigration is a shared federal responsibility.

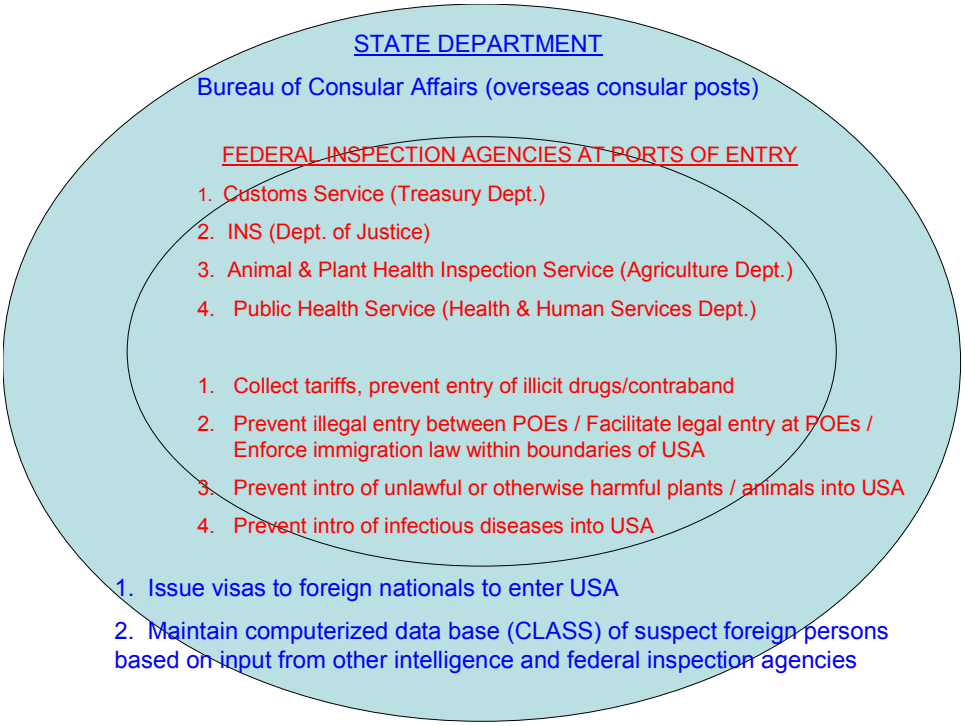

Figure 5. Agency roles in preventing illegal entry of people and/or goods into the USA

After: Krouse, W.J. & Perl, R.F. "Terrorism: Automated Lookout Systems and Border Security Options and Issues." Congressional Research Service. The Library of Congress. 18 June 2001. pp. CRS1-CRS3.

Krause and Perl explain the prevention of illegal entry of people and contraband as consisting of two concentric circles. Each circle represents a filter by which potential terrorists and/or the contraband used to commit terrorism can be screened and prevented from entering the United States. Figure 5 graphically depicts two important pieces of information in this model: (1) what service is performed; and (2) what federal agency performs that service, according to U.S. law.

The notions that traditional definitions of the border are obsolete, that the border and federal border inspection

functions should be expanded outward, and that countries must cooperate against transnational threats are rather new ideas in practice, if not in theory. Proponents of these concepts argue for more "filters," i.e., more opportunities to capture illegal immigrants and contraband away from U.S. international ports of entry (POEs) before they even reach U.S. physical borders. The strategy still includes federal inspection agencies at/between POEs as an integral part of the solution, but emphasizes other federal and international cooperative functions away from POEs as the final piece of the border security puzzle. Figure 6 displays these additional "filters" (portrayed as additional concentric circles) away from the border to graphically portray how border security is envisioned in the 21st century.

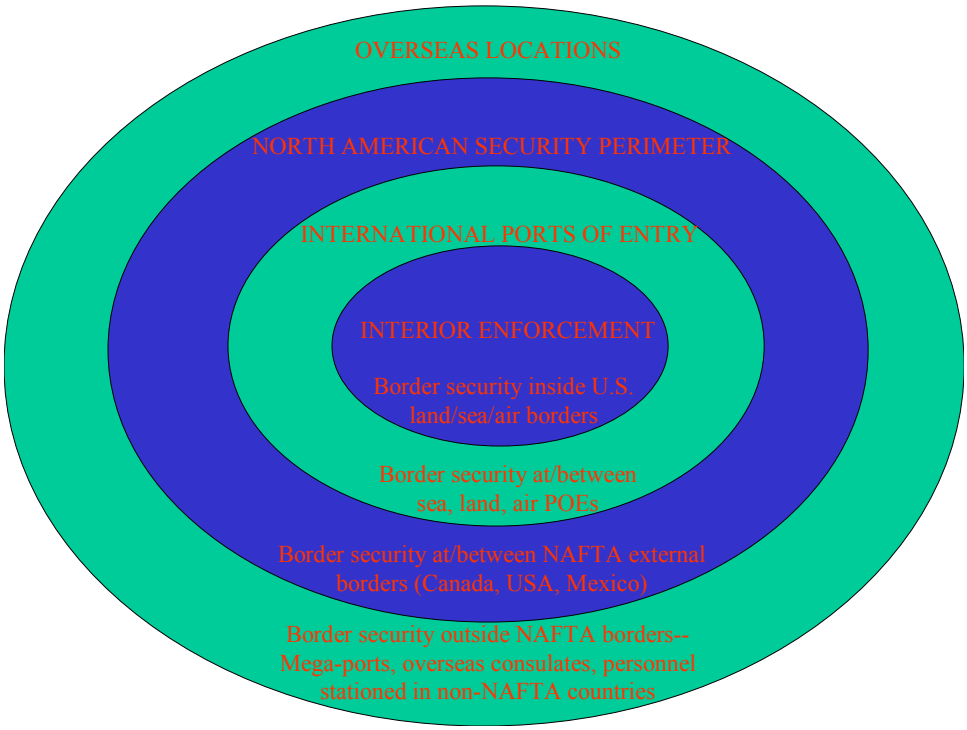

Figure 6. Additional border security "filters"

After: Krouse, W.J. & Perl, R.F. "Terrorism: Automated Lookout Systems and Border Security Options and Issues." Congressional Research Service. The Library of Congress. 18 June 2001. pp. CRS1-CRS3.

C. A CLOSED BORDER HAS ECONOMIC IMPLICATIONS

Several authors note that U.S. policy in the 1980s and 1990s focused on cracking down on illegal immigration. Strict border controls have been ongoing since the late 1970s.[82] Chapter III describes this phenomenon in detail, but for now, Rosenblum's work gives a good summary. He defined three phases of border escalation during this time period. The three phases included the time periods 1978-80, 1980-88, and 1994-2000.[83]

In phase one (1978-80), INS funding increased by 24% as border agencies purchased new technology and equipment. Phase two (1980-88) featured the "lost decade" of the 1980s in Latin America as a major factor in increased illegal immigration statistics. Total Border Patrol apprehensions increased dramatically and closely mirrored the increased apprehensions of illegal immigrants from Mexico. In 1986, Congress passed the Immigration Reform and Control Act (IRCA), which provided severe sanctions for certain categories of U.S. employers who employed illegal immigrants. Subsequently, The INS reported that total arrests (interior enforcement and apprehensions at the border) increased. Funding also increased again from 1986-1988.

Phase three marked the beginning of the "prevention through deterrence" strategy shift (see Chapter III). Significant legislation, the Illegal Immigration Reform & Immigrant Responsibility Reform Act (IIRIRA) of 1996 was passed. This act

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[82] Dunn, T.J. "The Militarization of the U.S.-Mexico Border, 1978-1992: Low-intensity Conflict Doctrine Comes Home." Austin, TX: Center for Mexican American Studies, University of Texas at Austin. 1996. p. 176.

Andreas, P. *Border Games: Policing the U.S.-Mexico Divide.* Cornell University Press, 2000. pp. 3-4, 51, 85, 105-11, preface.

Rosenblum, M.R. "U.S. Immigration Policy: Unilateral and Cooperative Responses to Undocumented Immigration." [http://www.ciaonet.org/pbei/igcc/rom01.html]. December 2000. Accessed 11 March 2003.

[83] Rosenblum, M.R., December 2000, pp. 1-8.

provided for 1000 new border patrol agents and 300 new INS support staff annually for five years. Although subsequent budgets fell somewhat short of the mandated manpower levels, manpower levels within the INS still surged. IIRIRA also permitted the INS to use quicker, more efficient deportation procedures and limited the legal rights of illegal immigrants.[84]

The evidence suggests that more focus on inspections at U.S. land borders is diametrically opposed to a healthy regional economy in North America. For example, consider border wait times immediately after 9/11 (see figure 7). These figures only represent a best estimate and actual wait times varied considerably across ports of entry. Nevertheless, the figures do give a sense of the tremendous impact that increased security had on the economies of all the NAFTA countries.

The huge traffic jams significantly affected social and economic activity in all three countries.[85] San Ysidro, one of the busiest crossings on the U.S.-Mexican border, averaged 88,000 daily crossings before 9/11, but in the months following the attacks, this number dropped to 58,000. The number of bicycles used to cross jumped from 20/day to 2,000/day as people tried desperately to find ways to reduce wait time.[86] The maquiladora auto industry in Mexico lost close to U.S. $10,000/day in the weeks after 9/11.[87]

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[84] Ibid, pp. 3-6.

[85] O'Connor, A. "A Year After: Southern California." Los Angeles Times, 11 September 2002, p. 16 (main news section).

Jackson, M. "Surviving 9/11: A time for reflection; border firms still assessing damage from tight security." San Diego Business Journal, 23:36, 09 September 2002, p. 1.

[86] Canto, 30 December 2001.

[87] Jones, R.B. "California, Baja leaders tout cross-border relations." San Diego Business Journal, 24:13, 13 March 2003, p. 7.

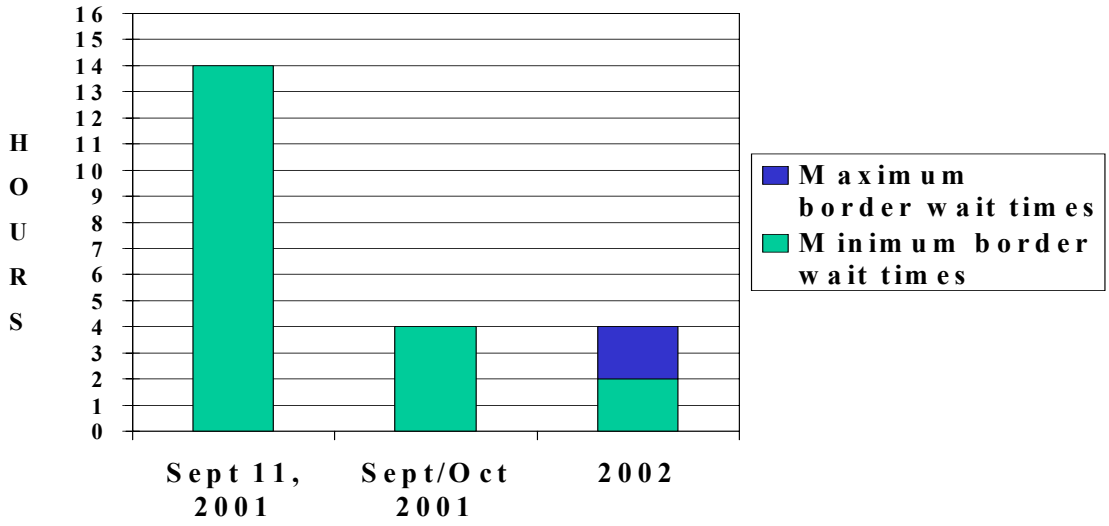


Figure 7. Border wait times for traffic after 9/11.

From: Canto, M. "At border, hard job has gotten tougher//Security: Drug smuggling is back after a post-Sept 11 lull. Hunt for terrorists continues." Orange County Register (California), 30 December 2001, news section.

Dougan, M. "Crossing a U.S. border? Better bring a good book." San Francisco Chronicle, 04 November 2001, p. T3 (travel section).

Many of the busiest crossings on the U.S.-Canadian border were even worse. For example, some ports were reporting "20-mile backups, 14-hour waits, and multimillion-dollar factory shutdowns" immediately after the attacks. On a border where a truck crosses the Ambassador Bridge every six seconds, those slow-downs translated into huge corporate losses for both Canadian and U.S. businesses. Paul Cellucci, the U.S. ambassador to Canada echoed the feelings of the trade industry: "Closing this border is not the answer. We need that border open for business. More open than ever."[88] The increased security and losses in revenue caused some transportation services to add a special "homeland security surcharge," a cost which will eventually be passed onto consumers.[89]

[88] Pianin, E., Graham, B., & Connolly, C. "Across U.S., a security scramble; patchwork measures may be insufficient, experts say." Washington Post (Final Edition), 23 September 2001, p. A01.

[89] Whitten, D.L. "Con-Way Says It Will Impose $8 Border-Security Fee." Transport Topics, 18 November 2002, p. 3, 36.

The dilemma of increased security to safeguard U.S. citizens versus the need to expedite legitimate border crossers, businesspeople, and commerce across the border in the current age of globalization is more acute than ever now. Where should the apex of U.S. border policy be placed when the United States essentially has a teeter-totter that is trying to balance security with ease of movement? Are the two mutually exclusive? Can America protect itself against terrorism and still maintain a growing, vibrant market economy with Canada and Mexico? The following section introduces some of the proposals discussed in recent years that aim to achieve that very goal.

D. BORDER SECURITY REFORM PROPOSALS SINCE 9/11

This section reviews current border security reform proposals. This section is not intended to be a comprehensive review of every U.S. immigration and transportation reform proposal ever made. Its primary focus is on proposals made since 9/11. The intent is to capture the ongoing debate since 9/11 about how to improve homeland security. The interest in immigration and transportation security reform surged after 9/11. The current U.S. administration views the prevention of terrorism—not only in the United States but abroad as well—as a top priority. My preliminary research from March 2002 until about December 2002 convinced me that most reform proposals to improve border security and stop terrorism on U.S. soil fit into one of four broad categories: (1) increasing manpower/financial resources to federal border inspection agencies; (2) improving cooperation; (3) implementing technology; and (4) reforming bureaucratic organizations, i.e., organizational changes.

Randy Beardsworth, the Director of Operations within the new Border & Transportation Security Directorate (BTS) of DHS, recently participated in a seminar at Naval Postgraduate School.

His comments at that seminar confirmed that policy-makers, as well as theorists, are talking about reform in terms of the categories mentioned above. He outlined three important strategic priorities for BTS: (1) effective reorganization of federal border inspection agencies; (2) pushing our borders out as far as possible, i.e., a "layered approach" to homeland security; and (3) using effective technologies.[90]

1. Increasing Manpower and Financial Resources

The Border Patrol did not receive the financial resources, equipment, and manpower that it felt it needed until at least the last couple of decades. The economic woes of the 1980s in Latin America helped fuel a large influx of both legal and illegal immigrants that has continued into the 21st century. During the late 1970s and 1980s, the Border Patrol finally began to receive support in Congress for additional funding, as well as military assistance (especially in the form of equipment, engineering support, and infrastructure support). Some authors have criticized the military assistance and the additional funding. Others, including but not limited to border communities and their government representatives, have praised the additional attention Congress has given the Border Patrol.

The INS always had two very different missions and funding for the INS was separated into these two functions. One branch of the INS was responsible for facilitating and processing legal immigration claims—more of a "service" oriented responsibility. The other branch of the INS was responsible for enforcing the law. Enforcement activities included such things as detention and deportation of illegal aliens, the prevention of illegal immigration between ports of entry, and ensuring illegal immigrants did not sneak through legal ports of entry using

[90] Beardsworth, April 2003.

fraudulent documents or human smugglers. This branch of the INS was more of an "enforcement" oriented responsibility.

There is no question that funding for border enforcement activities has increased over the past three decades, most dramatically in the 1990s. Budget outlays for INS enforcement expressed as a percentage of the U.S. budget remained steady from 1970-1976, spiked in 1977, and then returned to steady, yet slightly increased levels from 1978-1988. From 1988-1993, the average budget level was steady, yet slightly increased again as compared to 1978-1988. Then in 1994, the year the Border Patrol implemented their new "prevention through deterrence" strategy, the average budget outlay increased dramatically every year throughout the 1990s and into the 21st century. Figure 8 demonstrates this graphically. Figure 9 more accurately portrays the gradual trend of increased financial outlays (up until the dramatic increases of the 1990s) by eliminating the irregular year of 1977, when budget outlays spiked incredibly high only in 1977 and then returned to more regular levels.

Funding for border inspection agencies continued to increase after the creation of the new Dept. of Homeland Security (DHS). The amount of money currently spent on border inspection functions dwarfs funding levels for most other operational DHS directorates and other DHS operational organizations, such as the Coast Guard (see figure 10). The Directorate of Border & Transportation Security (BTS)—where both the Border Patrol and U.S. Customs currently operate—receives more funding than any other DHS directorate except the Directorate of Science & Technology.[91] Even so, many of the

[91] Fobes, J.L. "Overview of Policy Issues in Homeland Security." CS 4920: Homeland Security Research Seminar. Monterey, CA: Naval Postgraduate School. April 2003.

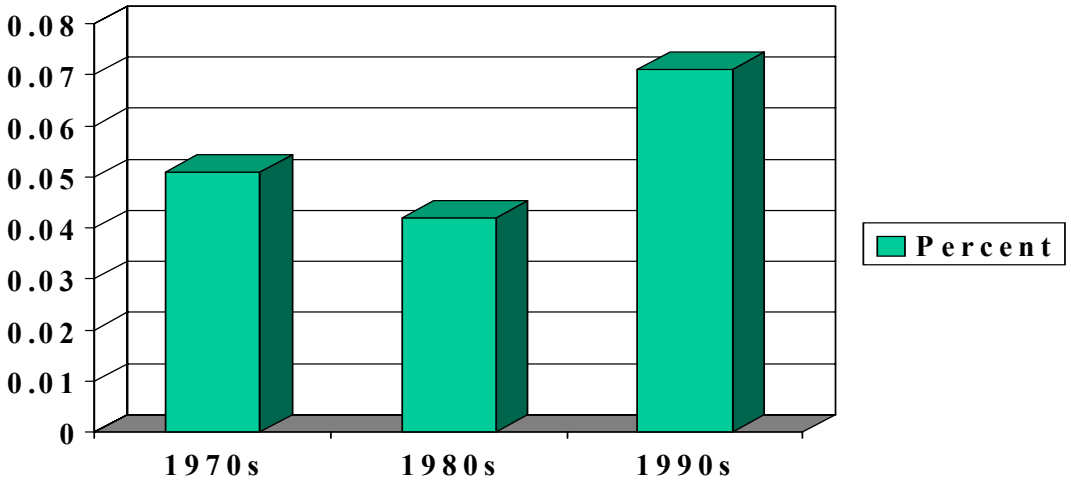


Figure 8. Budget outlays for INS enforcement activities expressed as an average percentage of the total federal budget per decade—1970s, 1980s, 1990s

From: Rosenblum, R. "U.S. Immigration Policy: Unilateral and Cooperative Responses to Undocumented Immigration." December 2000. [http://www.ciaonet.org/pbei/igcc/rom01.html]. Accessed 11 March 2003.

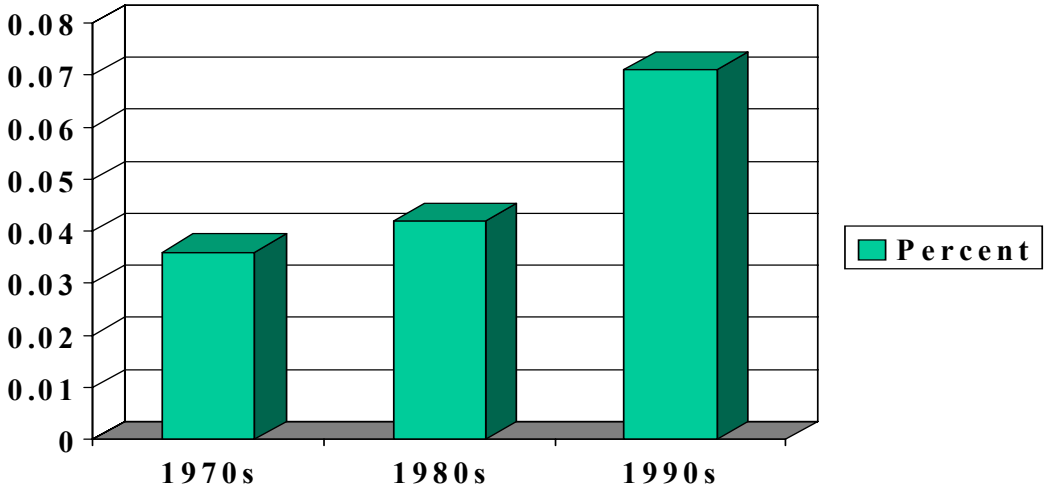
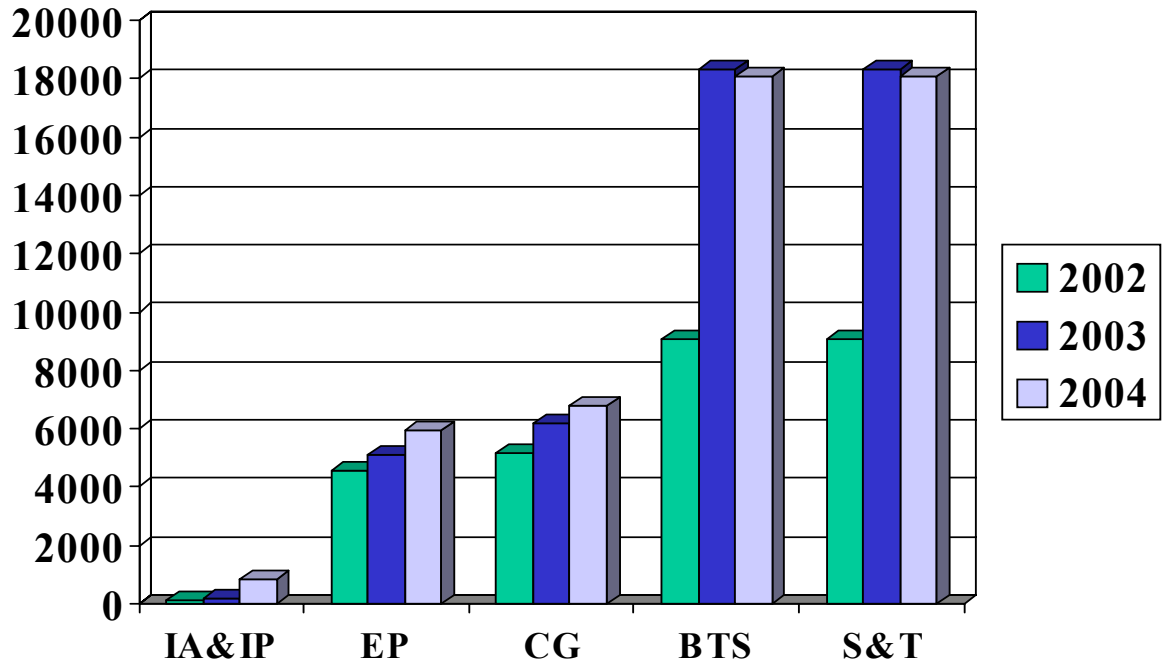


Figure 9. Budget outlays for INS enforcement activities expressed as an average percentage of the total federal budget per decade—1970s, 1980s, 1990s (excluding the year 1977)

From: Rosenblum, R. "U.S. Immigration Policy: Unilateral and Cooperative Responses to Undocumented Immigration." December 2000. [http://www.ciaonet.org/pbei/igcc/rom01.html]. Accessed 11 March 2003.



IA&IP	Directorate of Information Analysis & Infrastructure Protection
EP	Directorate of Emergency Preparedness & Response
CG	Coast Guard
BTS	Directorate of Border & Transportation Security
S&T	Directorate of Science & Technology

Figure 10. DHS budget (in millions of U.S. dollars), 2002-2004.

From: Fobes, April 2003.

experimental technologies under investigation in DST (e.g., remote detection of radioactive/nuclear material, VACIS, and high explosives detection)[92] will eventually be used by BTS. Therefore, direct funding for DST indirectly funds BTS.

Nor is the spending spree on border security over yet. Congressional appropriation bills for fiscal 2004 exceeded the Bush administration's budget requests for border protection and related activities. The House measure requested $9 billion (an

[92] Fainberg, T., May 2003.

increase of $400 million from FY 2003) while the Senate version requested $8.2 billion. Most of this money was appropriated to the Bureau of Customs and Border Protection, a division of BTS.[93]

But does higher spending levels equate to improved security? The evidence suggests that the United States is spending more money on border security than it ever has in three decades. Chapter III demonstrates strikingly similar findings regarding manpower levels in the Border Patrol along the U.S.-Mexican border. For this reason, studying the effectiveness of the Border Patrol during the period of 1994-2003 is a good way to study whether increased funding/manpower levels alone keeps Americans safe. Chapter III details what happened to funding and manpower levels on the U.S.-Mexico border during this time period, establishes a link between illegal immigration and the prevention of terrorism, and answers the question of whether increased manpower/resources alone prevents terrorism.

The debate about increased funding for federal agencies with border security or homeland security responsibilities does not only revolve around the Border Patrol. Numerous cases have been made to increase funding to nearly every agency from the overseas consular posts that process visa applications to U.S. Customs to U.S. intelligence agencies. Furthermore, the post-9/11 funding levels for border security in general indicate that increased financial resources continue to be a priority in both the legislative and executive branches (see figure 8). However, chapter III uses the Border Patrol from 1994-2003 as a model that potentially applies to other agencies as well.

[93] Anonymous. "House OKs $9 billion for border security." American Shipper, August 2003, Washington, D.C., p. 70-71.

2. Cooperation in Homeland Security

a. International Cooperation

Recently, especially since NAFTA, the United States and Canada have increasingly talked about a "North American security perimeter."[94] It should be emphasized here that this "security perimeter" only applies to protection against North America's common transnational threats (terrorism, drug trafficking, illegal immigration). It is not an alliance such as NATO or a Western Hemispheric policy, such as the Monroe Doctrine.

Currently, this "security perimeter" is probably best viewed as a bilateral project between Canada and the United States vice a multilateral agreement that includes Mexico. During recent U.S. congressional testimony, two migration policy analysts from the Migration Policy Institute presented arguments in favor of security integration among Canada, the United States, and Mexico, calling it a "NAFTA Border Zone."[95]

Mexico has a history of shaky relations with the United States. The Mexican-American War in the mid-1800s resulted in loss of territory to the United States. Pancho Villa's exploits across the Rio Grande and U.S. President Wilson's invasion of Vera Cruz during the Mexican Revolution set precedents for unwanted involvement in Mexican affairs, at least in the eyes of Mexico. Disagreements about Mexican sovereignty over natural oil resources in which U.S. companies invested

94 Wang, T. "The Debate over the North American Security Perimeter," Century Foundation, 10 May 2002, p. 1. Accessed 23 July 2003 at following website: [http://www.homelandsec.org/Pub_category/pdf/Security_Perimeter.pdf].

CIC Canada, Update 2000.

95 Papademetriou, Demetrious G. & Meyers, Deborah Waller. "NAFTA Border Zones: Security and Integration." Testimony before the Subcommittee on Immigration of the Judiciary Committee, U.S. Senate, 17 October 2001. Accessed 27 February 2003 at the following web address: [http://www.migrationpolicy.org/news/2001_10_17.html].

after the Mexican Revolution further strained relations. Mexico obviously may be less ecstatic about "North American security arrangements."

Nevertheless, these expressions about continental security are a natural expansion of dialogue among countries that already have close economic ties, not only in North America, but also in Europe. For example, several authors demonstrate that the European Union (EU) is not only a common economic market, but also currently employs its continental unity as a strategy to combat illegal immigration.[96] Another economist recently wrote about the effects of recent economic ties since the 1990s—as evidenced by NAFTA in North America and the ongoing FTAA negotiations in the entire Western Hemisphere—on security arrangements between Latin America and the United States.[97]

b. Interagency/International Cooperation

Recently, many people have characterized the 9/11 attacks as an intelligence failure.[98] The technical inability of many computer databases to share information, as well as the lack of cooperation among the diverse group of agencies with portions of responsibility for border security have both been blamed as likely causes for the attacks. These problems are very relevant to improving homeland security.

However, this thesis does not address this important variable for one main reason. The evidence in favor of increasing interagency cooperation and international cooperation

[96] Altamirano, D.R. "Illegal Immigration in Europe: Balancing National and European Union Issues," in Illegal Immigration in America: A Reference Handbook, ed. D.W. Haines & K.E. Rosenblum. Westport, CT: Greenwood Press. 1999, pp. 454-459; Gorman, S., 1 December 2001, p. 3655.

[97] Franko, 2000, pp. 66-87.

[98] Schaal, D. "Biometrics demo shows how to ID 'the bad guy.'" Travel Weekly, 08 November 2001, p. 10.

is so strong that I take it as a given in border security. That is, there is no need to study *if* increasing cooperation will improve land border security. Obviously, it will. Future research in this important area should focus on how to improve interagency cooperation, not why it is important.

Similarly, there is no question that international cooperation against terrorism is a must. The reason for this is that terrorism elusively crosses state boundaries. It may or may not be sponsored by other governments. Other legitimate governments may indirectly sponsor terrorism while showing another face to the international community. In short, terrorism is a sometimes vague, elusive, and obscure enemy that is difficult to defeat unilaterally. Therefore, while the intricacies of getting governments to cooperate against terrorism is a relevant topic is outside the scope of this thesis, future research should focus on *how* to get governments to cooperate, not *why* they should cooperate.

c. Industry and Government Partnerships

Most of the literature on cooperation against terrorism focuses on international cooperation and inter-agency cooperation in government. Yet it is important to understand that private industry can help in the war on terror. Badolato mentions government and industry cooperation as one of the four keys to meeting the future challenges of transportation security.[99] Rothkopf points out that venture capitalism[100] was a factor in winning the Cold War. He claims that when the roles of the private sector (e.g., developing innovative technologies,

[99] Badolato, E. "Cargo Security: High-tech Protection, High-tech Threats." TR News, vol. 211, November-December 2000, p. 16.

[100] In general, venture capitalism refers to agreements between government and private investors whereby government lends money at lower rates to private investors in exchange for the private investor's investment in risky but promising security ventures.

publishing standardized, objective homeland security readiness indicators, researching and marketing innovative technologies, and helping to finance risky technologies) are fused with the roles of government (e.g., defining a national strategy, providing insurance for investors against lawsuits, providing start-up funding with investment programs, sharing vital technologies among government agencies, and developing legislation to codify the balance between privacy and security) more can be accomplished than each could do singly.[101] Others believe that involving the private sector in security issues will help break through the existing slow, bureaucratic procurement processes and infuse some urgency into current inter-agency cooperation rhetoric.[102]

3. Technology Solutions

Technology is a critical piece of the puzzle if authorities are to strike a balance between security and the rapid movement of legitimate goods and people across borders. Robert C. Bonner, U.S. Customs Commissioner said the following:

> Technology is our greatest ally in preventing terrorists from getting weapons of mass destruction across our borders . . . It is technology that is allowing us to facilitate the movement of goods and people while simultaneously giving us the capacity to detect weapons of mass destruction.

There are a number of innovative technologies for border security. However, technology is expensive and most of the current land border technologies are untested. Chapter IV analyzes some of these current technologies with an eye towards

[101] Rothkopf, D.J. "Business versus terror." Foreign Policy, Issue 130, May/June 2002, pp. 56-65.

[102] Hughes, J. "Involve U.S. citizens in homeland security." Christian Science Monitor, 19 June 2002, p. 9.

making recommendations for the ones that both improve border security and reduce border wait times.

4. Organizational Changes

Organizational structure is also debated frequently. The INS was criticized for decades because of its management and financial practices as well as its dual roles of service and enforcement. At least seven studies dating from 1973 to 1988 recommend a unified management structure at ports of entry.[103] Yet despite attempts to legislate reform,[104] it took 9/11 to convince Congress and the executive branch to make a change. The recent change this year that split the INS into separate branches focusing on enforcement and service roles within the new Homeland Security Department is supported by previous studies, but will need to be watched and studied closely in order to ascertain its effects on illegal immigration as well.

Obviously, the most dramatic organizational change since 9/11 was the creation of the Department of Homeland Security (DHS) and the reshuffling, elimination, and/or creation of a variety of agencies within that Department. For the purposes of this thesis, it is important to note that the Border Patrol and U.S. Customs were organizationally transferred to the Directorate of Border & Transportation Security. Other functions of the INS were organizationally transferred to a separate bureau within DHS.

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103 See the following Senate hearing for a synopsis of these studies:

Controlling the Flow of Illegal Immigration at U.S. Land Borders: Hearing before the Subcommittee on Immigration of the Committee of the Judiciary, U.S. Senate, 103rd Cong., 18 (10 December 1993).

104 Mitchell, A. "A Nation Challenged: The Borders—Official Urges Combining Several Agencies to Create One That Protects Borders," New York Times, 12 January 2002.

INS Reform and Border Security Act of 1999: Hearing before the Subcommittee on Immigration of the Committee of the Judiciary, U.S. Senate, 106th Cong., 1-52 (23 September 1999).

Organizational changes are not addressed in this thesis. This variable is important and relevant to the debate at hand. However, it is my contention that it is too early to longitudinally study the recent addition of the new Homeland Security Department and the subsequent reshuffling of government agencies within that department. While it has been talked about extensively since 9/11, the official creation of DHS occurred only recently in March 2003. Most offices are still recruiting personnel and establishing infrastructure. Therefore, any study of its effectiveness would be a study of a department that has not been given sufficient time to do its intended job.

Since the scope of this study focuses on 1990-2003, there may be some confusion about the organization of the federal inspection agencies in question when reading subsequent chapters. A referral to any federal inspection agency in subsequent chapters necessarily refers to its land border inspection function that existed before DHS was implemented in March 2003, as well as its land border inspection function that transferred to DHS after March 2003. The text sometimes refers to border security agencies as if there were no DHS yet. This is not a major problem if one bears in mind that U.S. Customs Service and the Border Patrol are still performing the same functions, but are under new management.

Hopefully, the organizational changes made improve inter-agency cooperation, reduce bureaucratic red tape, focus federal inspection agencies on the primary threat (terrorism), and streamline the funding processes. Nevertheless, the bottom line is that agencies such as the Border Patrol and Customs are still performing land border security functions. How effective organizational changes will be in performing that function or

how these changes affect the focus of their missions is a subject for further research.

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III. DOES INCREASED MANPOWER AND FINANCIAL RESOURCES STOP ILLEGAL IMMIGRATION ON THE U.S.-MEXICAN BORDER?

A. INTRODUCTION

In the aftermath of 9/11, it became imperative to ask some important questions: First, do current levels of illegal immigration constitute a national security threat? Are current manpower and funding levels sufficiently preventing and/or deterring illegal immigration? Can a closed border that entirely prevents illegal immigration also support an unimpeded flow of legitimate persons across U.S. land borders (both of which are in the interests of the United States) in the current era of globalization? What factors most contribute to an effective policy that prevents illegal immigration?

The answers to these questions entail some controversy. While everyone living within U.S. borders obviously wants to feel safe, not everyone (e.g., U.S. immigration advocate groups, Mexican-American immigrants, U.S. federal inspection agencies, U.S. congressional delegates, and the Mexican government) agrees on how open our borders should be to foreign visitors, students, and immigrants across the Mexican border.[105] For example, Rep. Tom Tancredo recently advocated militarization of the border while Rep. Chris Cannon continues to advocate a traditional, "open" immigration policy.[106]

This chapter examines illegal immigration policy during the decade of the 1990s along the Mexican border with respect to one of the independent variables introduced in chapter 2: manpower and resources. The dependent variable in this chapter is still

[105] Ernsberger Jr., R., 12 November 2001.

[106] Boyer, D. "Troops For Border Sought," The Washington Times, [www.washtimes.com/national/20020619-504434.htm]. Accessed 25 March 2003.

prevention of terrorism within U.S. borders. It is assumed that in general, increased levels of illegal immigration correlates with increased numbers of terrorist acts within U.S. borders.

However, the primary purpose of the chapter is to examine whether or not increases in manpower and resources alone sufficiently secures U.S. borders from illegal immigration. The independent variable in this chapter is the increase of personnel and financial resources for U.S. federal inspection agencies responsible for the prevention of illegal immigration. From 1990-2003, that agency was primarily the Immigration and Naturalization Service (INS), specifically the Border Patrol (but as demonstrated in Chapter II, this was indeed a shared responsibility before DHS was created). After March 2003, the new Directorate of Border & Transportation Security within the new Department of Homeland Security (DHS) took the lead.[107] While the reorganization of responsibility for preventing illegal immigration may be still ongoing, it appears that the *Immigration/Customs Enforcement* and *Customs & Border Protection* divisions will now have the lead in preventing illegal immigration.[108] Nevertheless, from 1990-2003, the lead agency for preventing illegal immigration was the INS, specifically its enforcement arm (i.e., the Border Patrol).

The dependent variable in this chapter is the prevention or deterrence of terrorist acts by deterring or preventing illegal immigration. The scope of this case study applies to *the*

[107] To avoid confusion, I use the terms Immigration and Naturalization Service and Border Patrol in this chapter to refer to the agency responsible for preventing illegal immigration across land borders. I acknowledge that the name and organization of the agency changed in March, 2003. However, the effective dates of the case study in this chapter are from 1994-2003, during which time the government agency responsible for preventing the illegal entry of persons across land borders was the enforcement arm of the INS, specifically the Border Patrol.

[108] Fainberg, T., 2003.

southern border of the United States. It is assumed that the prevention or deterrence of illegal immigration along the southern border will likely reduce the number of terrorist acts committed within U.S. borders, since that is where the most apprehensions of illegal immigrants occur. The link between illegal immigration and terrorism is explored in a later section of this chapter. This chapter does not address terrorism committed on U.S. property overseas or outside the coastal, land, or airspace boundaries of the United States.

A short outline of the chapter's structure follows. First, the large volume of trade and flow of people along the southern U.S. border and the implications of that for immigration policy is discussed. Second, a discussion about the relevance of current trends in illegal immigration to national security is presented. Third, illegal immigration enforcement policy from 1990-2003 is examined with respect to the independent variable: increased manpower and resources. Fourth, other variables besides manpower/funding increases are briefly mentioned as alternatives. Finally, preliminary conclusions about the prospects of increased manpower/funding increases for future border enforcement policy are offered.

B. THE DILEMMA: TRADE OR SECURITY?

The U.S. economy has important traditional ties to Mexico. In 1994, NAFTA was signed, ensuring an increased flow of goods across the Mexican border. Mexico currently trades more with the United States than with any other country except Canada.

The Mexican border has become extremely congested. Between 1986 and 1994, exports more than quadrupled. After 1994, trade with Mexico more than doubled again following NAFTA implementation. In 1992, U.S.-Mexican trade was valued at $75.8

billion and in 1998, total trade value reached $173.4 billion. By 2000, the figure reached $261.7 billion, which averages out to $700 million per day. The number of railroad crossings also nearly doubled from 1992 to 1998. By late 1997, Mexico was our second largest export market. Some 89% of Mexican exports are destined for the United States and 73% of its imports come from the United States. This increase in trade, mostly handled by trucks, sometimes causes lines that can reach several miles long during peak periods. The four million truck crossings recorded in 1998 was a 30% increase from 1996. At some major ports of entry along the southwest border (Laredo, Otay Mesa, El Paso, and Nogales), wait times can reach as high as 2-3 hours.

Overland pedestrian traffic continues unabated also. In contrast to the U.S.-Canadian border—which saw same-day travel decline dramatically from 1990-1999 (partly due to unfavorable exchange rates for Canadian money)—same-day travel along the U.S.-Mexican border rose 19% during that same time period. Of the 530 million crossings into the United States in 2000, 438 million were overland and 290 million were from Mexico (approximately 800,000 per day, up from 750,000 per day in 1998).[109] An estimated 80% of all INS and Customs inspections are completed at land borders. It is estimated that 1.3 million people cross the border daily. Some 10 million people from both Mexico and the United States live on the U.S.-Mexico border.[110]

It goes without saying that there are several domestic U.S. and Mexican interest groups, citizens, communities, and

109 BTS 01-07, 2001, pp. 17-19.

110 GAO/NSIAD-00-25: General Accounting Office, "U.S.-Mexico: Better Planning, Coordination Needed to Handle Growing Commercial Traffic." pp. 3, 9-13, 38. March, 2000.

Migration Policy Institute. "U.S.-Canada Fact Sheet on Trade and Migration." [http://www.migrationpolicy.org]. Accessed 19 March 2003.

organizations with key economic and social interests in maintaining a free, uninterrupted flow of goods, services, and people across the U.S.-Mexican border. It should come as no surprise that the Mexican government also has its own economic interests in mind when the topic of U.S. border security policy is raised.[111] Yet 9/11 refocused the nation on the importance of security along our 2,000-mile border with Mexico. The dilemma between the desire for increased security and the need to keep the economy rolling was painfully evident immediately after the September 2001 terrorist attacks, as the government reacted by sealing off the border with National Guard troops and implementing lengthy inspection procedures, costing firms billions in revenue and stacking up traffic for hundreds of miles on either side of the border (12/23 southern ports of entry were closed at some point following the 9/11 attacks).

C. ILLEGAL IMMIGRATION

Estimates of illegal immigration in the United States are on the rise. It is impossible to accurately know for sure how many illegal aliens enter the United States annually. Some estimates run as low as 250,000[112] while other estimates are as high as 800,000.[113] In any case, the trend has been for the estimated number of illegal aliens in the country to increase—from 3.8 million in 1994, to 5.5 million in 1998, to 8.5 million in 2002.[114] One study's estimates were as high as 11 million.[115] Congressional testimony by border patrol agents indicate that

111 Barone, 05 August 2002, p. 34.

112 *The Need for Additional Border Patrol at the Northern and Southern Borders*: Hearing before the Subcommittee on Immigration of the Committee on the Judiciary, U.S. Senate, 106th Cong., 1 (1999).

113 Migration Policy Institute, Accessed 19 March 2003.

114 Ibid, p. 4.

115 GAO-01-842: General Accounting Office, "INS' Southwest Border Strategy: Resource and Impact Issues Remain After Seven Years." p. 1, Washington, D.C., August 2001.

for every illegal alien apprehended, 2-3 escape into the interior.[116] There was widespread feeling among legislators, the INS, and border communities that the southwest border was "out of control" in the early 1990s.[117]

It would appear at first glance that whatever strategy the United States had been pursuing to stop illegal immigration prior to 1994 had not been working. But is illegal immigration a national security threat? Some may argue that most illegal aliens seeking entry along the southwest border are just poverty-stricken refugees and honest, yet downtrodden foreigners seeking a better quality of life in the United States. For the most part, that statement is true. However, in the decade of the 1990s, illegal immigration has become increasingly tied with terrorism—*not because most illegal immigrants are terrorists, but because those who advocate terrorism on U.S. soil sometimes use complex U.S. immigration laws and our open, free society to enter the country illegally.* The significance of the rising tide of illegal immigrants in this country is the subject of the next section.

D. ILLEGAL IMMIGRATION: NATIONAL SECURITY RISK?

Do the seemingly porous borders of the United States pose a risk to national security? Traditionally, the literature on immigration policy has not been linked to national security implications or vice versa.[118] Moreover, the mindset of agencies involved in border security has not been focused on deterring terrorism, but rather on "keeping poverty-stricken foreigners

116 *The Need for Additional Border Patrol at the Northern and Southern* Borders, 1999, p. 40.

117 Ibid, pp. 1-5.

118 Holland, K.M. "Immigration and National Security: A Comprehensive Look at the Connections and Policies," Discussion paper of the Department of Diplomacy & World Affairs of Occidental College. Los Angeles, CA. pp. 3-10, 33-34. 15 April 2002.

from becoming illegal immigrants, busting drug traffickers, and confiscating salami that doesn't meet FDA standards."[119]

The evidence in favor of considering illegal immigration a national security risk seems to be mounting. For example, a recent study examining the last 48 militant, Islamic extremists who have committed terrorist acts on American soil since 1993 (to include the perpetrators of 9/11) found that they exploited nearly every immigration loophole imaginable. For example, 22/48 violated some immigration law to enter the country. At the time their crimes were committed, several (12/48) were illegal aliens. Prior to committing their crimes, another five had at one time been illegal aliens. Eight of them had worked in the United States illegally prior to their crimes. Thirteen of them overstayed their visas. Two were on federal watch lists for being suspected terrorists, four exploited the country's visa waiver program to enter the country, four were ineligible for visas under the terms of current law (but were given visas anyway), and one benefited from a lack of INS detention space (he was released on parole after having attempted fraudulent entry at a port of entry).[120] While this evidence cannot support the conclusion that immigration policy is completely to blame for the flurry of contemporary terrorist activity today (26/48 terrorists did not break any immigration laws in the study) it is clear that illegal immigration can no longer be viewed separately from the broader context of national security.

Recently, most attention has focused squarely on the 9/11 conspirators, but terrorists were exploiting immigration laws

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[119] Gorman, 01 December 2001, p. 3648.

[120] Camarota, S.A. "The Open Door: How Militant Islamic Terrorists Entered and Remained in the United States, 1993-2001." [http://www.cis.org]. Accessed 15 March 2003.

long before September 2001. Ayman al-Zawahiri, who ranks second only to Osama bin Laden in the Al-Queda network, used fake passports in the early 1990s to enter the United States and set up funding operations in California mosques. Additionally, Fathur Rohman al-Ghozi, an Indonesian bomb specialist for the terror group Jemaah Islamiah, was arrested in 2002 with forged passports. He was planning to conduct a series of attacks, including a bombing of the U.S. embassy in Singapore.[121]

Immigration advocates argue that the illegal immigration population is harmless. It is true that most illegal immigrants are poor, disenfranchised Latin Americans and Asians seeking a better life. In the last decade, the top fifteen countries with unauthorized residents in the U.S. population included ten from Latin America and most were from Mexico (see figures 11, 12, and 13).[122] The large volume of illegal immigration closely tied to seasonal agricultural periods, as well as economic conditions in Mexico[123] clearly indicates that most people only want to get into the United States to work and take advantage of its favorable economic conditions.

However, if one accepts the assumption that the real national security threat is from terrorist cells whose origins are from countries traditionally connected to the current radical, militant, Islamic "jihad" so prevalent today, then a closer look is warranted. For example, the State Department

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[121] Smith, P.J. "Transnational Terrorism and the al Queda Model: Confronting New Realities." Parameters: U.S. Army War College Quarterly, 32:2, Army War College, Summer 2002, pp. 6-7.

Blontank, P. "Fathur Used Fake ID to Obtain Passport," Jakarta Post, 28 January 2002.

[122] U.S. Immigration and Naturalization Service. "Estimates of the Unauthorized Immigrant Population Residing in the United States." [http://www.immigration.gov]. p. 9. Accessed 21 March 2003.

[123] Migration Policy Institute, Accessed 19 March 2003.

believes that "Muslims with political grievances" committed fourteen of the fifteen lethal and politically motivated attacks on Americans abroad in 2002.[124] Furthermore, in Europe—where postwar labor shortages encouraged Turks, Algerians, Moroccans, Tunisians, and Pakistanis to immigrate from 1950-1970 and to bring their families in the 1970s—the Muslim population is three times larger than in the United States. This fact by itself means nothing, and most Muslims in both Europe and the United States are nonviolent and obey the law. Still, U.S. ties to Israel remain strong, which means anti-Semitic incidents in Europe have indirect ties to how Muslims feel about Americans.[125]

> . . . the communities most resentful of Israel in Europe are Muslim. The perpetrators of anti-Semitic incidents in France are not right-wing extremists protecting the "French race" from Jewish contamination: The 400 or so anti-Semitic incidents documented in the country during 2001 have mostly been attributed to Muslim youth of North African origin. Such incidents tend to spike upwards during times of Israeli-Palestinian trouble—further proof of the Muslim role.[126]

People who fit this description are increasingly being apprehended at the border. Ten Egyptians were recently arrested near Douglas, AZ. Only hours after 9/11, an anonymous tip resulted in the arrest of 41 undocumented Iraqis ready to cross into the United States. Two weeks later, 13 Yemeni nationals were apprehended in a Mexican hotel across the border from Douglas, AZ.[127] One border patrol agent, when interviewed

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[124] Wright, J. "Lethal attacks on Americans sharply up in 2002," Reuters, Washington, D.C., 30 April 2003.

[125] Taspinar, O. "Europe's Muslim Street," Foreign Policy, March/April 2003, pp. 76-77.

[126] Ibid, p. 77.

[127] Walley, J.Z. "Coming to America: Arab terrorists crossing border." The Paragon Foundation, [http://www.geocities.com], pp. 2-3. Accessed 15 March 2003.

recently, claimed that "one out of ten arrests" on the border involved someone from "a country like Yemen or Egypt."[128]

The national security threat posed by illegal immigration is becoming more sophisticated in nature. In 1998, an Iraqi-born human smuggler, George Tajirian, was sentenced to 13 years in prison for running a human smuggling ring that brought over 1,000 illegal aliens into the United States from Middle Eastern countries. The smugglers used staging areas in Greece, Thailand, Cuba, Ecuador, and ultimately Mexico before sneaking their clients (from places such as Palestine, Jordan, Syria, Iraq, and Yemen) across the U.S.-Mexican border. Convincing evidence at the trial indicated that many of Tajirian's clients had ties to terrorist organizations or had criminal histories.[129]

Another smuggling ring attempting to bring Middle Eastern people across the Mexican border was broken up in December 2002. The ringleader was a Mexican national of Lebanese descent. Although none of the illegal immigrants who used this smuggling operation to get into the country have yet been identified with terrorism, the fact that such a route existed is cause for concern. The potential for terrorists to exploit such an operation for their own purposes is entirely feasible.[130]

The number of illegal aliens who are citizens of nations currently on the State Department's watch list of countries with ties to the Al Queda terrorist cell[131] that were formally removed

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128 Ibid, p. 2.

129 Dillon, S. "Iraqi Accused of Smuggling Hundreds in MidEast to U.S.," New York Times, 26 October 2001, p. A-18; Smith, Summer 2002, pp. 5-6.

130 Taylor, M. & Dibble, S. "Tijuana man charged with heading up a smuggle ring; Middle Eastern immigrants were helped, officials believe." San Diego Union-Tribune, 14 December 2002, p. B-1.

131 D'Agostino, J.A. "7,000 Men Recently Entered from Al Queda 'Watch' Countries." [http://www.humaneventsonline.com]. 17 December 2001.

from the United States increased every year from 1995-2000 (see figure 14). Furthermore, most of the countries on that watch list are from Asia, a region currently tied with South America for having the second-largest undocumented population in the United States (see figure 13).

While the increase may simply be a function of the overall increase in immigration discussed earlier rather than an explosion of terrorists trying to sneak across the border, it is nonetheless undeniable that increased numbers of aliens from countries tied to terrorism are reaching North America with the intent to cross into the United States. Again, immigration advocates are correct in pointing out that most immigrants (legal or illegal) are harmless. However, the Camarota study and the trends outlined above is cause for concern. After all, it only takes one terrorist to render all the harmless immigration patterns irrelevant. Indeed, it only took a handful of them on September 11, 2001 to temporarily bring the most powerful nation on earth to its knees, completely rewrite the agenda of the current administration, and forever change the way many Americans view their international borders.

So is illegal immigration really a national security threat? It is probably not as big of a problem as the huge knee-jerk reaction after 9/11 would indicate. After all, just prior to the 9/11 attacks, President Bush was reportedly getting closer to an immigration deal with President Vicente Fox of Mexico that included amnesty for existing undocumented workers, more guest worker programs, and the like.[132] Nor did the frenzied, emotional demands by some talk show hosts, Congressional delegates, and newspaper editorials to reform the

[132] Barone, 05 August 2002, p. 34.

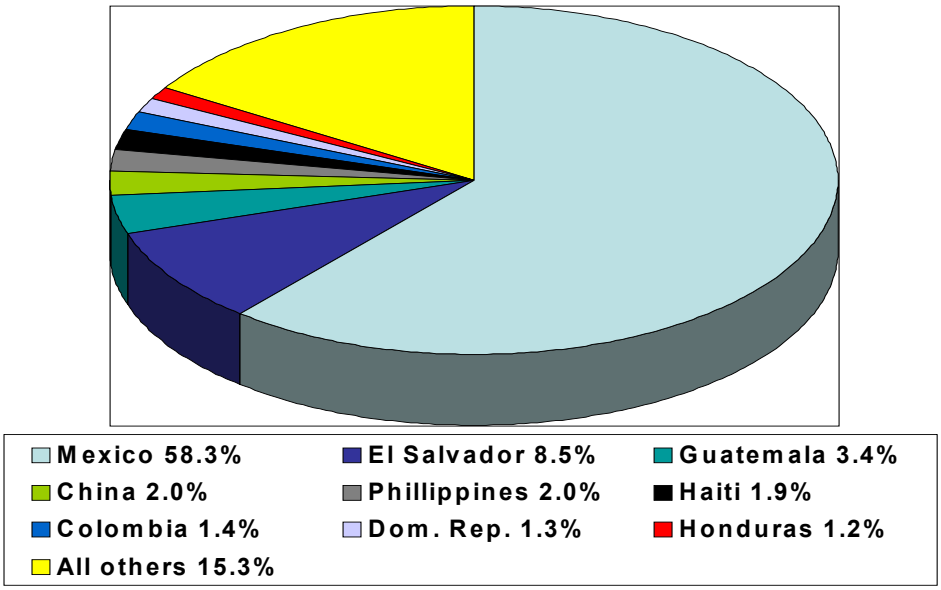

Figure 11. Estimated unauthorized resident population Top 10 countries, 1990

From: U.S. Immigration and Naturalization Service. "Estimates of the Unauthorized Immigrant Population Residing in the United States." [http://www.immigration.gov/graphics/aboutus/statistics/lll_Report_1211.pdf]. p. 9. Accessed 21 March 2003.

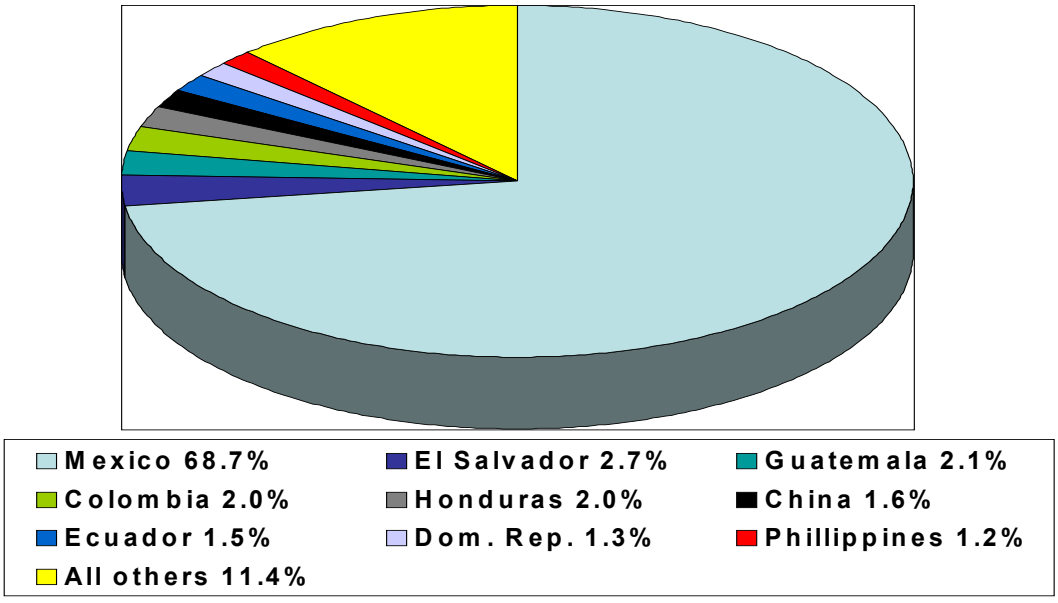

Figure 12. Estimated unauthorized resident population Top 10 countries, 2000

From: U.S. Immigration and Naturalization Service. "Estimates of the Unauthorized Immigrant Population Residing in the United States." [http://www.immigration.gov/graphics/aboutus/statistics/lll_Report_1211.pdf]. p. 9. Accessed 21 March 2003.

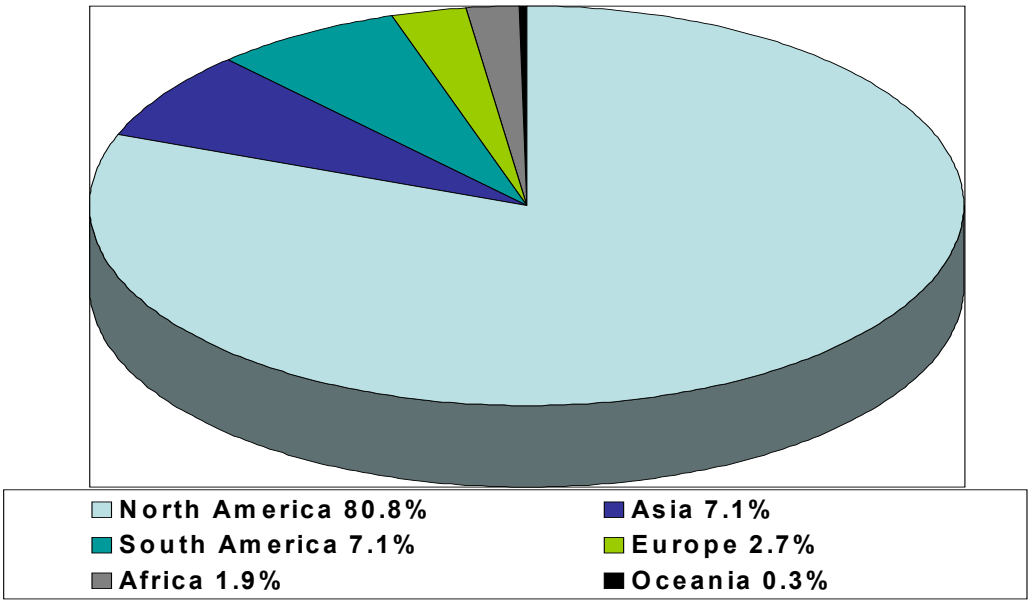

Figure 13. Unauthorized resident population by region, 2000

From: U.S. Immigration and Naturalization Service. "Estimates of the Unauthorized Immigrant Population Residing in the United States." [http://www.immigration.gov/graphics/aboutus/statistics/lll_Report_1211.pdf]. p. 9. Accessed 21 March 2003.

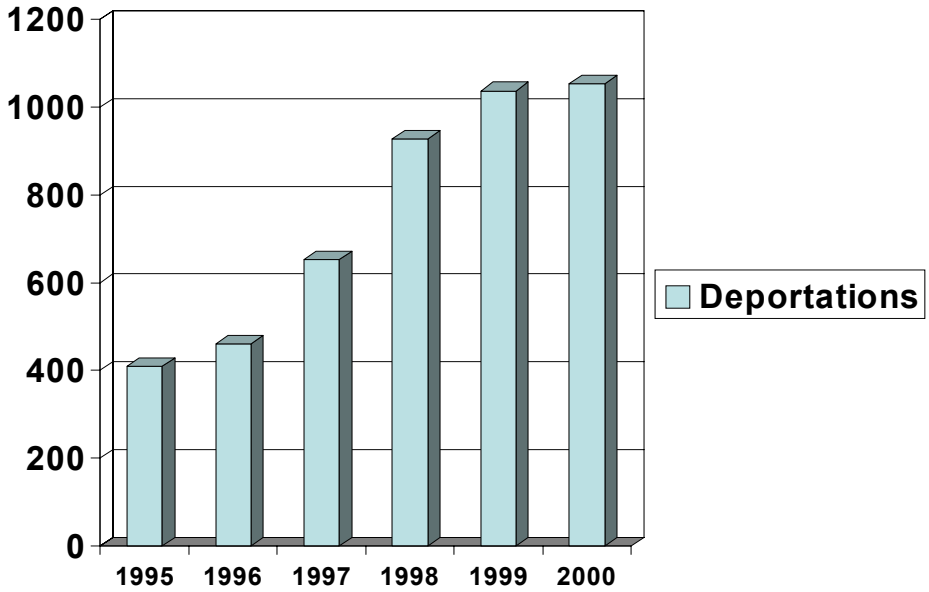

Figure 14. Numbers of formal removals of illegal aliens from countries with ties to Al Queda terrorist cells

From: INS Statistical Yearbook, 2000.

INS, militarize the border, and crack down on immigration in general exist to the extent that they did after 9/11. If the national security threat posed by illegal immigration had really been as serious as post 9/11 hoopla suggested it was, then there would have been similar proposals throughout the 1990s and leading up to the attacks, not just immediately after the attacks. Nevertheless, the evidence presented above suggests that illegal immigration can no longer be viewed in isolation from security of the homeland. The practices, policies, and procedures of our overseas consulates, immigration officials, and border enforcement personnel exist in a precarious time in which measures to stop illegal immigration have potential national security implications.

Given the evidence presented in this section, it can be concluded that there is indeed a correlation between illegal immigration and terrorism committed *within the United States*. How strong is that correlation? This study does not employ the use of statistical analysis to quantify the link between illegal immigration and terrorism. Further research should take a closer look at empirically quantifying the correlation between illegal immigration and terrorism committed inside the United States. Nevertheless, the conclusion here is that if measures are not taken to continue unabashedly enforcing our nation's existing immigration laws, the United States can probably expect more terrorist attacks within the United States in the future.

Assuming that a link does exist between illegal immigration and terrorism committed on U.S. soil, what is the most effective way for the United States to enforce immigration laws? What was the strategy of the U.S. border patrol prior to 1994? What was their strategy from 1994-2003? Does a strategy that includes

increasing the manpower and financial resources to border security agencies prevent or deter illegal immigration (thereby preventing terrorist attacks on U.S. soil)? These questions are answered in the following section.

E. PREVENTION THROUGH DETERRENCE

1. Operation "Hold the Line"

In October 1993, Silvestre Reyes successfully convinced top INS officials to experiment with a fundamentally different strategy to controlling the border. The laboratory for Reyes' experiment was El Paso, Texas, one of the two most heavily trafficked corridors for illegal aliens along the southwest border (apprehension rates ranged from 250,000 to 350,000 per year). Reyes put administrative duties aside, moved nearly every agent he had up to the border to create a visible presence (400/650 agents were assigned to line duty), mandated overtime, and manned the border 24/7 with a virtual wall of law enforcement personnel in an all-encompassing full court press to deter illegal aliens from crossing the border. Even the name of the month-long trial, "Operation Blockade," (later renamed "Operation Hold the Line") signified the Border Patrol's resolve to plug the hole of undocumented aliens flowing into El Paso. The operation was too resource-intensive to continue indefinitely, but the approach was a success. It caught the eyes and ears of legislators and earned the widespread support of the local community.[133]

2. The Southwest Border Strategy of Deterrence

The origins of the border patrol's current multi-year, multi-phase strategy to wrest back control of the U.S. southwest border began with the efforts of Silvestre Reyes. The strategy—

133 *Border Security:* Hearing before the Subcommittee on Immigration and Claims of the Committee of the Judiciary, U.S. House of Representatives, 104th Cong., 1-15 (10 March 1995).

developed during the Clinton administration under the auspices of INS Commissioner Doris Meisner, a proven scholar in immigration affairs—was significantly different from previous practice. Previous efforts had concentrated on apprehending illegal aliens soon after their entry into the country.[134]

The new strategy, unveiled in late 1994, focused on making the odds of successfully crossing the border appear so unlikely that no one would even try. Agents were tasked with creating a presence and removing easy access to entry. In short, the INS would practice "prevention through deterrence."[135] Significant objectives of the strategy were: (1) provide adequate resources to "deter, detect, and apprehend" illegal aliens; (2) Take back control of major entry corridors; (3) Seal off the most heavily trafficked routes of illegal entry, thereby shifting traffic to lesser-used, more rural, and more remote corridors where agents would have the advantage; (4) prevent illegal crossings at the ports of entry; and (5) provide workable ports of entry that facilitated legitimate travel and commerce.[136] To INS officials who lauded the program "the goal [was] clear: a border that deters illegal immigration, alien smuggling, and drug trafficking and facilitates legal immigration."[137]

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134 Ibid, pp. 21-30.

U.S. Border Patrol's Implementation of 'Operation Gatekeeper': Hearing before the Subcommittee on Immigration of the Committee of the Judiciary, U.S. House of Representatives, 104th Cong., 3 (9 August 1996).

GAO-GGD-96-65: General Accounting Office, "Border Patrol: Staffing and Enforcement Activities." p. 5-7, Washington, D.C., August 2001.

135 *What Resources Should Be Used to Control Illegal Immigration at the Border and Within the Interior?:* Hearing before the Subcommittee on Immigration of the Committee of the Judiciary, U.S. House of Representatives, 104th Cong., 6 (12 June 1995).

136 U.S. Department of Justice, Immigration and Naturalization Service, "Building a Comprehensive Southwest Border Enforcement Strategy," p. 3, 21-30, Washington, D.C. June 1996.

137 *U.S. Border Patrol's Implementation of 'Operation Gatekeeper,'* 09 August 1996, p. 64.

A significant piece of the strategy involved increased resources for the beleaguered border patrol (objective one above calls for "adequate resources . . . to deter, detect, and apprehend illegal aliens"). Implementation of this strategy during the period from 1994-2001 makes a good case study of whether or not increasing manpower, finances, and resources is the best way to target illegal immigration for a couple of reasons. First, the border patrol traditionally has been understaffed, undermanned, and under funded. A former INS commissioner once referred to his agency as the unwanted "ugly stepchild of the justice department."[138] Another border patrol sector chief testified that the most technological weapon he had prior to 1994 was a pen.[139] Second, as will be shown, the period 1994-2001 represents a phenomenal increase in manpower, resources, and finances for the U.S. border patrol. Therefore, this period appears particularly suited to study the effects of increased manpower and resources on stemming illegal immigration, since it is a historical time period in which Congress has gone to extraordinary lengths to increase funding.

Full implementation of the deterrence strategy involved four main phases that progressively targeted the most problematic areas and then extended outward.[140] Phase 1 entailed regaining control of the two most heavily trafficked U.S.

138 Magana, L. "Immigration Agencies: How Immigration Agencies Must Straddle the Border." Nottingham: Trent University. p. 17. [http://human.ntu.ac.uk/im/docs/LisaMagana.doc]. Accessed 24 March 2003.

139 *Enhancing Border Security:* Hearing before the Subcommittee on Immigration of the Committee on the Judiciary, U.S. Senate, 106th Cong., 47, (10 February 2000).

140 Ibid, p. 3

GAO-GGD-95-30: General Accounting Office, "Revised Strategy is Showing Some Positive Results." p. 26. Washington, D.C. December, 1994.

GAO-01-842: General Accounting Office, "INS' Southwest Border Strategy: Resource and Impact Issues Remain After Seven Years." p. 4, Washington, D.C., August 2001.

sectors—San Diego, CA and El Paso, TX. These two sectors had historically recorded some two-thirds of all annual apprehensions by the border patrol.[141] The worst stretch was the first 14 miles in Imperial Beach, beginning at the Pacific Ocean and extending east (25% of all arrests occurred here).

Phase 1 (1994-1997) entailed the addition of 800 new agents from 1993-1995 (and requests for 700 more in 1996), 140 new support personnel to free up agents from paperwork, 25 new IR scopes, hundreds of sensors/radios, 19 miles of corrugated steel fence line, the installation of computers in over 283 stations, and over 1,000 vehicles. Another 85 agents were held in reserve to react to unexpected traffic shifts. Most of these resources were concentrated in El Paso and Imperial Beach.[142]

Due to terrain and population differences, Reyes' virtual blockade approach employed in "Hold the Line" was modified somewhat for San Diego's "Gatekeeper." Most agents were sent within two miles of the border in three lines, each line farther back from the border. Crossers who were not deterred visibly were apprehended within a mile of the border and immediately removed. Agents hoped that deterrence would occur as word filtered back to Mexico that crossing illegally was a losing battle.[143] This multi-tiered, back-up approach was described as a strategy of "guaranteed apprehension."[144] However, the broad strategy of "prevention through deterrence" generally still applied, even though local tactics varied slightly.

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141 The San Diego sector had reached an estimated one million illegal entries per year immediately prior to implementation of Gatekeeper. *Border Security*, 10 March 1995, pp. 3, 24.

142 Ibid, pp. 21-30.

143 Ibid, pp. 1-21.

144 Ibid, p. 15.

Another significant addition during this time period (impossible without the increased funding by Congress) was the implementation in some stations of INS' automated fingerprinting system, known by the acronym IDENT. IDENT allowed agents to fingerprint apprehended aliens and store it in a database as a sure-fire way to catch repeat offenders who tried to cross illegally again. Until 1995, illegal aliens who tried to cross more than once could successfully hide their identity and avoid the felony charges that by law accompany repeat offenders.

Phase 2 focused on the Tucson, AZ sector and three sectors in south Texas—Del Rio, Laredo, and McAllen. Resources were continually balanced in an effort to maintain control of the San Diego and El Paso sectors while extending control to these latter sectors. Phase 3 (ongoing) targets the rest of the southwest border—Marfa, Yuma, and El Centro. Finally, phase 4 (not implemented yet) is intended to extend control to the U.S. northern and coastal borders.

The INS predicted six consequences of the shift in strategy. First, an initial rise in arrests would occur as illegal aliens experienced opposition, followed by a decrease in arrests. Second, illegal traffic flow would shift from the urban areas (where illegal aliens could blend in) to other low-volume, rural, remote, and more rugged areas, where agents presumably would have a better chance to make apprehensions. Third, there would be an increase in the number of attempts to use fraudulent documents to gain admission at U.S. ports of entry. Fourth, due to the more difficult circumstances, human smuggling fees would increase. Fifth, there would be an eventual decrease in the number of attempted re-entries (recidivism) as people began to realize that crossing illegally

was hopeless. Sixth, local crime along the border would diminish. The INS claimed that materialization of these predictions would indicate that deterrence had indeed taken effect. Therefore, they made plans to use these indicators as empirical evidence of success or failure of the strategy.[145]

3. New Manpower/Resources for the Border Patrol

The 1990s were a decade in which political will in Congress was matching the desire of the INS and the public to crack down on illegal immigration. As such, funding and support reached record highs. Figure 15 shows the unparalleled increase in the number of authorized border patrol agents along the border. Agent manpower tripled from 1993 to 2000. Likewise, immigration inspectors stationed at ports of entry increased from 1,117 to 1,865, a 67% increase. Currently, the INS fields more agents authorized to hold a gun and make arrests than any other federal agency. Border patrol agents and immigration inspectors are among the top ten fastest growing federal government jobs.[146]

The INS experienced a dramatic rise in financial benefits also. The INS budget tripled from 1993 to 1999 ($1.5 billion to $4.2 billion). From 1994 to 1998, $3.3 billion was spent on upgrading the border patrol. The president's budget proposals for the border patrol alone (not including the rest of the INS) were $917 million in 1999 and reached $1 billion in 2000.[147]

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145 GAO-GGD-99-44: General Accounting Office, "Illegal Immigration: Status of Southwest Border Strategy Implementation." pp. 17-19. Washington, D.C. 19 May 1999; GAO-GGD-95-30, December 1994, p. 26.

146 Andreas, P. Border Games: Policing the U.S.-Mexico Divide. pp. 89-95. Cornell University Press, 2000.

147 *The Need for Additional Border Patrol at the Northern and Southern Borders:* Hearing before the Subcommittee on Immigration of the Committee of the Judiciary, U.S. House of Representatives, 106th Cong., 11 (27 April 1999).

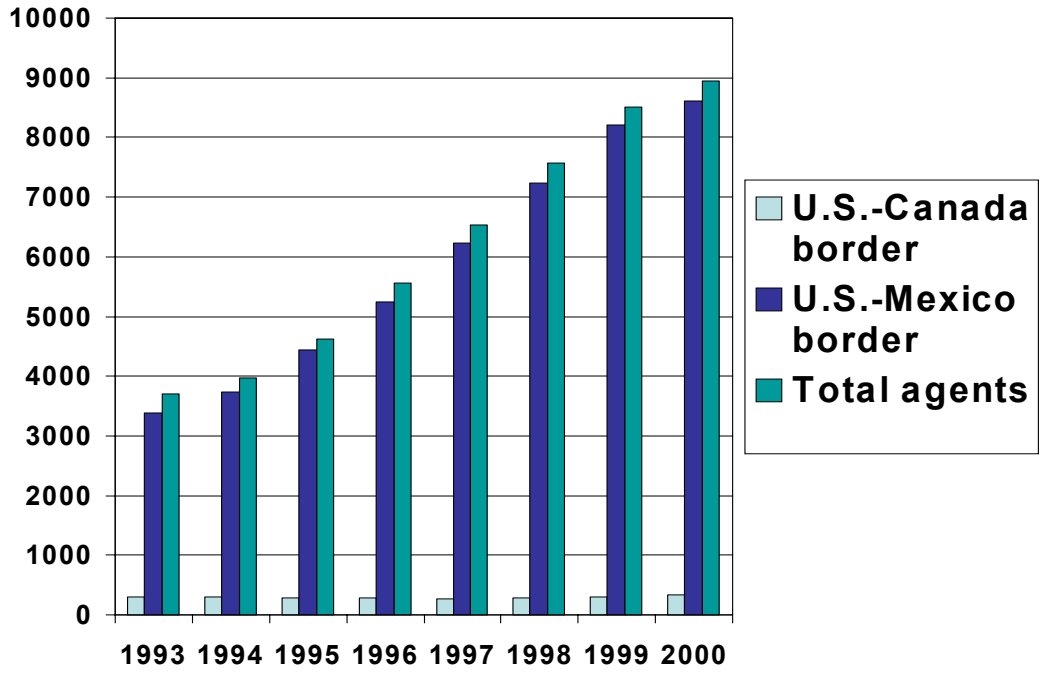

Figure 15. Authorized border patrol agents, 1993-2000

From: General Accounting Office (GAO-01-842). "INS' Southwest Border Strategy: Resource and Impact Issues Remain After Seven Years." Washington, D.C., August 2001. p. 4.
Enhancing Border Security. Hearing before the Subcommittee on Immigration of the Committee on the Judiciary, U.S. Senate, 106th Cong., p. 47 (10 February 2000).

The border patrol facelift included deploying a plethora of technological innovations, upgrading transportation needs, and building physical barriers. For example, from 1989 to 1992, 58 helicopters and 43 fixed-wing aircraft were added to INS inventories.[148] From October 1994 to June 1998, there were dramatic increases in the deployed numbers of IR scopes (12 to 599) and ground sensors (448 to 1214). Computer inventories jumped from 100 to 1350. Vehicle numbers rose from 700 to

148 Dunn, T.J. The Militarization of the U.S.-Mexico Border 1978-1992: Low-intensity Conflict Doctrine Comes Home. Austin, TX: Center for Mexican American Studies, University of Texas at Austin. 1996.

1765.[149] Automated fingerprinting programs, video surveillance units, and mapping systems were diligently expanded.[150]

Finally, in 1990 the INS began a multi-year construction project, spurred on by recommendations from a Sandia National Laboratories study that espoused multiple physical barriers vice increases in manpower for a variety of reasons: deterrent effects; early detection and delay of escape; and the channeling effect it would have into advantageous areas for the border patrol.[151] A 10-foot high, corrugated steel fence in the San Diego sector was finished in late 1993 with plans to use fencing in other key urban sectors.[152] A road paralleling the fence was completed in November 1992 to allow better access to the border and along the fence line.[153] By July 1997, 46 miles of fencing had been completed and included sectors such as Yuma and Tucson (as well as double barriers in San Diego).[154] By May 2001, 76 miles of fencing had been completed along the southwest border, with an additional 32 miles planned.[155]

Obviously, the new strategy was a monumental attempt to stop illegal immigrants dead in their tracks at the border with a virtual wall of fencing, technology, and people (in other words, increased funding/manpower). As an immigration official stated in congressional testimony, the goal was "to ensure maximum border enforcement through *unprecedented enhancements of*

149 Ibid, pp. 89-95

150 GAO-GGD-99-44, 19 May 1999, pp. 1-3.

151 Sandia National Laboratories. "Systematic Analysis of the Southwest Border." January 1993; GAO-GGD-95-30, December 1994, p. 1, 12-14.

152 Ibid, p. 17.

153 J 21.2:B 64/4: Immigration and Naturalization Service, "Building a Comprehensive Southwest Border Enforcement Strategy." p. 12-13, Washington DC, June 1996.

154 GAO-GGD-99-44, 19 May 1999, p. 11-12.

155 GAO-01-842, August 2001, p. 8.

personnel and technology to deter people from trying to cross the border illegally (italics and underline my own)."[156]

Stated differently, since 1994, the border patrol and the government's approach to solving illegal immigration have been primarily to throw money at the problem. While this statement may seem too simplistic, perhaps underestimates the perceived value of the change in tactics, and possibly ignores other variables (e.g., technology, inter-agency and bilateral cooperation) there is no denying that none of it would be possible without the record personnel and allocation increases.

It is safe to say that this case study effectively isolates the variable of organizational changes from the variable of increased manpower/resources. The INS did not officially become part of the Department of Homeland Security, with separate chains of command for service and enforcement responsibilities until just within the past couple of months. Therefore, although there have been repeated recommendations in the past to restructure the INS, in practice its historical organizational structure remained intact during the time period covered by this case study. Therefore, the success or failure of the southwest border strategy (at least during the years 1994-2001) cannot be attributed to effective organizational changes.

It is more difficult to make the same claim for variables such as technology and cooperation. For example, much of the increased funding was spent on technological initiatives such as IDENT, IR scopes, human sensors, ISIS, and the like. Furthermore, many bilateral cooperative efforts between the United States and Mexico, as well as evidence of differing degrees of improved inter-agency cooperation occurred during the

156 *Border* Security, 10 March 1995, p. 30.

1993-2001 period. However, many of the technological and cooperative initiatives represent pilot programs and/or were not fully implemented across all sectors until the latter part of the decade. Therefore, it is this author's contention that some preliminary conclusions, if carefully prepared, can still be made about the prospects of high levels of funding and manpower for border agencies as a solution to illegal immigration. The next section addresses the effectiveness of relying on increased manpower and resources to stop illegal immigration.

4. Effectiveness of the Southwest Border Strategy

Congressional mandate requires that the INS' "prevention through deterrence" strategy be periodically measured to ascertain its effectiveness. Three studies conducted by the General Accounting Office have been the primary means by which this mandate has been fulfilled. The tone of these reports ranged from guarded optimism early on in the process to inconclusiveness and guarded pessimism as time passed.[157]

In general terms, most of the six outcomes predicted by the INS did occur as promised. Apprehension rates did decrease in the heavily trafficked San Diego and El Paso sectors and shifted to less heavily trafficked sectors, as expected (see figure 16). El Paso's apprehension rates fell by a whopping 70%. The San Diego sector rate fell by 25%, which included a 40% reduction in the most heavily trafficked sector in the United States, the 14-mile "Imperial Beach" area. The San Diego sector remains under control today, with only 12% of arrests occurring there. In fact, there are recent reports of agents becoming bored with their jobs in the San Diego sector. For example, from 1996-

[157] GAO-GGD-95-30, December 1994; GAO-GGD-99-44, 19 May 1999; GAO-01-842, August 2001.

2000, 1189 agents were lost to attrition and a 1998 survey found that 60% of agents were actively looking for work elsewhere.

Illegal documents intercepted at land entry ports initially increased by 500%. Following phase 1, the number of false claims of citizenship and false documents at ports of entry in the San Diego sector rose to 200 per day. Likewise, between 1997 and 1998, these same measures increased by 4% and 17%.

Smuggling became more prevalent as aliens realized the border was not as easy to cross. INS officials reported anecdotal reports of smuggling fees as high as $1,000-$1,500 (prior to 1994, the figure averaged around $250). Prosecutions of migrant smuggling cases jumped from 33 to 233 over a three-

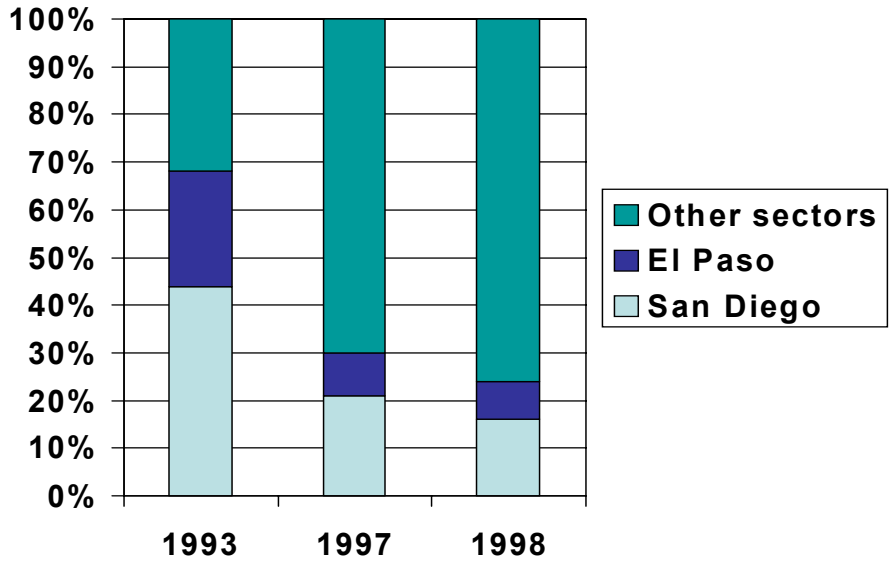

Figure 16. Shift in percentages of SW border apprehensions to rural sectors after phase 1 ops.

From: GAO-GGD-99-44: General Accounting Office, "Status of Southwest Border Strategy Implementation." p. 21. Washington DC. 19 May 1999.

year period (1993-96). In San Diego, Operation Disruption was launched to combat the increase in human trafficking. Smuggling

rings and staging areas were identified, drop houses were pursued and eliminated, and smuggling entry trends were monitored. In May 1995 alone, 500 alien smugglers and 700 vehicles were seized, and from May 1995 to May 1999, an additional 1900 smugglers were arrested. By the end of the decade, an estimated 75% of illegal aliens used a smuggler.

Finally, there were anecdotal and empirical reports of decreased local crime figures. INS officials claimed that in the San Diego sector, overall crime was down 30%, violent crime was down 21%, and property crime was down 30%. Other reductions occurred with homicide, rape, robbery, aggravated assault, residential burglary, and vehicle theft, which all decreased by 11-34% by 1995, following "Gatekeeper." There were no murders along the border in San Diego in 1994, as opposed to 10 in 1990. A Nogales county attorney reported "a 64% decline in the number of felony filings against Mexican illegal aliens between 1998 and 2000" after the deterrence strategy was extended to Nogales. In Brownsville, illegal aliens were blamed for daily muggings at a local park near the Rio Grande River, but now the park is deemed safe again.[158]

Despite these apparent victories, the GAO's reports did not fully endorse the strategy, mostly because they felt the data being used by the INS to measure success was not objective and measurable. For example, does an increase in apprehensions really mean more illegal aliens are coming across the border, or does it just as easily suggest better law enforcement? Furthermore, do increased fraudulent attempts at ports of entry

158 *U.S. Border Patrol's Implementation of 'Operation Gatekeeper,'* 09 August 1996, p. 64; GAO-01-842, August 2001, pp. 19, 21; *Border* Security, 10 March 1995, pp. 51-2, 64; Andreas, 2000, pp. 95-98; Valeron, M. "Now Fleeing the Border Patrol: Its own Agents," Wall Street Journal, pp. B1-B2, 4 January 2000.

suggest more aliens are trying to cross there vice between ports of entry or do those figures simply represent more effort to detect fraud? As mentioned above, the number of inspectors at ports of entry was increased concurrent with the implementation of the strategy in anticipation of this shift, so the answer to that question is ambiguous. Additionally, the crime rates cited were not deemed to be valid by the GAO because they were locally collected by other agencies that did not distinguish between crimes committed by aliens versus crime committed by U.S. citizens. Finally, although the INS anecdotally claimed recidivism was down significantly due to Operations "Gatekeeper" and "Hold the Line," it was unable to back up its claim that repeat crossers were being reduced at the border because they experienced difficulty in fully implementing their automated fingerprinting system (IDENT) across the board and had no data for the GAO, even by the year 2001.[159] The most recent GAO report is particularly critical of INS methodology:

> Whether INS' strategy has deterred illegal entry overall or whether it has merely shifted traffic to different locations is unclear . . . INS has not conducted a comprehensive, systematic evaluation of the strategy's effectiveness in detecting and deterring aliens from entering illegally, as we recommended in our 1997 report. With no baseline data to compare results against and with the passage of 7 years since INS began implementing its Southwest border strategy, undertaking such an evaluation becomes increasingly difficult. By necessity, the evaluation would be a retrospective study that relied on available data rather than systematically gathered evaluation data . . . As a result, what effect the strategy has had on overall illegal immigration along the Southwest border may never be fully known.[160]

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[159] GAO-GGD-99-44, 19 May 1999, pp. 20-25; GAO-01-842, August 2001.

[160] Ibid, p. 14.

The GAO has implored the INS to begin using the automated fingerprint data being accumulated since 1995 in order to reach more empirically valid results:

> Although illegal alien apprehensions have shifted, there is no clear indication that overall illegal entry into the United States along the Southwest border has declined. INS' current efforts to measure the effectiveness of its border control efforts could be enhanced by analyzing data in its IDENT system. These data offer INS an opportunity to develop additional performance indicators that could be incorporated into its Annual Performance Plan review process and could help INS assess whether its border control efforts are associated with an overall reduction in the flow of illegal aliens across the border. Borderwide analysis of the IDENT data could be used to address several important questions related to illegal entry.[161]

The INS has since made an effort at improving its empirical framework for analysis. They recently hired Advancia Corporation to study the southwest border strategy with more empirical rigor. Advancia did a very thorough literature review and employed a weighted, mathematical system to determine the most empirically valid indicators for use in studying the effects of the southwest border strategy. Advancia claimed that coming up with more objective, measurable indicators of success or failure was the first step to determining the effectiveness of the "prevention through deterrence" strategy. Some of the initial indicators in use by the INS (apprehension rates, shifts in traffic flows, and increases in smuggling activity) received high ratings as valid indicators by Advancia. Others did not (local crime rates, increased smuggling fees, and increased port of entry fraud) so Advancia will not be using them in their

[161] Ibid, p. 28.

future studies.[162] However, this study was not completed until 2001, and therefore the new objective measures have not been applied yet. Nor are Advancia's reports easily accessible to the public. Thus, the GAO reports and existing literature available in public libraries and on the Internet weighed heavily in the conclusions that follow in Chapter VI.

Other analyses of border enforcement during the 1990s have been equally as skeptical as the GAO reports. Dunn identifies several trends of INS activities from the period of 1989 to 1992 (immediately before the implementation of "Hold the Line" and "Gatekeeper"). These included the following: enforcement became more serious and severe; funding increased significantly while manning increased only slightly; detention of criminal aliens became increasingly emphasized; construction of physical barriers and additional detention space rose; the INS became increasingly associated with drug enforcement at the expense of illegal immigration enforcement; and the border became increasingly militarized.[163]

In his view, these trends ultimately resulted in the following outcomes. First, there were dramatic reductions in alien apprehensions in certain areas (San Diego and El Paso) and shifts in traffic flows. Second, while some improvement with regard to abusive behavior by border patrol agents occurred in some areas, other areas registered increased abusive behavior (there were 971 documented human rights abuses by border agencies from 1989-91, a 57% increase in civil rights cases during those same years, and 90 reported border patrol shooting incidents in 1990). Third, there were severe growing pains in

[162] Advancia Corporation. Oklahoma City, OK. "Border Patrol Strategy Analysis." June 19, 2001.

[163] Dunn, 1996, pp. 63-83.

the INS, resulting in mismanagement and overall lack of financial responsibility. Finally, there were an increased number of injuries to illegal aliens as they tried desperately to scale walls and canyons, as well as cross deserted, remote areas in severe climates.[164]

Andreas, who studied the entire decade of the 1990s, was equally as skeptical. In his view, there has been an escalation in border policing during the decade. The characterization of this escalation has changed from a historical focus of deterring armies concomitant with miniscule political priority to a modern focus on deterring drugs and illegal immigrants concomitant with a high-profile political priority, including an increasing link between law enforcement and national security institutions. His conclusion is that the expansion in border policing has not actually deterred illegal immigration, but has rather created an image of a safer, more orderly border with the illusion of increased territorial sovereignty.[165] In his own words:

> In a relatively short period of time, border control has changed from a low-intensity, low-maintenance, and politically marginal activity to a high-intensity, high-maintenance campaign commanding enormous political attention on both sides of the territorial divide.[166]

At the same time, he also documents several unwanted consequences of the escalated border enforcement activities. First, human smuggling continued to grow, while the skill and sophistication of smuggling rings became unprecedented. Smugglers now commonly use semi-trucks to blend in with the increased NAFTA trucking, and they even use underground tunnels.

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164 Ibid, p. 176.

165 Andreas, 2000, pp. 3-4, 51, 85, 105-11, preface.

166 Ibid, p. vii, preface.

Furthermore, their own technology is many times as good as or even better than that of the border patrol. Second, the major growth in border patrol personnel has resulted in a less experienced cadre of agents, with increased potential for bribery and corruption. Third, Andreas agrees with Dunn with respect to the overall scale of migrant deaths (see figure 17), accidents, and human rights abuses over the years.[167]

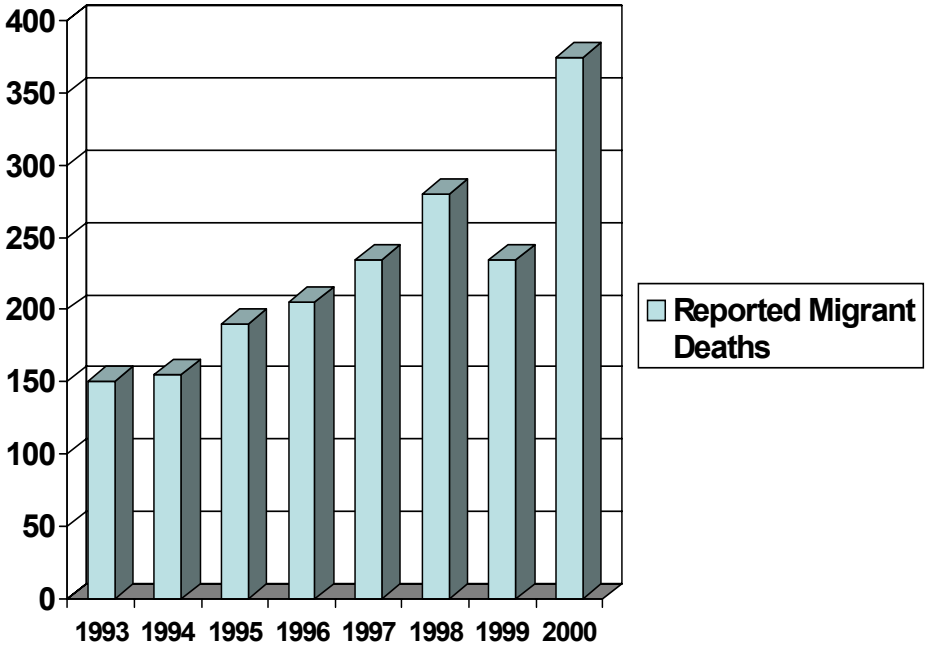

Figure 17. Migrant deaths: 1993-2000

From: Public Policy Institute of California. "Has Increased Border Enforcement Reduced Unauthorized Immigration?" [http://www.ppic.org/content/pubs/RB_702BRRB.pdf]. July 2002. Accessed 11 September 2003.

Other unexpected and unwanted side effects of the shift in traffic have been described in the literature as well. The San Diego sector began to be linked with an explosion of wildfires in East County forests resulting from alien campfires, as well as fires deliberately set for diversionary purposes. The number

[167] Ibid, pp. 95-6, 148.

of wildfires in California was 12 times more likely after implementation of Operation Gatekeeper as compared to pre-Operation Gatekeeper levels, at a predicted hospital cost of $40 million to California taxpayers. Many local politicians in counties east of Imperial Beach felt the wildfires were the result of the new strategy because it shifted traffic routes east into their forests and canyons.[168]

Additionally, during phase 2, the INS did not have enough agents to cover the entire Tucson sector, so the small community of Douglas, AZ was overrun with illegal immigration due to the shift in traffic patterns from San Diego, causing intense public outcries, the formation of vigilante organizations, and a pattern of citizen arrests by gun-toting ranchers whose livestock and property were being destroyed. The apprehension rates in Douglas reached the historically high rates previously seen in San Diego and the Mexican mayor of Agua Prieta (Douglas' sister city) reported as many as 100,000 new migrants loitering for a chance to cross—this in a town whose normal population is around 120,000.[169]

The most telling sign of failure is the overall estimate of illegal aliens currently in the interior of the United States. As shown earlier, this number continues to grow. The estimated 8.5-11 million illegal aliens within U.S. borders seems to be the most conclusive proof that a monumental increase in manpower and resources for the border patrol did not stem illegal immigration in the 1990s. Despite the pockets of border where the INS has seemingly gained control of illegal immigration, in

168 *U.S. Border Patrol's Implementation of "Operation* Gatekeeper, 10 March 1995, pp. 188-90.

169 *The Need for Additional Border Patrol at the Northern and Southern Borders,* 27 April 1999, pp. 8-10; GAO-01-842, August 2001, pp. 19-20.

the final analysis, increases in manpower and resources alone has not prevented an overall increase in illegal immigration flows across the border.

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IV. TECHNOLOGY IN LAND BORDER SECURITY

A. WHY TECHNOLOGY: THE ISSUE DEFINED

Technology can be a very valuable tool in border security, primarily because it tends to be a force multiplier for border inspection agencies and because it saves precious time. The list of border-related technology is immense and includes: (1) computer-related options such as IDENT, ENFORCE, a computerized entry-exit tracking system (CIPRIS, then SEVIS, and currently NSEERS), and the Trilogy Project, a program designed to get government agencies working from the same database; (2) immigration enforcement technology such as the Geographical Information Systems Project, the Resource and Effectiveness Model (REM), "laser" ID cards, the Integrated Surveillance Intelligence System (ISIS), UAVs, aerostats, and the sensors, IR scopes, and night vision technology mentioned in this report; (3) technology that separate high-risk travelers from low-risk travelers and quickly move the legitimate travelers through POEs (NEXUS, SENTRI, FAST, the EZ-pass system); (4) transportation security options that separate well-known, low-risk and unknown, high-risk carriers and their cargo away from the border (ITDS, ACE); (5) an array of technology used directly at the border which quickly scans people or containers vice having to manually inspect them (VACIS, RVIS, biological/radiological particle detectors, personal radiation detectors, high explosives detection systems, isotope identifiers, X-Ray imaging machines, and fiberoptic scopes); and (6) cargo tracking systems that trace cargo from original loading points to destined locations.

The disadvantages of technology include the following: (1) technology can be expensive, and as demonstrated in chapter III,

increasing finances to border agencies doesn't always correlate completely with effectiveness; (2) technology is time-consuming to implement; (3) technology requires maintenance and skilled technicians/operators, which translates into a long-term funding commitment from Congress;[170] (4) some technology architectures are rigid, i.e., new or updated applications may not be feasible, thus ensuring an outdated system.

Most of these technologies, as well as current research and development on cargo security fit into four main areas:

- Cargo tracking systems.
- The improvement of locks, seals, and containers.
- The development of fast-working, non-intrusive X-Ray and detection devices.
- The integration of security into the new cargo handling and e-business supply chain management systems.[171]

The explosion of technological options for border and transportation security precludes fitting them all within this chapter's scope, but in many cases they do speed up border law enforcement and act as force multipliers. Currently, many of these options are experimental in nature or are still being tested as pilot programs. Many technological breakthroughs have already secured approval from Congress and are making a difference by both securing U.S. borders and reducing congestion at U.S. borders. Examples are the U.S. Custom's Automated

[170] Siskind, Susser, Haas & Divine Law Firm. "Congress Halts Funding of INS Fingerprint System." [http://www.visalaw.com/99oct/26oct99.html]. Accessed 22 March 2003.

[171] Badolato, November-December 2000, p. 16.

Commercial Environment (ACE),[172] its International Trade Data System (ITDS),[173] and electronic seals.[174]

This chapter analyzes some of the experimental or pilot programs under investigation by border security agencies and Congress. Emphasis will be placed on new technologies that demonstrate three characteristics: (1) those that secure U.S. borders from terrorism, but also speed the passage of legitimate people and goods across the border; (2) those that have not already secured long-term Congressional funding; (3) those that are either in the research and developmental stages or currently are deployed as pilot programs at certain ports; and (4) those that emphasize border security principles highlighted in Chapter II (e.g., risk management, pre-clearance, adding additional filters, and extending the border out). The purpose for focusing on these technologies is to provide recommendations for prioritizing the limited Congressional funds that are available, as well as to help answer the overall question posed by this thesis: what can be done to improve policy such that both national security and free trade in North America can coexist?

The research conducted in this chapter indicates that Congress should make long-term investments in three specific technologies. First, the Vehicle and Cargo Inspection System (VACIS) should eventually be installed at all land border ports, based on its significantly enhanced ability to prevent both

[172] ACE is a multi-year, multi-million dollar computer system that allows Customs to manage trade manifests electronically on the internet instead of with paper forms. It also allows businesses to electronically submit trade information in advance to Customs agents, so that lengthy inspection time is eliminated at the border.

[173] ITDS is a revolutionary subsystem of ACE allowing trade data to be captured electronically and shared among 104 government agencies, so that separate inspections are not required when a truck arrives at the border.

[174] Electronic seals are part of the Container Security Initiative, whereby containers are inspected at their port of origin and then electronically tracked via GPS after being locked for shipping to ensure integrity.

cargo and human smuggling while simultaneously lowering border wait times. Second, the Secure Electronic Network for Traveler's Rapid Inspection (SENTRI) should be expanded to include more ports of entry and should receive long-term Congressional funding commitments, based on its principles of secure risk management while simultaneously lowering wait times. Finally, biometrics should be used in land border security, but on a smaller scale than presently envisioned. It is argued here that the sheer volume of people crossing at U.S. borders precludes the use of a national ID card that employs biometric technology.

B. SECURING THE BORDER AGAINST SMUGGLED CONTRABAND

Possibly no government agency is more affected by the large trade volumes generated by NAFTA than U.S. Customs. Speeding commerce through border checkpoints has worried U.S. Customs since NAFTA passage. However, these worries became especially acute as an increased emphasis on security after 9/11 became a reality. Business revenue losses,[175] job cutbacks, and auto plant shutdowns[176] became imminent as increased security and inspections turned the border into a virtual parking lot[177] (see figure 6, p. 33) and damaged the economy.[178]

1. Explosives Detection Technology

a. Explosives Detection Technology Defined

Explosives detection falls into one of five categories:

[175] Barber, M. "Port gets a new tool to fight terrorism: High-tech system will help inspectors screen ships more quickly." Seattle Post-Intelligencer, 27 April 2002, p. B1 (news).

[176] Bartelme, T. "Ports called soft underbelly in war on terror." The Post and Courier, Charleston SC, 17 February 2002, p. 1A.

[177] Dougan, 04 November 2001, p. T3.

[178] Grunwald, M. "Economic Crossroads on the Line; Security Fears have U.S. and Canada Rethinking Life at 49th Parallel." Washington Post, 26 December 2001, p. A01 (A section).

Jackson, M. "Long Waits At Border Hurt Firms, Employees." San Diego Business Journal, 22:40, 01 October 2001, p. 1.

- Searching cargo or baggage by hand
- Canines trained to detect explosives by smell
- Explosive Trace Detection (ETD) Units
- Explosive Detection Device/System (EDD or EDS) Units
- Automated X-Ray Machines

Automated X-Ray machines apply only to baggage screening. Searching cargo by hand for possible bombs is obviously out of the question at land ports due to time constraints. Customs only searches 2% of commercial cargo entering the country as it currently stands. Therefore, only the remaining three options will be explored in this chapter.

Canines have the longest track record in explosives detection. Trained dogs are used not only to detect explosives, but also to sniff out drugs. Several different law enforcement agencies, such as Customs, DEA, and FBI use dogs for detection.

ETD units collect particles or vapors in order to analyze and determine the presence of explosives. The technological means for ETD include chemiluminescence, ion mobility spectroscopy, and gas chromatography. Unlike EDD and EDS units, which have traditionally only been used in airport settings, ETD units have been used on cargo containers in the past.[179]

Different types of ETD processes exist. *Directed ETD* occurs when another device, such as an X-Ray machine, indicates that something might potentially contain an explosive (hence, the bag/container is directed toward additional screening using trace detection). *Non-directed ETD* refers to the process by which the inside of a bag/container is checked without any

[179] NMAB-482-5: National Materials Advisory Board. "Assessment of Technologies Deployed to Improve Aviation Security: First Report." Washington, DC: National Academy Press. 2000. p. 3.

previous screening that indicated a potential problem. Finally, *open-bag ETD* occurs when the bag/container is opened and samples are taken from both the inside and the outside of the bag.[180]

EDD and EDS units belong to a family of technology known as bulk explosive detection equipment. This equipment includes anything "that remotely senses some physical or chemical property of an object under investigation to determine if it is an explosive"[181] and includes technologies such as radiography and tomography. The difference between an EDD and an EDS is that the former is only certified to detect one specific type of explosive while the latter is "composed of one or more integrated explosives-detection devices."[182]

The metrics that determine the usefulness of a device includes probability of detection rates, probability of false alarm rates, and throughput rates. In other words, how likely are irregularities detected when they are actually present, how often do alarms sound when no irregularity is present, and how fast does the job get done. FAA certification has not traditionally been granted in airport settings unless certain minimal standards are met in all three areas. Another consideration when weighing the options is cost. The following sections evaluate these technologies along these lines.

b. Pros/Cons of Explosives Detection

The primary advantage of any detection system is its ability to reliably inform an inspector whether contraband of one type or another is present without having to manually open a bag/container. Therefore, technological automation presumably

[180] Butler, V. & Poole Jr., R.W. "Re-thinking Checked Baggage Screening." Reason Public Policy Institute: 2002. pp. 3, 19.

[181] NMAB-482-5, 2000, p. 3.

[182] Ibid, p. 9.

speeds up the process while reassuring inspectors that no further action is necessary. In short, these systems presumably do more work than a human can do and don't get tired or bored. The question is, which system is the best at all four metrics mentioned earlier?

The following table compares some data available on these systems. Data for hand searches and automated X-Ray machines are included just for comparative purposes.

Type	Bags /hour*	False Positive Rate	False Negative Rate	Initial Cost/ Unit	Unit Operating Cost/Year
Hand Search	12-30	n.a.	n.a.	$0	$45K
Dogs	400	n.a.	n.a.	$20K	$50K
Trace (Closed)	76	n.a.	30-50%	$450K	$90K
Trace (Open)	24-30	n.a.	15%	$45K	$90K
Trace (Non-directed)	15-20	n.a.	15%	$45K	$90K
Automated X-ray**	1,200-1,500	n.a.	n.a.	$250-400K	$90K
EDS Machine	150-200	30%	n.a.	$1,000K	$510K

*not including time to "clear" false positives

**not certified for use in the United States, though approved in Europe

n.a. = no generally accepted figure available.

Table 1. Comparison of Explosive Detection Alternatives

From: Butler, V. & Poole Jr., R.W. "Re-thinking Checked Baggage Screening." Reason Public Policy Institute: 2002. p. 4.

Several disadvantages emerge after carefully perusing this chart. First, note the paucity of research regarding explosives detection technology. Despite the exaggerated claims of vendors, most of their products simply have not been proven in the laboratory, let alone field-tested in a real-time

environment.[183] In fact, none of the X-Ray based technologies on the market have passed the FAA bulk explosives-detection certification tests,[184] even though over 100 of these devices had already been deployed by 1999.[185] Only the CTX-5000 SP (a device made by InVision Inc. that depends on CT scans vice X-Ray scans) is certified in the lab environment by the FAA.[186] However, field tests at San Francisco International, even this device revealed excessive false alarm rates that ultimately took longer for security personnel to sort through than if they had never used the device at all.[187] ETD technology is even more immature than EDS technology, mostly because tests cannot be performed yet due to a lack of standard methodology for doing so.[188]

Second, devices that have been tested are very unreliable. They either miss legitimate contraband that really is there or sound an alarm when no contraband is present, introducing additional human interpretation into the process and causing excessive delays. The only somewhat decent false alarm rates occur with ETD, but only when both the inside and outside were swiped, thus significantly decreasing throughput rates. The only system with real applicability to land ports, i.e. those that detect concealed items and explosive residue/vapor on passengers themselves "pose a number of health, legal, operational, privacy, and convenience concerns."[189]

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[183] GAO/T-RCED/NSIAD-96-262: General Accounting Office. "Aviation Security: Technology's Role in Assessing Vulnerabilities." Washington DC, 19 September 1996, p. 6; Butler & Poole, Jr., 2002, pp. 4-5; NMAB 482-5, 2000, pp. 3-6.

[184] NMAB 482-5, 2000, p. 37.

[185] Ibid, p. 38.

[186] GAO/T-RCED/NSIAD-96-262, 19 September 1996, p. 7.

[187] NMAB 482-5, 2000, pp. 37-40.

[188] Ibid, pp. 41-45.

[189] GAO/T-RCED/NSIAD-96-262, 19 September 1996, p. 8.

Finally, EDD/EDS/ETD costs more than traditional methods, such as canines. EDS especially is very expensive.[190] Therefore, most explosives detection technology is an unnecessary waste of travelers' time and taxpayer money, despite the fact that Congress mandated its use in airports following 9/11. It might have a future in airport security, but Congress should not allocate funds for it at land ports at this time.

2. Radiation Detection Technology

a. Radiation Detection Technology Defined

Traditionally, radiation detection has not played a border security role. Radiation detection equipment is marketed towards maintaining safe working environments in medical and nuclear reactor settings, allowing first responders to nuclear accidents an means of initial detection, keeping steel mills and junkyards free from contamination, and managing various other environmental/geophysical measurements. Nevertheless, like explosives detection, 9/11 jump-started a frenzy of research and development in the radiation detection industry with an eye towards border security and surveillance.

Radiation detection is a tricky business. Many ordinary materials—such as clay tiles, marble, bananas, and earthenware—emit various levels of radiation naturally. Yet a border inspector's concern is with two main radiation sources: (1) gamma-emitting isotopes, the most likely source for so-called "dirty bombs" (the technical term is radiological dispersion device or RDD); and (2) enriched uranium (which emits gamma rays) or plutonium (which emits insignificant levels of gamma rays but high levels of neutrons), both weapons-grade materials likely to be present in a nuclear device. Thus, for

[190] Butler & Poole, Jr., 2002, pp. 1-8; GAO/T-RCED/NSIAD-96-262, 19 September 1996, p. 6-10.

border inspection purposes, equipment would need to detect gamma rays and neutrons and such equipment is not currently available.

Current equipment also varies depending on how detection occurs. Some devices passively measure radiation. Others must actively interrogate the measured substance by discharging radiation into it, a process that theoretically could accidentally detonate the measured substance if it was designed to be a bomb.[191] Enriched uranium, for example, cannot be detected passively at present.[192] Consequently, using active detection methods might play right into a terrorist's hands.

b. Pros/Cons of Radiation Detection

The advantages of having a device that alerts border inspectors to the presence of unauthorized nuclear material are obvious. Preventing a nuclear event is far more desirable than responding to one after the fact. Such a device would also fit nicely into the layered-approach model described in Chapter II. That is, they could be deployed overseas to detect smuggled nuclear material as terrorist cells move it secretly across international borders to prevent it from ever reaching North American shores. In short, radiation detection would provide another filter (see figure 5, page 34) to sift out terrorism.

Unfortunately, the current technology does not accomplish what it needs to do at land ports. Each commercially available product is designed to do a specific task that is not compatible with large-scale cargo surveillance at land ports. Table 2 summarizes the pros and cons of these devices.

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[191] Mottley, R. "Detect, not detonate." American Shipper, January 2003, p. 59; Fainberg, May 2003.

[192] National Research Council: Committee on Science & Technology for Countering Terrorism. "Making the Nation Safer: The role of science and technology in countering terrorism," p. 55. National Academies Press: 2002.

ADVANTAGES	DISADVANTAGES
ELECTRONIC DOSIMETERS	
Tracks dosage exposure, alerts to hazards, protects from overexposure	Low sensitivity--only alerts to significant radiological event
Excellent battery life (months)	Cannot detect alpha, low energy beta
Small size (pager or wrist watch)	Not sensitive enough to find contraband radioactive material
Simple (no user action required), often very rugged, low-cost ($200-800)	
Applications: First responders to radiological probs (e.g., hospital staff	
PERSONAL RADIATION PROXIMITY ALERT SYSTEMS	
Excellent sensitivity, even to naturally occurring radiation	No determination of how much radiation is present, only that it is there
Capable of finding contraband radioactive material	Poor discrimination of natural rad. and contraband (high false alarm rate)
Good battery life (several weeks)	Cannot detect alpha, low energy beta
Small size (pager/notebook size)	Expensive ($800-$2,000)
Simple (no user action required)	Not rugged—shock sensitive
	Only function at small ranges
Applications: Law enforcement (currently deployed with all Customs agents)	
ISOTOPE IDENTIFICATION EQUIPMENT (GAMMA SPECTROSCOPY)	
Excellent sensitivity, even to naturally occurring radiation	High false alarm rate—Detects commercial, medical, or natural sources (though options for further analysis can resolve this)
Capable of finding contraband radioactive material	Not 100% effective and accurate assessment requires an experienced spectroscopist
Can track dose rates and total user dose exposure	Expensive ($8,000-$12,000) and requires extensive training
Identifies many common isotopes	Cannot identify all known isotopes and can mis-identify some isotopes
Applications: Experienced responders (follow-up hazmat or emergency response)	
SIMPLIFIED CONTAMINATION SURVEY INSTRUMENTS	
More sensitive than electronic dosimeters	Less sensitive than radiation proximity alert systems
Better range than personal radiation proximity alert systems	Range improvements offset by only average sensitivity
Smaller size (notebook size), rugged, and low-cost ($300-$600)	Occasionally detects legit commercial, medical, or natural sources
Simple (user action only 2 switches)	Inaccurate measures of high dose rates
Variable alarm threshold set points	Require more training (though not as much as isotope identification)
Applications: Occasional users (emergency responders, hospital staff)	
INDUSTRY STANDARD RADIATION INSTRUMENTS	
Generally very accurate and sensitive	Generally requires a trained, knowledgeable user
Application: Experienced, well-trained users, such as health physicists and radiation technicians at nuclear power plants, hospitals, and research labs	

Table 2. Comparison of current radiation detection devices

From: Buddemeier, B.R. "Radiological Emergencies: Tools, Training, and National Assistance for First Responders." Livermore, CA: Lawrence Livermore National Laboratory (Contract # W-7405-Eng-48). 24 July 2003, pp. 5-10.

3. Vehicle and Cargo Inspection System (VACIS)

a. VACIS Defined

X-Ray imaging has seen limited use at some land border crossings and especially at airports to prescreen baggage and containers. Nevertheless, its cost and poor image quality (requiring extensive interpretation on the part of the user) usually precluded justification for widespread use. Quality imaging techniques for security screening purposes were a reality only in the movies, such as in *Terminator II* and *Total Recall*. Then, in the early-to-mid 1990s, Science Applications International Corporation (SAIC) introduced VACIS.

VACIS was first deployed in 1999 by Customs mostly along the U.S.-Mexican border in large-volume ports such as Laredo and El Paso. SAIC was awarded a $25 million contract to manufacture and install 29 VACIS over a 19-month period. The original role of VACIS was drug interdiction.[193] However, after 9/11, the primary role of VACIS shifted to counter-terrorism (searching for illegal weapons or bombs).[194] The post-911 homeland security emphasis resulted in several additional contracts for SAIC. Currently, there are over 100 VACIS machines deployed on U.S. borders and around 200 deployed worldwide.[195]

VACIS permits Customs to conduct fast, non-invasive, imaging of lorries, sea containers, and vehicles that might contain contraband, undeclared cargo, explosives, weapons, and

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[193] Science Applications International Corporation. "SAIC's VACIS II to Search for Contraband at U.S. Borders." 26 July 1999. [http://www.saic.com]. Accessed 20 August 2003; Barber, 27 April 2002, p. B1.

Battagello, D. "Customs delays border X-Rays: Machine scans trucks for drugs, illegal migrants." Windsor Star, 30 November 2001, p. A3 (local news).

[194] Schiesel, S. "Their Mission: Intercepting Deadly Cargo." New York Times (East Coast Late Edition), 20 March 2003, p. G1.

[195] Kittikanya, C. "Tighter Checks a Boon for Singapore-Based Firm's Cargo X-Ray." Bangkok Post, 27 February 2003.

even hidden humans. A gamma-ray generator unit uses a Cobalt-60 energy source to direct low levels (5 microrems/hour) of gamma rays into the subject of inspection in order to produce a real-time, X-Ray-like image on a computer screen at a remote station.

The basic set-up can be applied in a variety of ways. The Fixed VACIS machine is a 50-foot by 50-foot structure that looks similar to a local car wash. This version requires a driver to move the vehicle through the VACIS machine at speeds lower than 5 mph. The Mobile VACIS has a hydraulic arm mounted on a truck. The arm straddles a stationary container/vehicle and the truck moves the hydraulic arm the length of the container/vehicle. The Portal VACIS is designed for high-throughput areas at port gates and roadways. It is engineered to operate in smaller areas and work in conjunction with existing infrastructure, such as weigh scales. The technology has even been expanded to work at train stations to allow trains to pass through the VACIS without having to stop and open its train-cars for inspection.[196] Figures 18-21 exhibit the different VACIS applications.

b. Advantages of VACIS

The benefits of VACIS can be summed up three ways. First, it saves time by allowing agents to screen cargo at much higher throughput rates than by hand. Second, VACIS poses significantly lower health risks than conventional X-Ray machines. Third, it permits as thorough an inspection as a manual inspection, but in a non-invasive manner.

[196] Battagello, 30 November 2001, p. A3; Barber, 27 April 2002, p. B1.

The Net Risk. "VACIS II." [http://www.thenetrisk.com]. Accessed 25 April 2003.

FIXED VACIS

Figure 18. A typical Fixed VACIS site.

From: The Net Risk. "VACIS II." [http://www.thenetrisk.com]. Accessed 25 April 2003.

MOBILE VACIS

Figure 19. A typical Mobile VACIS application.

From: The Net Risk. "VACIS II." [http://www.thenetrisk.com]. Accessed 25 April 2003.

PORTAL VACIS

Figure 20. A typical Portal VACIS site

From: The Net Risk. "VACIS II." [http://www.thenetrisk.com]. Accessed 25 April 2003.

RAIL VACIS

The VACIS unit is the structure on the left

Figure 21. VACIS technology adapted to a rail port

From: The Net Risk. "VACIS II." [http://www.thenetrisk.com]. Accessed 25 April 2003.

VACIS is a valuable asset because of its phenomenal throughput rate, compared to the traditional way Customs inspects cargo. There are no official test statistics available, but interviews with Customs agents confirm how much time is saved using VACIS. One official said that it would take two days for 15-20 inspectors to open and inspect twelve maritime containers. VACIS can do all twelve containers in about less than an hour with two people (three with Mobile VACIS).[197]

A faster throughput rate allows Customs to increase the overall number of containers that are inspected. This is critical, because Customs was heavily criticized following 9/11 for only inspecting 2% of the cargo containers that crossed U.S. borders.[198] At one port, VACIS technology doubled the number of inspections over the course of a year. Another official echoed those same statistics at his port of jurisdiction.[199] Despite the lack of standardized testing, it is generally accepted that VACIS has a throughput rate of about 8-11 containers per hour.[200]

VACIS is hassle-free because no sophisticated safety, environmental, or health precautions are necessary. The radiation exposure hazard from VACIS is virtually nothing. In fact, it is a factor of 100 to 1,000 times less than standard X-Rays. For example, a dental X-Ray exposes a patient to 4,000 times the amount of radiation than one pass through a VACIS machine does. VACIS exposure levels are even lower than what U.S. standards require. In layman's terms, VACIS emits one

[197] Armstrong, D. "New gatekeepers: Gamma-ray monitors search incoming containers." San Francisco Chronicle (Saturday Final Edition), 21 September 2002, p. B1 (business section).

[198] Barber, 27 April 2002, p. B1.

[199] Bartelme, 17 February 2002, p. 1A.

[200] Ibid; Schiesel, 20 March 2003, p. G1.

quarter of what a person standing on a Seattle street corner is exposed to.[201]

Nor is the quality of inspections is not hindered using VACIS. Gamma rays penetrate much better than X-Rays do, permitting inspectors to see through 3-6" steel walls. Gamma rays also produce a sharper image and the system's software allows agents to switch between black/white/color contrasts to detect densities and other anomalies. The inspection is also thorough, because VACIS can see through false walls, the vehicle itself, and even inside individual objects.[202] "If there's a core of something hidden inside something else, the machine will see the core."[203] Finally, unlike bulk explosives, trace, and radiation detection technology—all of which generally search only for a specific type of radiation or explosive substance—VACIS represents one-stop shopping. It catches anything that hides, including drugs, illegal cargo, suspicious objects (such as bombs), and even humans.[204]

c. Disadvantages of VACIS

Despite its superior throughput rate, some officials have expressed concern that it still has the potential to delay traffic and slow down the economy. For example, the recent, post-9/11 slew of VACIS purchases has the Ontario Trucking Association worried. The OTA stated that if VACIS is not used in conjunction with a risk management plan designating high-risk shipments only for VACIS inspection, then it could be a drawback. "We look at it with some understanding and respect,

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[201] Barber, 27 April 2002, p. B1.

[202] Ibid; Armstrong, 21 September 2002, p. B1; Canadian Press Newswire. "Port of Montreal adds new gamma-ray machine to curb smuggling, terror." Canadian Business and Current Affairs, 07 January 2003, section JA 7'03.

[203] Barber, 27 April 2002, p. B1.

[204] Ibid; Battagello, 30 November 2001, p. A3.

but also some concerns. This is a border that is extremely busy and this is something that could further disrupt traffic," said Massimo Bergamini, VP of Public Affairs for OTA.[205]

The OTA also points out that if governments don't implement common policies, problems can result. "It's not a negative thing as long as some policy is developed. I am concerned about whether it will unduly affect traffic. You have to develop a risk-assessment model, so you don't just start pulling over trucks at random," said Bergamini.[206]

Others are not convinced that VACIS does not present a radiation hazard. They cite the asbestos controversies of recent years as evidence (asbestos was not discovered to be harmful until some workers were exposed to it for years). Some dockworkers and truckers, supported by the International Longshore and Warehouse Union (ILWU), refuse to drive their trucks through the contraption. When this happens, Customs officials must unload the containers and scan them later, which potentially causes delays. There are currently no long-term exposure rate studies to measure the effects of VACIS on personnel who work around these systems.[207]

Yet the primary disadvantage of VACIS is its cost. Each individual VACIS is a multi-million dollar system. Most sources report VACIS costs in the $1 to $1.3 million ranges,[208] although Customs was able to acquire some of them as low as $862,000 each (since they bought them in bulk quantities).[209]

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[205] Battagello, 30 November 2001, p. A3.

[206] Ibid.

[207] Armstrong, 21 September 2002, p. B1.

[208] Espinoza, J.N. "Scanner expected to speed up rail traffic at bridge near Texas/Mexico border." Brownsville Herald, Brownsville TX, 21 May 2002; Battagello, 30 November 2001, p. A3; Barber, 27 April 2002, p. B1.

[209] SAIC, 26 July 1999.

But beyond manufacturing and installation costs, Customs also has a contract with SAIC for $46.5 million for maintenance and support for its installed systems.[210] In the case of VACIS then, the primary question is whether or not the security benefits of VACIS outweigh potential health risks, traffic delays, and cost.

4. Recommendations: Thumbs Up or Down?

a. Explosives/Radiation Detection

Explosives detection technology is a bust in the airport environment. Therefore, there is no reason to think it can be expanded to land ports, where the amount of people and cargo to be screened is much more immense. Explosives detection technology costs more than dogs, even though it is not proven to be more reliable than canines and cannot move goods through the line any faster than canines. It cannot detect the types of explosives used in the USS COLE attacks in Yemen, such as plastic and sheet explosives. Most importantly, the technology is in its infancy and therefore has for the most part not been either laboratory or field-tested. Federal, state, and local agencies should be wary of purchasing this equipment until industry improves the technology and/or proves its reliability.

Most of the evidence stacks up against commercially available radiation detection equipment as well. Indeed, a perusal of table 6 above highlights three main reasons not to use radiation detectors at land border ports. These reasons include the following: (1) they are not foolproof; (2) they were not designed for the specific characteristics of land border ports; and (3) the costs do not outweigh the benefits.

Radiation detection, like explosives detection, is still in its infancy when applied to a homeland security

[210] SAIC. "SAIC Wins U.S. Customs VACIS Maintenance and Support Contract." [http://www.saic.com]. 17 October 2002. Accessed 20 August 2003.

setting. Probably the most practically important metric for a radiation detector is its false alarm rate, especially at land border ports. The sheer volume of traffic and people at land border ports necessarily means that a border agent has only about 20-30 seconds to make a decision. Repetitive false alarms, which can take up to several minutes to resolve, skew the delicate balance between the benefits of ensuring no "dirty bombs" ever get through versus the need to keep traffic flowing, especially in today's globalized, just-in-time-delivery economy.

Testing confirms the excessively high false alarm rates of radiation detectors. For example, the Austrian government sponsored a radiation detection pilot program as part of the *Trafficking Radiation Detection Assessment Program* in the year 2000. The program was designed to capture data at the Nickelsdorf border crossing between Austria and Hungary. Over a period of six months, the researchers averaged around 13 hits for every 900 or so trucks that normally cross the border. None of the detained trucks contained weapons-grade material (most hits were attributable to such things as contaminated scrap metal and electrical pulses generated by old cars).[211] Some first-generation U.S. systems have error rates as high as 25%.[212]

A U.S. Customs pilot program in Detroit, America's busiest border truck crossing, showed similar results. During a two-week trial, a sophisticated sensor revealed high readings during a specific time period. The matter took weeks to resolve, as officials spent valuable personnel time tracking down all vehicles that had crossed the border during the time

[211] Ladika, S. "New effort puts radiation sentinels at the borders." Science (Washington), 292:5522, 01 June 2001, p. 1633.

[212] Johnson, J. "U.S., Tennessee to test truck radiation detector." Transport Topics, 02 December 2002, No. 3514, p. 10.

the high reading had occurred. In the end, officials attributed it to a "false positive, rather than a successful attempt to smuggle nukes into the United States."[213] A typical example of what is to come should radiation detectors be installed nation-wide.

Moreover, terrorists can exploit vulnerabilities in radiation detection systems. Detectors, no matter how sensitive, have range limitations and cannot detect radiation sources if they are shielded or encased in lead.[214] Furthermore, most detectors cannot distinguish very well between different types of isotopes or they only detect the isotope that is giving off the highest level of radiation. For all practical purposes, this means well-shielded material or even material buried deep in a pile of legally transportable isotopes might not get detected.[215]

This is not to say that radiation detection cannot be modified to fit the needs of Customs agents. A joint project by the Department of Energy, the Oak Ridge National Laboratory, and the Tennessee Department of Safety and Transportation recently installed a $100,000 scrap metal radiation scanner (it had been placed in storage after its intended use) at a heavily trafficked route weigh station near Knoxville. The manufacturer (Exploranium Radiation Detection Systems) claims a low 0.1% false positive metric[216] and recently convinced the Virginia Port Authority to install similar scanners at marine terminals in Newport News, Portsmouth, and Norfolk.[217] Government has recently

[213] Hosenball, M. "Stepped-up scrutiny at the borders." Newsweek (New York), 140:12, 16 September 2002, p. 8.

[214] Fields & Begley, 12 June 2002, p. B2.

[215] Ladika, 01 June 2001, p. 1633.

[216] Johnson, 02 December 2002, p. 10.

[217] Dujardin, P. "Norfolk, VA, ports scan for bombs." [http://www.centredaily.com]. 22 December 2002. Accessed 27 August 2003.

built upon this idea by starting a program in large metropolitan cities whereby surplus radiological detection equipment is supplied free of charge to state and local agencies.[218]

One initiative is particularly applicable to commercial cargo security. Thermo Electron Corp. has partnered with Advent Inc. to develop a "rectangular deployment unit the size of a container top that fits between a spreader bar and the roof of a container being lifted on or off a ship by a crane."[219] The device is intended to take advantage of the 45 seconds to 1 ½ minutes of time it takes for a crane to lift a container onto the pier during unloading to passively scan for radioactive materials, so as not to slow down the current operational flow of port operations.

Other initiatives exist as well. For example, another passive screening technique comes from Porter Technologies in Greer, South Carolina. Small, 6"-long sensors are fitted into pre-drilled holes in container doors. The sensors not only detect radiation levels, but also indicate when the door has been breached and a hand-held monitor can display images of the inside of the container.[220] The Idaho National Engineering and Environmental Laboratory (INEEL) is also studying ways to outfit inspectors with a hand-held device that is capable of distinguishing between medical isotopes and contraband isotopes. Their battery-powered device was named as one of the 100 most significant technological achievements of the year 2000.[221]

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[218] Department of Energy. "Pilot program aids emergency responders [radiation detection equipment]." DOE This Month, 25:9, September 2002, p. 7.

[219] Mottley, January 2003, p. 59.

[220] Ibid, pp. 59-60.

[221] Anonymous. "Custom-made dosimeter detects nuclear smuggling." Nuclear News (H.W. Wilson-AST), 43:11, October 2000, p. 69.

Despite these advances, the fact remains that radiation detection still has problems. For example, cost is a limiting factor for radiation detection systems because of the sheer number of land border ports in North America.[222] Also, Thermo Electron and Advent's invention uses passive methods, so there is no guarantee that it can detect highly enriched uranium. Furthermore, while the hand-held dosimeter made by the INEEL is more selective and discriminatory, it still doesn't solve the range problem. An inspector would still need to physically approach every vehicle rather than scanning it with some type of stationary, portal device as it crossed the border.

In summary, explosives and radiation detection might have a future, but the federal government should not be blinded into thinking that buying these hi-tech gizmos would solve illegal immigration and ultimately terrorism within U.S. borders. The technology is new, not foolproof, not designed for land border ports, and expensive. As far as this author is able to discern, there is very little valid, measurable data on detection probability, false error, and throughput rates. In some cases, no industry-wide methodological standards exist either. Given that bombing attempts against U.S. commercial aircraft occur only once every 10 years and similar miniscule numbers apply to land border ports, it can safely be said that only one potential terrorist attack out of several billion or even trillion possibilities exists. Therefore, measuring the number of times a terrorist act was actually prevented through the use of this equipment "is almost impossible" and can "only be estimated through comprehensive testing and evaluation."[223] It is likely that for these reasons, the National Research

[222] National Research Council, 2002, p. 55.

[223] NMAB-482-5, 2000, p. 43.

Council does not currently endorse any specific type of explosives or radiation detection systems for operational use.[224]

b. Vehicle/Cargo Inspection System (VACIS)

VACIS is potentially a force multiplier for Customs. Unlike explosives and radiation detection, it has been proven to be a reliable technology in the field. It is a versatile and mobile technology that is proving its worth in the field.

For example, VACIS is increasingly demonstrating that it can expose contraband at the border. During summer 2001, Customs seized two tons of marijuana hiding among a shipment of crackers and fruit juice.[225] In March 2002, at the Laredo border crossing, another 2,000 pounds of marijuana was seized by Customs on a railcar coming from Mexico.[226] At the Blaine border crossing, 600 kilos of marijuana tucked among packaged wood shavings were seized from a truck headed to California.[227] Even the Canadians are finding VACIS is a boon for inspectors. They found 11.5 tons of hashish mixed with cat food and cotton fabric from a shipment that originated in Pakistan.[228] All of these successes would have been impossible without VACIS.

It isn't just drug busting going on either. Significantly, undeclared Swedish missiles were recently found in a shipment (the Swedes accidentally sent them to the wrong port).[229] Despite the fact that the missile shipment was an

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[224] Ibid, pp. 1-4, 36-45.

[225] Bartelme, 17 February 2002, p. 1A.

[226] Espinoza, 21 May 2002.

[227] Keating, J. "X-Ray machine uncovers truckload of B.C. pot." Vancouver Province, Vancouver BC, 15 May 2003, p. A31 (news section).

[228] Southam News (CP): Sault Star. "Customs officers find 11.5 tonnes of hash." The Gazette (Montreal, Quebec), 23 January 2003, p. A13 (news in brief section).

[229] Bartelme, 17 February 2002, p. 1A.

honest error, this incident still demonstrates the value and validity of VACIS.

It will be remembered that the primary indictments against VACIS were health risks, effects on traffic wait times, and cost. The health concern is not a valid concern. Existing studies confirm that there are no adverse effects on humans at the low levels at which VACIS emits gamma rays. Most of the health concerns represent scientific ignorance on the part of a special interest group that let their emotions get in the way of common sense. The complaints by the ILWU occurred during their contract negotiations with management and well-publicized strike in West Coast seaports in 2002. In fact, the concerns voiced by truckers and longshoremen have been resolved. The incidents in which truckers refused to drive through VACIS portals were minimal anyway and overall made little difference. Besides, Customs closely monitors the exposure levels of its employees with radiation pagers anyway, so if it ever is a concern, they will be able to take action.[230]

The traffic delay concern is unfounded as well. VACIS is not used randomly and without any coherent strategy. Customs uses its *Automated Targeting System* (ATS) to determine which containers are high-risk before conducting an inspection with VACIS. In fact, after 9/11 Customs completely re-prioritized the criteria in this software program in order to integrate VACIS into its existing inspection process.

Furthermore, the concern about common policies is being addressed, at least on the U.S.-Canadian border. For example, Canada's largest railroads, U.S. Customs, and Canadian Customs authorities recently signed an agreement that proves

[230] Armstrong, 21 September 2002, p. B1.

international cooperation is a reality. Under the accord, the United States pays for the installation of seven VACIS machines and Canada pays for the facilities and infrastructure where they will be housed. The VACIS machines and the unarmed U.S. Customs agents are located on Canadian soil, but if VACIS reveals the need to unpack any containers, hand inspections occur on the U.S. side. If it becomes necessary to unpack more than five percent of the train's cargo, U.S. funds will pay the associated costs of repacking the goods.[231] Additionally, the United States recently signed border accords with both Canada and Mexico that both emphasized the importance of collaborating on technology that improves border security.[232]

Finally, is VACIS really worth millions of dollars? This author believes it is. The urgency and importance of securing the intermodal transportation system is unmatched today. Customs Commissioner has testified that "world trade would grind to a halt if terrorists used containers to smuggle weapons of mass destruction into the country."[233] VACIS is the best technological tool currently available to detect WMD. If it prevents even one catastrophic event, its high cost is justified. Ask the family members of the victims of 9/11 if they would rather have their loved ones back or take the millions of dollars the federal government has granted in compensation. If the skeptic really searches his soul, he will find that VACIS is indeed part of the solution to terrorism.

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[231] Williamson, D. "Border scanner on track: Device to peer into rail cars." Windsor Star, 05 April 2003, p. A3 (local news section).

[232] Treat, J. "A New, Improved U.S.-Mexican Border?" [http://www.americaspolicy.org/pdf/commentary/0203immig.pdf]. 28 March 2002. Accessed 29 August 2003; CIC Canada, 2000.

[233] Bartelme, T. "Senators get lesson in Charleston port security: Commerce panel hears testimony from federal officials, port security experts." Post and Courier (Charleston, SC), 20 February 2002, p. 1A.

C. SECURING THE BORDER AGAINST ILLEGAL IMMIGRATION

1. Secure Electronic Network for Traveler's Rapid Inspection (SENTRI)

a. SENTRI Defined

SENTRI was originally a grass-roots program that grew out of a local problem in the San Diego/Tijuana communities. In 1994, the San Diego Dialogue (SDD), a local think tank, produced the only scientifically valid survey of local border crossers that exists. The results (shown in table 3) had profound implications for the way INS inspectors were doing business.

TYPE OF CROSSER	PROPORTION OF CROSSERS	NUMBER OF CROSSERS	PROPORTION OF CROSSINGS
Frequent (4-19 times per month)	34.9%	182,000	96%
Very frequent (20 or more per month)	25.1%	131,000	
First time	17.3%	90,000	4%
Occasional (under one per month)	8.8%	46,000	
Low Frequency (1-3 times per month)	13.8%	72,000	
TOTAL	100%	521,000	100%

Table 3. Proportion of frequent border crossers in San Ysidro and Otay Mesa ports of entry (1994).

From: Nathanson, C.E. & Lampell, J. "Identifying Low Risk Crossers in Order to Enhance Security at Ports of Entry into the United States." San Diego Dialogue, University of California at San Diego, January 2002, p. 2.

Using INS and U.S. Customs data, as well as conducting over 6,000 random interviews, SDD discovered that most of the 5 million monthly, northbound border crossings at the San Ysidro and Otay Mesa ports of entry were low-risk, frequent crossers. The researchers also found that most of the people interviewed for the survey welcomed extensive background checks by the government in exchange for faster treatment at the border. Subsequently, a multi-agency team—consisting of law enforcement

personnel from the INS, Customs, DEA, FBI, Dept. of Transportation, and lawyers—developed SENTRI.[234]

SENTRI combines technology and risk management to allow border inspectors to work smarter, not harder in improving security while simultaneously facilitating the movement of low-risk, frequent travelers. Participants are subjected to an intensive, criminal background check (proof of U.S. citizenship, financial solvency, auto insurance, vehicle registration) that can take months to complete. Digital fingerprints are also taken and entered into a centralized database. If deemed low-risk, a transponder is installed in the windshield of the traveler's car. This transponder keys an inspector's computer, which boots up a photo and detailed information about the traveler (taken during the prescreening process) before the traveler even reaches the inspection booth. Because the inspector is able to review information in advance, no lengthy questions are needed when the traveler reaches the inspection booth. Participants get to use dedicated lanes set aside only for those who participate in the program.[235] Inspectors reserve the right to complete random, full inspections when they deem it necessary. Figure 22 is an example of SENTRI in action.

b. Advantages of SENTRI

There is not much to dislike about SENTRI. Its proponents tout it as a win-win situation for law enforcement and the local community. It reduces wait time for citizens of the border communities of Baja California, Mexico, and San Diegans, who both suffered from long border wait times even

[234] Nathanson & Lampell, January 2002, pp. 2-4.

[235] Ellingwood, K. "Device Speeds Up Border Crossings; Technology: Demand is rising for system that Ids pre-screened motorists, allowing them to avoid long post-Sept. 11 lines." Los Angeles Times (Record Edition), 06 March 2003, p. B6 (California; Metro Desk section).

SENTRI

1. Transponder keys up info about passenger on inspector's computer screen
2. Inspector reviews passenger, vehicle info before the traveler pulls up to the inspection window
3. The need to ask lengthy admissibility questions is eliminated, reducing inspection time at the border

Figure 22. The SENTRI inspection process

From: Volpe Center. "Volpe Journal 30th Anniversary—A Special Edition." December 2001. [http://www.volpe.dot.gov/infosrc/journal/30th/security.html]. Accessed 30 August 2003.

before the 9/11 attacks. Post 9/11 wait times, which can be up to two hours in regular lanes, are never more than 15 minutes in SENTRI lanes. In fact, wait times are limited to just minutes, or nothing at all most of the time since the plan was implemented.[236]

Yet it also fits nicely into the border paradigm introduced in Chapter II, because the rigor of inspection takes place away from the border and "limits the size of the haystack"[237] that immigration officials must sort through in their search to keep terrorists out. Furthermore, SENTRI has

[236] Jackson, M. "Business assured border traffic will continue to flow: Homeland reps suggest the use of commuter passes." San Diego Business Journal, 24:12, 24 March 2003, p. 3.

[237] Flynn, 2002, p. 41.

the potential to become a more precise security tool, because future applications could potentially make use of biometrics to allow for almost foolproof methods of identification (see the biometrics section in this chapter for a full analysis of biometrics).

An added benefit for the federal government is that SENTRI helps pay for itself. User fees offset much of the cost associated with SENTRI. In order to enroll, users pay a $129 fee. The fee must be repaid to renew the application periodically.[238] The fee is higher at another SENTRI site on the southern border in El Paso, TX.[239]

c. Disadvantages of SENTRI

Not everyone is jumping on the SENTRI bandwagon. The biggest deterrents to SENTRI enrollment are its cost and enrollment processing time. Some have criticized SENTRI as a program intended only for the wealthy. Finding spare change in the amount of U.S. $129 is especially difficult for some Mexican nationals to do on a regular basis.[240] Others have also heavily criticized an initial enrollment processing time of six months. This wait grew to as much as eight months after the popularity of the program exceeded INS ability to process the applications that were pouring in.[241] Could the SENTRI lanes become just as

[238] Nathanson & Lampell, January 2002, p. 4.

[239] Gilot, L. "Term for commuter lane users extended." El Paso Times, 06 March 2003, p. 1B (news section).

[240] Anonymous. "Eugenio Elorduy, governor of Baja California." Sand Diego Union-Tribune, 09 March 2003, p. G5 (opinion section).

[241] Anonymous. "INS to Spend $1 Million to Ease Borderr Traffic." Los Angeles Times (Record Edition), 25 May 2002, p. B12; Nathanson & Lampell, January 2002, p. 4; Boudreaux, 25 April 2003, p. A3; Smith, D.G. "Endurance test for border pass worth the wait." San Diego Union-Tribune, 22 July 2002, p. D-3 (lifestyle section).

congested as the regular lanes if everybody enrolled? Finally, some view the annual requirement to reapply as inflexible.[242]

Some U.S. officials viewed the program with skepticism when they learned that Mexican citizens from Baja, California could participate. The reason for this is that the ability of the criminal justice system in Mexico to adequately screen potential applicants (in the opinion of some critics) is limited. That is, some feared that allowing Mexican authorities to conduct portions of the background check for Mexican nationals attempting to participate would diminish confidence in the program's ability to completely screen out suspect individuals.[243]

Other criticisms of SENTRI exist as well. Some people feel that the potential for smuggler abuse at SENTRI lanes is high. That is, professional criminals could take advantage of the system to speed up and safeguard their illicit activities. Indeed, there are already three documented incidents of people attempting to smuggle both drugs and illegal immigrants across the border in SENTRI lanes.[244] Another common critique of SENTRI is that its applicability to the entire nation is limited to ports where highway infrastructure supports it. That is, in order for SENTRI to have a real impact, sometimes additional lanes need to be constructed. In some ports of entry, existing space is already at full capacity.

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[242] Anonymous, 09 March 2003, p. G5.

[243] Dellios, H. "House OKs bill on border security; High-tech tactics urged for tracking Mexican migrants." Chicago Tribune, 09 May 2002, p. 1; Cantlupe, J. "America's balancing act on the border: Between trade and terror." Copley News Service, 15 April 2002, Washington wire section.

[244] Morgante, M. "Ashcroft praises border passes for approved travelers." Associated Press State & Local Wire, 14 January 2003, state/regional section; Anonymous. "Inspectors thwart illegal crossings." San Diego Union-Tribune, 27 August 2003, p. B2.

2. Biometrics Applied to Land Border Security

a. Biometrics Defined

The movie *Minority Report*, starring Tom Cruise, featured a futuristic environment in which crimes were solved before they happened and department stores scanned their customer's retinas for security and advertising purposes. Digital fingerprint scans and the like are no longer something seen only in the movies. Technology has progressed to the point that scenarios in a James Bond movie will likely be applicable in everyday situations within a few years. The buzzword to describe these futuristic applications is *biometrics*.

Biometrics refers to the real-time, digital capture of the distinct individualities that set all human beings apart from one another. Biometrics can include a variety of different measurement types: retinal scans; face recognition; voice recognition; digital fingerprints; and hand geometry are common ones. People can even be digitally identified by how they smell, how they walk, how they type on a computer, and how they sign their name. Think of biometrics as your fingerprint on a computer instead of on a piece of paper.[245] The ability to digitally capture and store templates of each individual's unique, biological characteristics makes biometrics an intriguing option for border security functions.

Biometric technology has been around since the 1970s, but its application was limited to high-security installations, such as nuclear plants or top-secret Defense Department facilities. However, since 9/11, private industry realized the applicability of biometrics to a number of border security

[245] Bois, A. "Aviation seeks new security tools." Interavia, December 2001, p. 36; GAO 03-174: General Accounting Office. *Technology Assessment: Using Biometrics for Border Security*, Washington DC, November 2002, pp. 39-52.

problems. The number of firms investing in biometrics before 9/11 was around 20 at most, but now there are over 200, with new ones being added weekly. Stock sales in one such firm rose as much as 80% and biometric sales are expected to reach $900 million by 2006.[246] Currently, there is an explosion of off-the-shelf technology with law enforcement and security applications.

The scope of this analysis is limited to only four biometric measurements, based on years of research and recommendations from the International Civil Aviation Organization (ICAO) and General Accounting Office (GAO). Ninety-five percent of current applications are concentrated in seven types. They are digital fingerprints, retinal/iris scans, hand geometry, facial recognition, voice recognition, hand signature dynamics, and keystroke dynamics.[247] Of these, the GAO determined that only four (digital fingerprints, iris scans, hand geometry, and facial recognition) and the ICAO determined that only three (digital fingerprints, iris scans, and hand geometry) apply in a border security setting.[248]

There are a number of important metrics that are critical to choosing a biometric system to fit the needs of land border security ports. Among these are false match rates (FMR), false nonmatch rates (FNMR), and failure to enroll rates (FTER). A false match occurs when an identity is incorrectly matched, and a FMR is the probability that an identity will be matched to the wrong person. A false nonmatch occurs when a valid identity is incorrectly not matched like it should be, and a FNMR is the probability that a valid identity is wrongly not matched. FTER

[246] Bois, December 2001, p. 36.

[247] Momberger, M. "'Biometrics' seen revolutionizing security measures." Airport Forum, 20:3, June 1990, p. 14.

[248] GAO-03-174, November 2002, pp. 69-70.

refers to the probability that a system cannot enroll certain individuals in the system for various reasons that do not allow the system to initially capture a biometric template (e.g., a person who has lost both hands in an accident).

The time it takes to enroll someone and the time it would take to process someone through a port of entry are key considerations in a land border security scenario. The overwhelming crush of people and vehicles at the border necessitates that the time it takes to process someone through a biometric system be very short or the security measures taken will bring economic livelihoods to a standstill on both sides of U.S. borders. The next two sections examine the pros and cons of biometrics in detail.

b. Advantages of Biometrics

Obviously, the overriding advantage of using biometrics for border security is in its automated, accurate, timesaving capacity. "Biometrics has the potential for increasing handling efficiency while at the same time enhancing security, a somewhat unexpected combination."[249] Biometrics work on *one-to-one* search principles. Other systems, such as credit card validation systems, must verify a user number against a database of invalid numbers. Biometrics, on the other hand, matches encrypted, unique features with a previously stored machine scan of only one physical characteristic. Since the system is only matching two pieces of information together, rather than one against potentially millions of pieces of information, verification is quick and accurate.[250]

Biometrics permit a much more precise determination of identification. Several authors have pointed out the difficulty

[249] Bois, December 2001, p. 36.

[250] Volpe Center, Spring 1997.

in overcoming fraud and forgery in current identification systems.[251] Chapter III discussed the increase in fraudulent documents at ports of entry that resulted once the Border Patrol rolled out their new strategy to prevent illegal immigration in 1994. Yet with biometrics, fraud or forgery is difficult, if not impossible. Furthermore, even if imposters gain access to the system, they cannot subsequently switch identities, because they cannot switch their biological trait characteristics.[252] Finally, the integrity of the system is not compromised due to stolen or lost cards, because only the rightful owner has the biological traits linking him to that card.[253]

Proponents laud the extremely discriminatory abilities of biometrics. One reviewer claimed that laboratory tests of some biometric systems revealed very low false acceptance rates (0.0001% to 0.1%) and false rejection rates (0.00066% to 1.0%).[254] Biometric systems are more foolproof than the bar-code 2D systems typical of ATM cards, credit cards, and some driver's licenses. Bar codes are machine readable, but are considerably less secure. Bar codes can be created on a home printer and laminated to a driver's license and once the encryption scheme for bar codes is compromised, the entire system is corrupted. On the other hand, the chips using *smart card* or *laser card*

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[251] Ham, S. & Atkinson, R.D. "Modernizing the State Identification System: An Action Agenda." [http://www.ppionline.org]. 07 February 2002. Accessed 18 August 2003; Ham, S. & Atkinson, R.D. "Using Technology to Detect and Prevent Terrorism." [http://www.ppionline.org]. 18 January 2002. Accessed 18 August 2003; Smith, Summer 2002, pp. 4-8.

[252] Bois, December 2001, p. 36; Volpe Center, Spring 1997; Ham & Atkinson, 18 January 2002, p. 5.

[253] Allen, D. "Biometrics may be wave of future." Army Communicator: Voice of the Signal Regiment, 27:1, Army Signal Center, Spring 2002.

[254] Anonymous. "Biometrics for Airport Applications." Airports International, December 2001, p. 29.

technology are individually encrypted; so in the unlikely event that one card is hacked, all other cards remain secure.[255]

Biometrics potentially fulfill various other functions. A smart card using biometric encryption can ultimately replace a plethora of plastic in one's wallet. The digital chips carrying biometric identifiers have enough memory to store everyday applications, like ATM card numbers, credit card numbers, garage key access, frequent flyer numbers, and a grocery store discount card number. Citizens already carry many of these things already, but they could all be placed on one card, allowing the user to use his *smart card* for a sort of digital one-stop shopping. Individual users could allow private companies to download their company applets onto the chip, for applications ranging from paying with digital cash to downloading a hotel room key onto the smart card from the Internet.[256]

Biometric applications could save taxpayers money by streamlining government processes as well. Ham and Atkinson list a number of these applications:

- Hand-held devices for police officers that can read and verify smart ID cards, putting an end to writing down driver's license information on paper citations.
- Upgraded Electronic Benefits Transfer system to reduce food stamp fraud with biometric verification.
- Voter registration and identification, including an interlinked voter sign-in database to

[255] Ham & Atkinson, 07 February 2002, p. 4.

[256] Ibid, p. 3-4, 9.

eliminate the possibility that the same individual will vote in multiple precincts (which in turn will eliminate the need for early voter registration), as well as secure online voting.

- Integrated digital cash systems, to allow one card to pay for parking meters, highway tolls, public transit, and so on.
- Online adjudication of minor violations such as traffic citations.
- Paying taxes.
- Obtaining/renewing licenses and registrations.[257]

c. Disadvantages of Biometrics

The disadvantages of biometrics for land border security scenarios are more numerous than one might initially think. Most of the literature addresses the drawbacks in terms of five main categories. These include concerns about privacy, standardization, accuracy, processing and management, and cost.

Possibly the biggest obstacle to employing the use of biometrics is that many people fear an invasion of privacy. Anytime personal information is collected from individuals and stored in a centralized database, civil liberties can be threatened. Most of the concerns revolve around the following:

- Widespread use of biometric data strips one of anonymity.
- Centralized databases share information across agencies, possibly resulting in information that was intended for one use being used for other purposes ("function creep). For example, social security

[257] Ham & Atkinson, 07 February 2002, p. 8.

numbers over time have begun to be used for purposes other than what they were intended for.

- ID theft is a possibility if corrupt government employees take advantage of the system.
- Profiling, i.e., "the reconstruction of a person's movements or transactions over a specific period of time, usually to ascertain something about her habits, tastes, or predilections," is a drawback to biometrics.[258]

In short, many people are asking significant questions: Who has access to the information? What data is included in the biometric database? How will data be used once it is captured? Along these same lines, liability becomes an issue. Who will pay litigation damages if someone sues and wins?[259] The government? The vendor of the technology? The inspector who used the biometric technology? This concern is not far-fetched. Legal action is currently pending in the European Court of Justice against a joint EU-USA decision to allow transfer of Customs and immigration data on passengers flying to U.S. airports.[260] Australia's Federal Privacy Commissioner, Malcolm Crompton, sums up privacy concerns nicely:

> Biometrics are powerful tools that also can go powerfully wrong. It is therefore very important that privacy issues are addressed during the development of biometric identifiers.[261]

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[258] Sutherland, D.W. "The Hi-Tech Menace." American Spectator, 32:2, February 1999, p. 60-63; GAO-03-174, November 2002, pp. 115-117.

[259] Wilkinson, C. "Nine-one-one: Airport security post September 11." Airports International, December 2001, pp. 22-23.

[260] Jane's Information Group. "A new role for biometrics." 01 June 2003. [http://www4.janes.com]. Accessed 25 August 2003.

[261] Ibid.

The fact that biometrics are an emerging industry means that vendors are attempting to cash in on the demand for them, resulting in the possibility of widespread types of border security systems that are mutually incompatible. One Delta executive has said that biometrics "is still a bit of a Wild-West industry."[262] It still needs to be established which systems work best and where. It is possible that some ports might get impatient with the bureaucratic inertia of Congress (who are currently debating the use of biometrics), buy a system now, and then find out that the system they bought is not acceptable to the newly created Transportation Security Administration.

Standardization is an international issue as well. There are a "wide variety of proprietary systems with limited lifetimes, a lack of communication with other systems, and no industry commonality."[263] For example, if European countries decide to use iris scans as their biometric standard, but the United States favors hand geometry, then a proliferation of different systems will have to be bought in order to accommodate all international travelers.

Biometrics are not 100% accurate either. The low false acceptance and false rejection rates cited earlier came out of laboratory settings, which are a controlled environment. But no biometric technology in large scale, everyday usage matches the success percentages of vendor-controlled tests. A standardized methodology for testing biometrics was not developed until 2000, so operational testing is just now underway. Furthermore, researchers in Germany proved they could

[262] Newton, G. "Biometrics' Identity Crisis," Airlines International, 8:1, February/March 2002, p. 33.

[263] Pilling, M. "Biometrics on trial." Airport World, 7:1, February/March 2002, p. 41.

defeat facial, fingerprint, and iris recognition technology using various sophisticated techniques. Finally, a small percentage of people are unable to enroll in some biometric systems due to a loss of both limbs, significantly worn fingers due to manual labor or exposure to corrosive materials, arthritis, pregnancy, hand injuries, poor eyesight, and various other limitations. Poor lighting, too much subject movement, and glare from the sun can also affect the performance of biometric technology enough to affect system accuracy.[264]

Managing a large biometric database can be intense work. One significant concern is that if initial verification and enrollment is not carefully controlled and accurately conducted, there is the possibility that the very people that the system is attempting to exclude will find a way into the system, creating a false sense of security. That is, if initial documents (e.g., birth certificates and driver's licenses) to gain entry to the system are forged, then nothing has been accomplished.[265] Biometrics "will not verify who a person is—only that he or she matches with an initial biometric reading."[266] Because initial enrollment must be so thorough and detailed, getting a large database (such as a national ID system) off the ground could potentially take years.

Database size affects accuracy and performance as well. The larger the population of the database, the more chance there is for false negatives and false positives. A large database is inherently harder to manage because of technical issues, such as keeping the data clean and keeping the database

[264] Ibid, p. 42; GAO-03-174, November 2002, pp. 69-73.

[265] Ham & Atkinson, 07 February 2002, p. 2-3; Newton, February/March 2002, p. 31.

[266] Ibid.

functioning properly. Mass registration is logistically difficult, due to the need for skilled technicians, proper equipment, and proper infrastructure to support it.[267]

Finally, cost is a deterrent for such a large undertaking. Biometric technology is not cheap. The GAO estimates that the total cost (including initial infrastructure, employee training, ongoing maintenance costs, and personnel requirements) just to implement biometrics into the existing visa issuance system in the United States would be $12 billion.[268] Some sort of national ID card system incorporating biometrics might cost even more.

3. Recommendations: Thumbs Up or Down?

a. SENTRI

SENTRI is one of the few technological options discussed that truly conforms to both the letter and spirit of the law as it pertains to a layered, integrated, risk management approach to border security. In fact, that is what SENTRI is all about: risk management. Despite its limitations, SENTRI is the "best and most effective investment the government can make for improving security at the border."[269] Besides, the critics of SENTRI do not have any better ideas and just about anything that even remotely resembles SENTRI is better than the current, archaic system of manually checking everyone at the border.

Most of the concerns with SENTRI have been dealt with anyway. The annual enrollment requirement has been extended to two years. This decision reduced processing time and saved federal funds. Additionally, investments have been made in a new processing facility in the San Diego area that addresses the

[267] Newton, February/March 2002, p. 31.

[268] Jane's Information Group, 01 June 2003.

[269] Nathanson & Lampell, January 2002, p. 4.

slow processing time (e.g., work space added, additional employees hired, and new automated equipment added to speed processing). Federal officials promise that processing time will eventually be cut in half to two months.[270] Furthermore, the enrollment fee was reduced to $105 in spring 2003.[271]

None of the other fears have turned out to be justified either. First, excessive interest in SENTRI has not resulted in the dedicated lane wait times equaling those in the regular lanes. The wait in the regular lanes is still much worse (2 hours versus only 15 minutes in the SENTRI lanes).[272] Second, the busiest border crossings all have highway infrastructure potential for SENTRI programs. Programs have already been expanded to El Paso, TX and Nogales, AZ and lanes have been added in San Ysidro for both vehicles and pedestrians,[273] with potential SENTRI lanes existing in Brownsville, TX.[274] Third, as far as the smuggler abuse in SENTRI lanes is concerned, the aforementioned three incidents are isolated cases. Nothing further has happened. Besides, the perpetrators were exposed and arrested by vigilant immigration inspectors anyway,[275] so the integrity of the system does not seem to be compromised.

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[270] Canto, M. "Making a sprint for the border: Security—INS chief announces $1 million effort to cut waiting time for pre-screened travelers." Orange County Register (California), 25 May 2002, news section.

Rams, B. & Bunis, D. "Ridge told orange creates red: Terror alerts drain law enforcement, officials tell Homeland Security chief." Orange County Register (California), 25 April 2003, local section.

[271] Showley, R.M. "Pay as you go; 'congestion charge' cuts London traffic by 20%; would it work here?" San Diego Union-Tribune, 23 March 2003, p. I1.

[272] Jackson, 24 March 2003, p. 3.

[273] Boudreaux, 25 April 2003, p. 3 (main news, part I, national desk).

[274] Espinoza, J.N. "Proposed Lane Could Expedite Crossings at Brownsville, Texas, Bridge." Brownsville Herald, 22 October 2002, p. BV-Bridge.

[275] Anonymous. "Inspectors thwart illegal crossings." San Diego Union-Tribune, 27 August 2003, p. B2.

SENTRI should be expanded. The government has a good thing going here, but it has not capitalized on its potential. SENTRI enrollment was still at only 42,000 in March 2003.[276] Initial researchers of the program point out that enrolling all 300,000 frequent crossers in the San Diego area would cut congestion and focus inspection efforts even more.[277] As Doris Meisner, INS Commissioner from 1992-2000 has stated:

> SENTRI is the best tool available and operational today to insure border security because it takes the guesswork away. It basically moves a vast majority of people who are lawful and law-abiding and allows the resources to be focused on the people who could be questionable, the people that are first time crossers, the people who are high risk . . . SENTRI lanes really represent the wave of the future in this new era.[278]

b. Biometrics

There is no question that incorporating biometrics into the current U.S. system of identification would be a huge, expensive undertaking. Additionally, there are significant privacy issues to address. Nevertheless, many of the drawbacks inherent in biometrics can be overcome with proper strategic vision and management savvy.

To address the privacy issues, Ham and Atkinson have correctly pointed out that biometric technology itself is privacy-neutral. Biometrics do not abuse peoples rights, other people do. Therefore, the United States can still take advantage of the limitless potential of biometrics, as long as proper oversight and legislation addresses the privacy issues. Their advice to policy-makers is right on track:

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[276] Sanchez, L. "Fast-track border permits are now valid for 2 years." San Diego Union-Tribune, 06 March 2003, pp. B-4:7; B-2:1-2; B-6:6.

[277] Nathanson & Lampell, January 2002, p. 4.

[278] Ibid, p. 3.

- Mandate that the "onboard" thumbprint scans only be used to match the card to the cardholder, and never stored in a central database.

- Prohibit agencies from selling information—government or private—stored on the card.

- Specify that the rules that govern the circumstances under which an ID card must be presented and the information recorded by government agents will not change with the addition of computer chips to the cards.

- Prohibit private companies from using the "official" data on the cards for any purpose other than verifying identity (e.g., grocery stores may not capture age and gender data to ascertain shopping habits).

- Specify that verifying the card against the onboard biometric data will be optional in non-secure facilities (e.g., airports may be required to check thumbprint scans but not bartenders).

- Impose severe criminal penalties on anyone who attempts to "hack" a smart ID card, and attach substantial liability to manufacturers that sell cards with serious security defects.[279]

Most of the complaints by civil libertarians are exaggerated claims of worst-case scenarios. The fact is, Americans already show biometric identification on their driver's licenses anyway (listings include hair color, height, weight, eye color, etc.). Adding an encrypted chip with biometric data simply makes existing identification more secure and less subject to forgery.[280]

Even so, there are a number of ways around the privacy issues besides just legislation and oversight. For example, the

[279] Ham & Atkinson, 07 February 2002, p. 7.

[280] Ham & Atkinson, 18 January 2002, p. 2.

government could make a biometric ID optional. Doing so still "limits the size of the haystack" that inspectors face every day and satisfies the privacy objections that some people have with biometrics. Civil libertarians can continue to subject themselves to intrusive, thorough examinations at the border (but still have their privacy) while those who embrace biometric technology will be able to capitalize on the timesaving advantages that biometrics allow. In short, everybody is happy.

Most people would probably welcome the added security and economic benefits that biometric smart cards bring with them. Once people see these benefits on a daily basis in action, this author is confident that most will want one. The same phenomenon happened with the SENTRI system. As people watched SENTRI participants whiz through the dedicated lanes in less than 15 minutes while they languished in 2-hour lines, the number of applicants surged so much that the INS could not process the applications fast enough and fell behind.

Many of the current criticisms of biometrics just need time to be addressed fully. First, the standards problem is being addressed. The Liberian International Ship and Corporate Registry (LISCR), the second-largest shipping registry in the world, is using biometric technology to create the world's first biometric seafarer's identity card. The technology has an open architecture that will permit interchangeability with other biometric standards that might be established in the future.[281] Furthermore, the International Biometrics Group (IBG) is currently working with all nations to ensure that the world will be on the same page as technologies are procured.[282] As

[281] Hickey, K. "Biometrics Onboard." Traffic World, 24 February 2003, pp. 1-3.

[282] Jane's Information Group, 01 June 2003.

mentioned, a standard testing methodology has been developed so that accurate comparisons between systems can be made.

Second, field-testing is forging ahead in earnest. Hand geometry has been used at San Francisco International Airport to provide access control for airport employees for several years with outstanding results.[283] A recent operational test at Charlotte airport processed over 500,000 people over an 18-month period with "flawless" results.[284] Ben Gurion Airport in Tel Aviv, Israel has used hand geometry (first for frequent flyers, then for all Israeli citizens) for more than a decade,[285] and their airport security procedures are considered to be the best in the world by some.

Third, the size of a land border database does not have to be a show-stopper. There are many existing biometric systems that are functioning well with millions of participants (see table 4). The way the system is built from scratch can ensure the system works, even one as large as a land border database would be. If the government starts with pilot programs that include willing, frequent users (such as the SENTRI program did), and then expands from there, the technical glitches and inevitable problems can be worked out on a smaller scale before expanding the system. U.S. Customs so far has been successful applying these principles to its multi-year, billion-dollar ACE and ITDS program for cargo security and automated trade.

[283] Anonymous, December 2001, p. 28-29.

[284] Bois, December 2001, p. 36.

[285] Anonymous, December 2001, p. 28-29.

Biometric database	Technology	Enrollment
Mexican Federal Electoral Institute	Facial recognition	60,000,000
Integrated Automated Fingerprint Identification system	Fingerprint	40,000,000
INS Automated Biometric Fingerprint Identification System	Fingerprint	4,500,000
Ben Gurion International Airport	Hand geometry	100,000
INS Passenger Accelerated Service System	Hand geometry	35,000
King Abdul Aziz Airport, Saudi Arabia	Iris recognition	30,000
Schiphol Airport, Amsterdam	Iris recognition	2,000

Table 4. Comparison of different large-scale biometric databases currently in operation.

From: GAO 03-174: General Accounting Office, *Technology Assessment: Using Biometrics for Border Security*. Washington DC, November 2002, p. 94.

Characteristic	Facial	Fingerprint	Iris	Hand
False nonmatch rate (FNMR)	3.3–70%	0.2–36%	1.9–6%	0–5%
False match rate (FMR)	0.3–5%	0–8%	Less than 1%	0–2.1%
User acceptance issues	Potential for privacy misuse	Associated with law enforcement; hygiene concerns	User resistance; usage difficulty	Hygiene concerns
Enrollment time	About 3 minutes	About 3 minutes 30 seconds	About 2 minutes 15 seconds	About 1 minute
Transaction time	10 seconds	9–19 seconds	12 seconds	6–10 seconds
Template size	84–1,300 bytes	250–1,000 bytes	512 bytes	9 bytes
Number of major vendors	2	More than 25	1	1
Cost of device	Moderate	Low	High	Moderate
Factors affecting performance	Lighting, orientation of face, or sunglasses	Dirty, dry, or worn fingertips	Poor eyesight, glare, or reflections	Hand injuries, arthritis, or swelling
Demonstrated vulnerability	Notebook computer with digital photo or false photographs	Artificial fingers or reactivated latent prints	High-resolution picture of iris	None
Variability with age	Affected by aging	Stable	Stable	Stable
Commercially available	1990s	1970s	1997	1970s

Table 5. Comparison of critical metrics of biometric systems applicable to land border security.

From: GAO 03-174: General Accounting Office, *Technology Assessment: Using Biometrics for Border Security*. Washington DC, November 2002, p. 69.

The question is not so much whether biometrics should be used, but which type best fits the land border problem. Table 5, extensively researched by the GAO, gives the best current comparison of all four biometric systems to date.

A review of the above table indicates that hand geometry is probably the best option. It has the best false

non-match rate and is the least intrusive of all four. It also has the lowest enrollment and transaction times, and it takes the least amount of memory (these are critical to a land border system because of the sheer volume of people involved). Furthermore, it is the only system that so far has not been demonstrated to be vulnerable to hackers. Finally, its characteristics are stable as people age and the technology has been around since the 1970s. It also will not break the government's bank account, as iris scanning might.

While the cost may be high for such a system (see table 6), Ham and Atkinson have correctly pointed out that some of these costs could be defrayed by charging businesses a fee for the right to use the encrypted chip on the ID card for economic purposes. Businesses would likely pay this fee because then they would be able to offer the full benefits of e-commerce to their customers without having to come up with money for the initial start-up costs of fabricating their own cards.

SCENARIO	INITIAL COST	ANNUAL RECURRING COST
Watch list check before issuing travel documents	$53	$73
Watch list check before entering the United States	$330	$237
Issuing visas with biometrics	$1,399-2,845	$598-1,482
Issuing passports with biometrics	$4,446-8,766	$1,555-2,363

Note: Dollar amounts are in millions

Table 6. Total cost of biometrics in land border security.

From: GAO 03-174: General Accounting Office, *Technology Assessment: Using Biometrics for Border Security*. Washington DC, November 2002, p. 15.

All of the drawbacks to using biometrics for land border security can be addressed, as demonstrated above, except one: processing time. Assuming that the largest volume of

people crossing the U.S.-Mexican border daily is 800,000 (as reported in Chapter III), is it feasible to biometrically check everyone? No, it is not. There simply is not enough time in the day. Some simple math reveals that it will be impossible.

Let us assume 800,000 people cross daily and that no new entry ports open in the near future. There are currently 154 land ports in operation. If we assume that those 800,000 people are evenly distributed across all 154 ports, then each port would have to process approximately 5,195 people in one day in order to meet the demand. That translates to about 216 people per hour, or about 3.5 people per second. Even the fastest system, hand geometry, can only process one person every 6-10 seconds. Obviously, this model does not take into account that some ports are busier than other ports. However, it does help illustrate that the government would be asking the impossible from its border inspectors to try to process the already existing volume of people at land ports of entry.

There are unknown factors to consider as well. What if people do not have their ID cards out and ready? What about the time between transactions as people move up through the line to the inspector? All these factors add time and time is one thing that cannot be added to an inspector's day. The bottom line is that despite the accuracy and added security that biometrics bring to the table, there simply are too many people crossing the borders to employ such a system.

The GAO has also correctly pointed out that biometrics still do not address the fact that most illegal immigration (up to 60%) occurs *between the ports of entry* anyway. Therefore, biometrics at land border ports might cut down on fraud and reduce the risk of terrorists getting into the country at ports

of entry, but they cannot stop someone from sneaking across between the ports of entry.[286] Biometrics only solve a piece of the land border security puzzle.

D. PRELIMINARY CONCLUSIONS

In conclusion, the use of technology to improve security along U.S. land border ports is not a panacea. In particular, explosives and radiation detection are not mature enough to be deployed in a border security role yet. VACIS and SENTRI, on the other hand, not only significantly improve border security, but also improve border wait times. Congress should consider funding these projects long-term and expand their use to as many land border ports as possible.

The jury is still out on biometrics. It should not be employed on a large scale for land border ports. However, this does not mean that biometrics should not continue to be employed for access control, airport security, and perhaps on a smaller scale at the busiest land ports of entry or at known smuggling routes along the U.S.-Mexican border. Even better, why not address the privacy issues by issuing biometric ID cards a volunteer basis? This would ensure that those who distrust the technology on privacy grounds are not required against their will to use it. Yet the fact that some people would volunteer for such an endeavor might allow border inspection agencies to focus their inspection activities on those who do not have a biometric card. Essentially, using biometrics on a volunteer basis or on a smaller scale still practices smart, risk management techniques while avoiding the privacy issue altogether.

[286] GAO 03-174, November 2002, p. 14.

V. COOPERATION BETWEEN GOVERNMENT AND THE PRIVATE SECTOR TO IMPROVE SECURITY

A. INTRODUCTION

Much fanfare has been made about the need for inter-agency and international cooperation to combat terrorism. Less has been written about the importance of federal agencies and the trade industry jointly solving security problems. This chapter focuses on the increasing links between the trade industry (production, storage, transportation, importation and exportation, and distribution businesses) and federal governments in preventing terrorism, while simultaneously maintaining increased North American trade flows. In short, this chapter is about cooperation between the private sector and federal governments.

The vulnerabilities of the intermodal transportation system became more apparent after the 9/11 attacks. The market opportunities created by NAFTA have molded a "just-in-time economy," in which businesses use containers as "mobile warehouses."[287] Instead of ordering raw materials or unfinished goods in advance, companies order them just before they are needed, in order to save on warehouse costs. Increased wait times at the border stop production and shut down factories. Clearly, the need for a border open to the movement of legitimate goods is paramount.

However, on the other side of the coin, the argument for a secure border is also convincing. The exchange that occurs between land modes and sea modes of transportation is an especially vulnerable time. For example, in October 2002,

[287] Bartelme, T. "Ports called soft underbelly in war on terror." The Post and Courier, Charleston SC, 17 February 2002, p. 1A.

Italian police intercepted an al-Quaida operative sealed inside a container, complete with mobile phones, false credit cards, plane tickets, and false identification proving the man was an airplane mechanic. Countries such as the Philippines and Indonesia—both home to several militant, radical Muslim groups—supply more crewmembers for international shipping carriers than anyone else. These crewmembers have access to the docks and warehouses where a container's contents are loaded onto trucks. A Senate panel recently concluded that a significant threat exists that terrorists could use the transportation system to introduce weapons of mass destruction into the country.[288]

This chapter analyzes why a pre-clearance strategy to simultaneously improve transportation security while reducing wait time for commercial truck carriers on the northern U.S.-Canada border was successfully created. The chapter also analyzes why such a strategy has not developed along the southern U.S.-Mexico border. The increased security following 9/11 was so intense[289] that businesses in all three countries were losing money due to the increased security checks and long truck lines at the border.[290] In short, tightened security and long lines at the border (initiated primarily by the United States) necessitated a strategy to improve security while simultaneously reducing wait time at the border.

The government's need to secure its citizens against terrorism and industry's need to keep the border open to increased trade flows created a unique partnership. This partnership between industry and government is based on the risk

[288] Ibid.

[289] Graham, E.P.B. & Connolly, C. "Across U.S., A security scramble; Patchwork measures may be insufficient, Experts say." Washington Post, Washington, D.C. (final ed.), 23 September 2001, p. A01.

[290] Gorman, 01 December 2001, p. 3655-3656; Foster, May 2003, p. 45.

management principles introduced in Chapter II, whereby the border is pushed back to its points of origin and goods are inspected and cleared in advance.

The creation of a jointly administered pre-clearance strategy for commerce at North American borders is basically a two-step process. First, individual countries develop a strategy whereby imported goods are inspected and determined to be low-risk before reaching federal inspection agencies at the border. Second, countries agree to set aside and jointly administer dedicated lanes at the border for businesses that are considered low-risk. In the case of Canada and the United States, domestic processes and a history of mutual border security cooperation have permitted both steps to happen. In the case of Mexico and the United States, the process stalled early on due to domestic pressures.

The chapter is divided into four sections. The first section introduces the actors involved and how their preferences for or against a pre-clearance border transportation strategy developed. It discusses their goals and preferences as utility-maximizing individuals and groups. The second section addresses the institutional context. This section focuses on the framework within which the decisions were made. The third section addresses the outcomes, specifically why an agreement has been reached with Canada and why an agreement has not been reached yet with Mexico.

B. ACTORS AND GROUPS

In the case of the agreement between the United States and Canada, the major actors were: governmental border inspection agencies; Congress; the President; and key private-sector, special interest groups in the trade industry, such as the

National Customs Brokers and Freight Forwarders Association (NCBFFA), the National Tank Truck Carriers (NTTC), the National Industrial Transportation League (NITL), Less-Than-Truckload (LTL) Carriers, the American Trucking Association (ATA), and the Freight Transportation Security Consortium (FTSC).

1. Actors in the United States

The United States—whose largest trading partner is Canada—wanted a free flow of goods across the northern border, but tended to err on the side of caution. In the initial aftermath of 9/11, the United States advocated tighter security measures to protect U.S. citizens and more international and inter-agency cooperation against terrorism. The United States was partial to international agreements that would stop terrorists from entering North America in the first place.[291]

Most governmental border inspection agencies (DEA, INS, FDA, Dept. of Agriculture, Customs), in order to comply with their missions, envisioned an end state where contraband smuggling and illegal immigration declined. These agencies were not necessarily against increased trade flows, but drew a line in the sand when it came to eliminating their individual inspection requirements. Immediately after 9/11, security was the number one goal of the Bush administration and all governmental border inspection agencies. Ultimately this translated into a more restricted border.[292]

Immediately after 9/11, Congress debated legislation that, in general, increased security but also increased the costs[293] of conducting trade for the business community. A user's fee on

[291] Ibid, pp. 12-13.

[292] Schneider, June 2000, p. 2; White & Case Limited Liability Partnership, 18 June 2003, p. 8.

[293] By costs, I refer not only to financial costs, but also risks, barriers, and difficulties to conducting business.

import/exports to fund security, a mandate to manually open and inspect all containers, and permanently placing the military on the border were three examples of extreme measures being threatened on Capitol Hill.[294] Additionally, the President declared a broad "war on terrorism," which would define the rest of his term in office. One piece of the broad strategy called for increased security measures within U.S. borders.[295]

In general, those who had a stake in policy outcomes included those actors involved in the supply chain process, namely production, storage, transportation, importation and exportation, and distribution. In business, time is money. Therefore, as a group, private sector businesses wanted a relatively open border, with reduced inspections and wait time at the border. A border supporting increased trade flows equated to increased profits.[296]

Shippers and carriers in general were opposed to increased security measures because of the increased financial costs and the decreased trade flows it would cause. Specifically, some U.S. traders opposed any government-mandated technological solutions such as GPS (up to $5,000 to install and $1800/year per truck to maintain) and automatic braking systems. The trade industry opposed any action that increased the number of inspections on the border.[297] The import/export fee was heavily discouraged by NITL and NTTC for two reasons: (1) costs were borne by shippers while the increased security benefits were

294 D'Amico, 18 September 2002, pp. 30-32; Boyer, 25 March 2003.

295 McManus, 16 September 2001, p. A-1.

296 Schneider, June 2000, p. 2.

297 D'Amico, 18 September 2002, pp. 30-32.

shared by everyone else in the industry; and (2) legislation did not specify where the money would go once Customs obtained it.[298]

The governmental agency in the United States that broke this policy deadlock was Customs. Customs took the lead in shaping a pre-clearance strategy for goods shipment that combats terrorism when Robert Bonner, Customs Commissioner, proposed a partnership between Customs and U.S. importers in November 2001. This partnership was called the Customs-Trade Partnership Against Terrorism (C-TPAT). C-TPAT was important for two reasons: (1) it provided incentives (reduced inspection time) for the private sector to become involved in increasing their own security practices; and (2) Customs invited the trade industry to collaborate with them to develop the guidelines.

Once traders understood the benefits of C-TPAT, most trade private interest groups became interested in a pre-clearance regime. After Bonner's introduction of C-TPAT in November 2001, the largest U.S. automakers (GM, Daimler-Chrysler, and Ford Motors) allied with four other large companies (BP America, Motorola, Sara Lee, and Target) to support the initiative and become the first import companies to take advantage of its potential benefits.[299] Peter Powell, who heads the National Customs Brokers and Forwarders Association of America (NCBFAA), also supported the initiative. His praise of C-TPAT centered around three ideas: (1) C-TPAT both improved security and maintained or increased trade flows; (2) C-TPAT was compatible with Powell's belief that importers and exporters should be responsible for informing Customs early in the supply chain process about shipping details; and (3) C-TPAT requirements were

298 Ibid, pp. 30-32; Harrington, November 2002.

299 Shuman, September 2002; Bradley, Gooley, & Cooke, May 2002.

not overly burdensome and compliance increased a firm's credibility with Customs.[300]

The groups opposing C-TPAT were either relatively small in number compared to the rest of the U.S. trade industry, had no political clout, and/or offered no alternative solutions. For example, the Financial Technology Services Consortium (FTSC—a group of technology vendors who sell security products to the transportation industry) opposed C-TPAT. They criticized C-TPAT for only targeting terrorism that uses international supply chains while leaving supply chains within the United States vulnerable. FTSC also criticized C-TPAT for not targeting terrorism that could take advantage of supply chains not approved by C-TPAT guidelines.[301] However, the fact that their technology sales might be impacted by the new focus on risk management vice the status quo probably made their criticisms empty and invalid.

U.S. and Canadian less-than-truckload (LTL) carriers, which represent 20% of the freight carried across the northern border, were also hesitant about C-TPAT benefits. LTL carriers are small and medium-sized firms whose goods come from a wide variety of suppliers, both approved and unapproved by C-TPAT. Under the rules, even one supplier/importer not participating in C-TPAT disqualifies a carrier from using express treatment at the border. Some larger LTL carriers were able to load approved and unapproved goods on separate trucks, but smaller firms were unable to do so. Many LTL carriers were unwilling to change their business practices when dedicated lanes were unavailable

300 Harrington, November 2002.

301 Whitten, 24 March 2003, p. 8.

to their trucks, simply because the suppliers or importers they served were unapproved.[302]

2. Actors in Canada

Canadian major actors included both the public and private sector as well. Major Canadian governmental agencies involved included Citizenship & Immigration Canada (CIC), the Canada Customs and Revenue Agency (CCRA), and Canadian Foreign Affairs and International Trade Canada. Major private-sector groups in Canada also included exporters, importers, customs brokers, and transporters. In general, the Canadian Trucking Alliance was the voice of the entire Canadian trade industry.

Developing public-private security partnerships in Canada was not nearly as debatable as it was in the United States. Most businesses and private citizens in Canada want standardized U.S.-Canadian border laws in general and support a "North American Security Perimeter" instead of a closed northern border. However, Canada preferred a balance between security and trade flows that favored less stringent inspections and a free, easy flow of goods. Additionally, Canada was concerned about cooperative agreements limiting their sovereignty.

The bottom line in Canada was that concentrated economic ties to the United States ensured whatever concessions were necessary to develop a pre-clearance strategy that satisfied U.S. security concerns. The volume of trade Canada has with the United States overrode any sovereignty concerns Canadians may have harbored. Canada, whose primary trading partner is the United States and whose trading relationships are not as diversified as the United States, has a greater stake in

[302] Abt, 09 December 2002, p. 3.

maintaining trade flows across the U.S.-Canadian border.[303] As mentioned earlier, the only concern that the Canadian Trucking Alliance voiced over C-TPAT was for the LTL carriers, who usually shipped from a wide variety of suppliers.

3. Actors in Mexico

Mexico's preferences soon mirrored their pre-9/11 policy goal: quick, easy transborder migration. Mexico's preferences were mostly centered around the transfer of people across the southern border. Mexico wanted a cooperative venture that made migration into the United States safer and easier. In addition, the Mexicans were also concerned about losing sovereignty.[304]

Mexico, like Canada, understood that concessions would have to be made with regard to border security. Mexico knows that the United States will ultimately tighten border security unilaterally at Mexican expense if they do not cooperate. Therefore, it was in the Mexican interest to cooperate to some degree in a pre-clearance strategy. Otherwise, a future border might become near impossible for Mexicans to cross.[305]

Interestingly, the Mexican Trucking Association continues to lobby against joint U.S.-Mexican transportation infrastructure planning and the incremental relaxation of national transportation restrictions. Despite the NAFTA mandate in 1993 to both harmonize and relax these regulations, Mexican truckers fear that doing so will hasten the onset of competition with Canadian and U.S. truckers (Mexican truckers do not feel prepared for this). In short, Mexican truckers continue to

303 CIC-Canada, 2000, pp. 8-9, 12.

304 Ibid, pp. 8-9, 12-13.

305 Ibid, p. 9.

advocate for the status quo and are resistant to the consequences of globalization and free trade in North America.[306]

C. INSTITUTIONAL CONTEXT

The institutional context for negotiations between the United States/Canada and the United States/Mexico were markedly different. The United States has an impressive record of cooperation with Canada on transportation border issues dating as far back as 1995. Conversely, Mexico and the United States—while making valiant attempts at cooperation on border transportation issues—does not have a very good track record.

In 1995, Canada and the United States announced the *Accord on our Shared Border*. Out of that agreement grew several cooperative initiatives. First, shared technology such as the *Remote Video Inspection System (RVIS)* permitted officials to monitor border crossings at remote locations where before there had been only orange cones. Second, the *Liaison Officer Exchange* permitted joint training in each other's customs laws. Today, there are U.S. customs officials operating in Canada and vice versa. Third, a reciprocal program that reduced customs inspections from a 4-step to a 2-step process improved border crossings. Fourth, they planned and pooled resources to reroute commercial trucks entering the United States, reducing congestion. Finally, joint construction projects in Washington/British Colombia, Montana/Alberta, and Alaska/Yukon were scheduled to be fully completed by summer 2003.[307]

Mexican-U.S. border cooperation has been less harmonious. First of all, transportation-related standards, regulations, and operating procedures between the United States and Mexico were very different prior to NAFTA negotiations. Before full access

[306] Schneider, June 2000, p. 1.

[307] CIC-Canada, 2000, pp. 2-3, 7, 9-11.

to each other's domestic trucking markets can happen, the two countries must standardize these procedures—a process that is still ongoing today (9 years after NAFTA was signed). Despite the formation of a Land Transportation Standards Subcommittee (LTSS) under NAFTA to make compatible regulations (specifically safety standards), very little has been accomplished.

The most difficult dispute for the LTSS is arguably full U.S. access for Mexican trucks. Under NAFTA, the United States agreed to limited U.S. access across the border and promised to extend that to full access in its four border states by December 1995. By January 2000, applications were to be accepted from Mexican truckers to operate anywhere in the United States.

U.S. domestic pressure has so far forced the U.S. government to break NAFTA promises. The Teamsters and other labor unions mounted huge pressure during an election year to prevent Mexican truck access. Most empirical evidence does not support the claim that Mexican trucks are unsafe. Furthermore, Canadian trucks have full access to U.S. markets despite using trucks that are 60% heavier and drivers who log 30% more hours on the road than U.S. standards allow. In short, the U.S. unyielding stance on Mexican truck safety equates to the use of a non-tariff barrier to protect U.S. trucking jobs.

The Mexican trucking safety issue is as bitter now as ever. Mexico filed suit via NAFTA's dispute resolution process.[308] After deliberations in summer 2000, the arbitration panel ruled in favor of Mexico. President Bush subsequently ordered the southern border open to Mexican trucks by 01 January 2003.

Nevertheless, Congressional and other actions have confused Mexico. The U.S. Dept. of Transportation passed a series of

[308] Schneider, June 2000, pp. 1, 4.

regulations (e.g., inspection of truck facilities in Mexico, additional safety checks, and renewal of permits for transborder carriers to continue operating in the currently allowed 27-mile border zone), all of which were violations of the 2001 NAFTA arbitration panel. The U.S. Teamsters Union filed a federal suit because of the U.S. DOT's failure to conduct studies of the environmental impacts of Mexican trucks in the United States.

Mexico responded in dramatic fashion. CANACAR—a trucking association representing nearly all Mexican truckers—responded with drastic measures, citing dishonesty, unfairness, and cleavages in national sovereignty/international rights. First, they requested suspension of equivalent access benefits to U.S. truckers and threatened to strike if U.S. applications for Mexican access were processed. Second, some truckers staged partial blockades of international bridges to protest the new U.S. DOT rules. CANACAR's president even influenced the Mexican Sec. of Communications and Transportation to call for cancellation of the NAFTA transportation chapter.[309]

Second, despite various binational forums (e.g., Border Liaison Mechanism, Joint Working Committee, Border Governor's Conference, U.S.-Mexico Binational Group on Bridges & Border Crossings, and the Binational Commission),[310] long-range solutions to inadequate transportation infrastructure remain. The only innovations have been at the local or regional level (i.e., Border Liaison Mechanism), but transportation corridor planning is not only inadequate, but also resisted by Mexico, who fears competition with Canadian and U.S. truckers.[311]

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[309] Foster, May 2003, pp. 43-47.

[310] GAO/NSIAD-00-25, March 2000, pp. 32-34; Bureau of Public Affairs, May 1994, p. 7.

[311] GAO/NSIAD-00-25, March 2000; Schneider, June 2000, p. 1.

Finally, two other considerations must be mentioned. First, even if Mexico's aggregate preference was to develop a pre-clearance strategy approximating the stringent private-sector security requirements of C-TPAT and CSA/PIP, the private trade sector in Mexico is woefully unprepared to do so. Most small and medium-sized businesses in Mexico lack both the finances and the information systems requirements inherent in C-TPAT, CSA/PIP, FAST, or even Mexico's own program.

Second, the U.S.-Mexican trucking dispute is working at cross-purposes with the new pre-clearance initiatives. Until long-haul Mexican trucks get U.S. access, shippers must use drayage carriers. These firms pick up trailers on the Mexican side, submit to all required inspections on both sides, carry the load across the border, and pass the load onto U.S. truckers for transport within the United States. Drayage carriers are small and medium-sized operations that lack the infrastructure to comply with trade security rules. Most drayage companies have no automation capabilities, and therefore cannot be tracked by customs officials. This fact alone poses a risk in the U.S. government's estimation. This problem could be remedied if the U.S. government would simply abide by its NAFTA obligations and grant Mexican trucks access into the United States because most of the drayage companies would not be needed anymore.

In short, the setting for negotiations of a pre-clearance border strategy in North America developed over the course of a decade. This setting can be broken down into four key points. First, "there is concern within Mexico's trucking industry that Mexico is not ready to compete with trucking companies from the United States and Canada."[312] Second, a precedence of continued

[312] Ibid, p. 1.

cooperation regarding customs issues benefited the U.S.-Canadian negotiations while a precedence of failure regarding customs issues hindered U.S.-Mexican negotiations. Third, there are powerful domestic pressures in Canada to push the concept of a border out to the North American perimeter. Conversely, there are powerful domestic pressures in Mexico and the United States to protect trucking jobs and maintain the status quo. Fourth, in the case of Mexico, the infrastructure requirements necessary to form public-private security partnerships do not exist.

D. OUTCOMES

1. Outcomes on the U.S.-Mexican Border

Mexico and the United States could not overcome the existing protectionist, national sovereignty, and uncooperative impulses to develop a jointly administered pre-clearance strategy for commerce. Mexico has attempted to streamline commercial processing unilaterally, but its program is not as well developed as the U.S.-Canadian models and there is little information to suggest that anyone knows about it, at least in the United States. Nevertheless, the fact that 300 companies do 2/3 of the volume of cross-border trade encouraged the Mexican government to implement its Compliant Importer-Exporter Program, which certifies companies' security compliance and offers benefits to companies that qualify. As of April 2003, this program has certified 110 compliant companies in Mexico.[313]

Mexico, despite the concerns of some domestic special interest groups (such as the Mexican Trucking Association and CANACAR), knows that security compliance is necessary if their privileged status as the second-largest trade partner of the United States is to continue. Unfavorable changes in Mexican tax laws, higher labor and production costs, and chronic border-

[313] Field, A.M., p. 8A.

crossing delays due to poor infrastructure planning in the 1990s are threatening maquiladoras. Maquiladoras work almost exclusively on the just-in-time concept, whereby costs are minimized via not using warehouses and through bypassing taxes and duties by ordering raw materials and intermediate goods on the day of their assembly in Mexico, and then exporting them elsewhere.[314] Sony spokesman Dan Sherman predicts the following:

> It's not going to take long for companies to start doing the math and to see that [maquiladoras are] going to be less effective and less competitive with facilities that are located in other parts of the world.[315]

As such, Mexican-U.S. cooperation is improving. Mexican officials are working with U.S. officials to develop detailed profiles of frequent shippers and entry points. The profiles analyze the types of goods crossing at each point at various times of the day. When trucks cross the Mexico-U.S. border, agents on both sides compare electronic information received from bar codes placed on some shipments. If Mexican data does not match the data collected U.S. data, a red flag is raised.[316]

Other signs of improved cooperation are occurring as well. In April 2003, Mexico and the United States signed a joint 22-point action plan—the U.S.-Mexico Border Partnership—that outlines specific actions necessary to ensure the secure flow of people and goods and the development of a secure and sufficient infrastructure to facilitate the growing trade between the two countries. The action plan, which embraces technology and enhanced bilateral cooperation, is similar to the one signed in

314 Foster, May 2003, p. 46.

315 Ibid, p. 46.

316 Field, 17 June 2003, p. 8A.

1993 by Canada and the United States. One of the three target areas is the secure flow of goods.

One of the initiatives of the Border Partnership is to integrate C-TPAT with Mexico's Compliant Importer-Exporter program.[317] However, the program is still in its developmental stages, despite an announcement that a pilot FAST-lane project will start at the El Paso-Juarez crossing later this year.[318] This is evident in a current U.S. Custom's strawman proposal:

> The Southern Border Cargo Release Strategy will mirror a system similar to the FAST concept with modifications to meet the cargo-processing needs of the southern border. Currently, a select group of customs officials from both Mexico and the United States are coordinating their efforts to develop a similar release mechanism for the southern border, which will include a bilateral release strategy.[319]

2. Outcomes on the U.S.-Canadian Border

The Free and Secure Trade Program is a recently unveiled, jointly administered program that uses risk management and private sector-public security trust relationships to balance the security/increased trade flow issue. Before FAST became a reality, Canada and the United States developed strikingly similar pre-clearance transportation regimes to guard against the introduction of terrorism. Canada's model, introduced by the Canada Customs and Revenue Agency (CCRA) is called the Customs Self Assessment & Partners in Protection (CSA/PIP). The U.S. model, introduced by U.S. Customs, is called the Customs-Trade Partnership Against Terrorism (C-TPAT). Both models initially were intended for the final destinations of cargo in

317 U.S. Embassy in Mexico City. "U.S.-Mexico Border Partnership: Joint Statement on Progress Achieved." [http://www.usembassy-mexico.gov]. 24 April 2003. Accessed 18 June 2003.

318 Journal of Commerce Online, 25 April 2003, p. WP.

319 U.S. Customs Service, 16 January 2003.

their respective countries (U.S. importers and Canadian importers/carriers), although C-TPAT has progressively become available to each corresponding link in U.S. supply chains. Both processes involved partnerships between the trade industry and government that categorized cargo into low risk and high-risk categories. Both models permit customs examinations and post-audit verifications when deemed necessary by government. Finally, both programs developed at about the same time, although the Canadian model was implemented first.

The differences between CSA/PIP and C-TPAT are minimal. Initial implementation benefits of CSA/PIP provided only streamlined accounting and payment processes for imports, but by December 2001, CSA/PIP-approved firms enjoyed express treatment at the border as well. Additionally, CSA/PIP currently only applies to Canadian importers and the carriers who serve them.

Approval by the CCRA involves three steps: (1) a risk assessment that demonstrates a history of compliance; (2) proof that business processes, accounting procedures, and security measures both account for goods throughout the supply chain as well as have the necessary linkages, controls, and audit trails to support CSA requirements; and (3) a signed contract with CCRA outlining importer/carrier responsibilities, accounting/payment schemes, and who the importer/carrier's clients and customers are. U.S. and Canadian drivers who use CSA/PIP clearance benefits also must complete a rigorous prescreening process to be approved for the Commercial Driver Registration Program (CDRP). CDRP drivers present a photo ID (with bar code) to CCRA at the border for express treatment.[320]

[320] Canada Customs & Revenue Agency, January 2002; Shuman, September 2002.

C-TPAT was hailed as a win-win-win policy for government, business, and U.S. citizens. Essentially, C-TPAT required U.S. import companies to evaluate and improve (when needed) their own security procedures in exchange for faster Customs processing at the border. C-TPAT puts the onus on the private sector to self-police their own supply chains, effectively places cargo into *low risk* and *high-risk* categories, and allows Customs to focus inspection energies on the high-risk cargo. Benefits of the program are summarized in Table 7.

CUSTOMS	TRADE COMMUNITY	U.S. CITIZENS
Decreased volume of required inspections	Dedicated lanes at land ports or entry	Decreased lines at land border ports
High-risk goods screened from low-risk goods before arrival at border	Customs account managers dedicated solely to approved C-TPAT members	Improved security against terrorism
Customs officials able to focus inspection efforts on high-risk goods (companies not approved for C-TPAT)	Eligible for account-based process (bimonthly, monthly payments, online payments)	
Standardized security	Reduced inspections, audits, border wait time	
	Self-policing vice Customs verification	
	Security is standardized across trade industry	

Table 7. Benefits of C-TPAT

After: Shuman, J.R. "Preserving and Expanding our Important NAFTA Trading Relationship in Light of September 11," Business Credit, pp. 53-60, September 2002. Retrieved 14 June 2003 from ProQuest database.
After: Whitten, D.L. "Con-Way Says It Will Impose $8 Border-Security Fee." Transport Topics, 18 November 2002, p. 3, 36.

In order to be eligible for the program, the trade industry is required to accomplish four basic tasks. First, conduct a comprehensive self-assessment of each link in their supply chain, using joint Customs-trade community guidelines. Second, submit a supply chain security questionnaire to allow Customs to them as a potential C-TPAT member. Third, use the joint

guidelines to develop and implement a program to enhance security along their respective supply chains. Fourth, advertise the joint guidelines to all companies in their supply chain and encourage implementation. Sometimes this requirement means new contracts with suppliers and carriers.[321] The requirements are specific to each industry sector. For example, truckers must show that they have security measures to prevent physical tampering of cargo in their possession. Importers must show that their paperwork and data procedures have safeguards against falsification of information.[322]

Customs proposed the program first to U.S.-based importers in November 2001 and unveiled the program to the public in April 2002. At that time, sixty companies had signed agreements with Customs, including the initial members (General Motors, Daimler-Chrysler, Ford Motors, BP America, Motorola, Sara Lee, and Target).[323] C-TPAT was offered to transportation carriers in July 2002;[324] to brokers and freight forwarders in August 2002;[325] to domestic port of entry authorities in January 2003; and will ultimately be offered to terminal operators, warehouse operators, and manufacturers. [326]

Due to the similarity and proximity of implementation dates for both C-TPAT and CSA, it was not difficult to develop a system whereby approved businesses from both countries could be given express treatment at the border. Free and Secure Trade (FAST) is the name used to describe the jointly administered

321 Shuman, September 2002, pp. 54-55, 60.

322 Whitten, 18 November 2002, p. 8.

323 CNN, 16 April 2002.

324 Customs Headquarters: Office of Public Affairs, 09 July 2002.

325 Customs Headquarters: Office of Public Affairs, 21 August 2002.

326 Customs Headquarters: Office of Public Affairs, 13 January 2003.

program. FAST participants submit two separate applications to each government's FAST processing center(s) (administered by immigration and customs officials from each country). Essentially, if supply chain businesses from Canada importing into the United States are C-TPAT approved, they receive FAST benefits. Conversely, if supply chain businesses from the United States importing into Canada are CSA/PIP approved, they receive FAST benefits. FAST benefits include the following:

- Reduced information requirements for customs clearance
- Elimination of the need for importers to transmit data for each transaction
- Dedicated lanes for FAST clearances
- Reduced rate of border examinations
- Verification of trade compliance away from the border
- Streamlined accounting and payment processes for all goods imported by approved importers (Canada only)

FAST was implemented at six northern border crossings in December 2002.[327]

E. PRELIMINARY CONCLUSIONS

After significant discussion between customs/immigration agencies and the private sector in both Canada and the United States, a pre-clearance strategy that puts the onus on the private sector to police its own supply chains has emerged. Its creation was the result of several years of Canadian pressure-which date back to the early 1990s—to relieve bottlenecks at the northern border. The cooperative ventures that preceded 9/11 permitted an environment in which Canadian and U.S. cognitive processes mirrored each other with regard to border security strategies. Instead of fighting U.S. domestic pressure to streamline and reduce inspection time at the expense of

[327] Canada Customs & Revenue Agency. "The Free and Secure Trade Program." [http://www.ccra-adrc.gc.ca]. Accessed 19 June 2003.

security, the U.S. Customs agency effectively used those pressures to their advantage. Both U.S. and Canadian customs agencies accomplished this by developing risk management techniques whereby the private sector bore the costs of improving security and automating commercial manifest information in exchange for express treatment at the border.

Domestic pressures, a negotiating environment (framed over the past decade) in which Mexican transportation officials do not trust U.S. transportation officials, and an inferior industrial infrastructure in Mexico have so far prevented a similar arrangement between the United States and Mexico. Domestic pressures in Mexico center around Mexican truckers, who have traditionally resisted the following: participation in long-range infrastructure planning; opening Mexico's transportation market up to competition; and loosening national transportation restrictions. Conversely, U.S. domestic interests have spurred an ongoing battle over permission for Mexican trucks to operate in the United States. U.S. officials have used the lower safety and operating standards of Mexican trucks as a non-tariff barrier to protect U.S. trucking jobs. The resulting mutual mistrust prevented a spirit of cooperation regarding transportation issues to materialize. Finally, the lack of information management systems and financial resources inherent in the Mexican private sector trade industry has so far prevented a strategy comparable to the U.S.-Canadian model to emerge. Since only the largest private sector trade businesses in Mexico can afford such infrastructure, much of the commerce crossing the southern border is still significantly scrutinized.

Even though no pre-clearance strategic agreement currently exists between Mexico and the United States, the two

countries are currently attempting to develop one. It remains to be seen whether or not the U.S.-Mexico Border Partnership will yield real results regarding improved security and increased trade flows. A significant first step might be for the United States to honor its NAFTA commitments and grant Mexican trucking access to U.S. markets.

VI. SUMMARY, CONCLUSIONS, & POLICY IMPLICATIONS

A. SUMMARY

Terrorism has been a perpetual problem for the United States and other countries for quite some time, but most U.S. efforts to combat terrorism in the past have focused on disrupting terrorist cells overseas. The 9/11 terrorist attacks in New York City galvanized U.S. political will to do more to secure U.S. borders at home. After 9/11, the current U.S. administration's priorities expanded to not only conducting counter-terrorism efforts abroad, but also to strengthening border security efforts at home.

This thesis makes a case for more fully studying U.S. land borders as the potential weak link in the border security chain. The reasons for this are twofold: (1) the geography of the United States is such that its land borders encompass a vast amount of space; and (2) the sheer volume of traffic moving across U.S. land borders is colossal, and continues to increase due to NAFTA. The characteristics of U.S. land borders have created unique opportunities for future terrorists to exploit; yet land borders continue to be ignored by policy-makers.

Traditional state threats have changed over time. Traditionally, the primary threats to states have been other states. However, the end of the Cold War helped initiate an era in which most states accept—to one degree or another—free markets and capitalism as the economic model of choice. In turn, these changes have accelerated the current phenomenon of globalization and closer integration (in both economic and security arenas) between states. Unfortunately, globalization and integration also have a series of negative side effects,

including an increase in transnational threats (e.g., terrorism, illegal immigration, drug smuggling, and organized crime).

This thesis reviewed current theory on how to structure border security to address these threats. Most authors, policy-makers, and think tanks agree that the best way to think about border security is to redefine what a border is. Borders can no longer be viewed as a line in the sand where all inspection and security efforts converge. The concept of borders must be shifted outward such that additional "filters," or opportunities to weed out terrorism are added. Doing so requires an integrated, cooperative effort on the part of all border inspection agencies and governments in a region.

This thesis attempted to analyze three currently cited proposals for securing U.S. land borders against terrorism. The first was increased manpower and financial resources for border inspection agencies. The second was the procurement of technology as a tool to combat terrorism at home was explored. Finally, increased cooperation between the private sector and government was also explored.

Three important arguments emerge from the findings of this thesis. First, there must be a balance between freedom of movement and security along U.S. land borders. Focusing too exclusively on security right at the border—especially without employing the risk management concepts advocated by most border security experts today—can crush social and economic life along border communities. Second, illegal immigration is a significant problem with implications far more serious than just domestic job loss or taxpayer inconvenience. In short, stopping illegal immigration is vital to the homeland security effort. Third, the rash of spending by Congress in the 1990s to stop illegal

immigration has so far yielded no positive results in the overall level of illegal immigration into the United States. Furthermore, additional unwanted side effects of the increased emphasis on additional agents and high-tech deterrents along the U.S.-Mexican border are now commonplace.

Harnessing the benefits of technology is an important part of risk management and "moving the border out." Currently, there are several technologies that are either being tested or piloted along U.S. borders in the war on terror. The list analyzed in this thesis was not all-inclusive, but was representative of those technologies in which Congress has either made an initial investment or is considering doing so. This scrutiny is warranted because Congress is spending so much money on border security (and the "war on terror" in general) that deficit levels are again creeping back into the federal budget. This thesis prioritized Congressional border security spending on technology that secures the United States against terrorism while simultaneously improving border wait times.

Most people agree that if the government tapped into the resources already present in the private sector (e.g., ingenuity, technological prowess, and organizational skills), security could be improved. The Customs-Trade Partnership Against Terrorism (C-TPAT) is a strategy that entails prescreening goods before their arrival at the border, as well as putting more of the onus for security on the private sector. Such a system views the private sector as an integral part of security, rather than just a Custom's customer. This type of risk management strategy is something that Canada and the United States can agree upon, but despite its usefulness as a model, such a model is not as well developed in the supply chains along

the U.S.-Mexican border. This thesis analyzed why this is, by examining some of the domestic and international political complexities that obstruct the development of such a scheme.

B. CONCLUSIONS AND IMPLICATIONS FOR POLICY

The Border Patrol case study in this thesis provides insights into the effectiveness of increased manpower/resources on the prevention of terrorism. The Border Patrol's new strategy in 1994 hinged entirely on increased funding levels. Without the funding and new agents on the line, the strategy would have been dead from the start. My findings indicate that a strategy that requires more money and agents on the line may not necessarily be effective against illegal immigration. If these findings apply to the high-priced strategy of "prevention by deterrence," then they likely apply to any other high-priced strategy under consideration.

This is an important distinction because Congress is spending more money on border security than it ever has before. The significantly increased spending comes at a time when deficit levels are appearing again on the federal government's radar screen. During most of the past decade, the federal government was able to actually see surplus spending levels in the budget. Nevertheless, FY 2001 marked a change in that beneficial trend and Congress is again starting to spend more than they have again.

These findings should serve as a grim reminder to U.S. politicians—both in Congress and the executive branches of government—that spending a lot of money on border security will not necessarily equate to a more secure border. A long line of border agents and inspectors holding high-tech gadgets are not a cure-all for the border security ills that 9/11 exposed.

Priorities need to be made and effective management, follow-up, training, and strategic vision must accompany any funding increases for the desired effect to occur.

The meat of the immigration argument is two-fold. First, the continued rising estimates of illegal immigration in the United States are becoming an increasingly serious cause for concern, not necessarily because of the high estimates themselves, but because of the increasing likelihood that illegal immigration may have national security implications. In other words, the fact that illegal immigrants continue to pour into the country is not as alarming as the possibility that potential terrorists are increasingly taking advantage of a border security system that has not traditionally targeted the real problem, i.e., terrorism on U.S. soil. The question then becomes, of course, how must the current system change so that border security protects against terrorism as an unwanted side effect of illegal immigration? This is a subject for further research.

Second, simply adding enforcement personnel and/or spending high levels of financial resources on current border institutions will not alone stem the overall level of illegal immigration on the southern border. The current strategy has allowed the border patrol to gain a measure of control over illegal immigration that is unsurpassed in recent memory. This control has been achieved in the face of formidable odds, including a seemingly overwhelming number of individuals determined to live in the United States.

Nevertheless, despite these successes, the level of illegal immigration today still suggests that the border is porous and therefore subject to exploitation by terrorists who want to harm

America. The implication is that Congress cannot expect to just increase funding levels and hope that terrorism does not rear its ugly head again. U.S. political leadership and federal border security agencies (specifically those now housed within the Department of Homeland Security) must additionally provide an integrated, strategic vision for the "war on terror." Technology spending must be prioritized and well studied before it is enacted into law or U.S. citizens risk wasting their tax dollars on an expensive border security campaign that does not yield the desired results. In short, U.S. political leadership needs to define their desired end state before hastily embarking on the means to achieve their goals.

As far as technology is concerned, some of the pilot programs for land border security are suspect. The decision to equip all Customs officials with personal radiation detectors is especially questionable. Unless these devices are intended to protect against potential radiation hazards caused by the VACIS machines being employed, they have no place on U.S. borders. Therefore, Congress should not fund additional purchases of these and other explosive detection devices until the technology is sufficiently tested in an operational environment and proven to be accurate for what they are intended to do.

Congress is to be applauded for its investment in other technologies, including VACIS, SENTRI, ACE/ITDS, and the Container Security Initiatives. These types of technologies should help protect against further terrorist attacks. As far as biometrics are concerned, its use has a place in border security. However, Congress should take great care in expanding the use of biometrics to all land border ports in some type of "national I.D. system." The main reason for this is not the

privacy implications of such a system. These dilemmas can be solved with proper oversight, legislation, and offering biometric systems for frequent travelers, in much the same way as SENTRI works (and INSPASS in the airports). However, further research needs to be done on how such a system would impact congestion at the border. The sheer volume of people crossing the border makes a biometric system of identification technically impossible.

This does not mean that biometrics could not be employed on a smaller scale. For example, using biometric identification in U.S. visas and passports or with specific border communities along the U.S.-Mexican border would be feasible. The important point here is that before spending millions of dollars on a biometric system of identification, border agencies need to test out such a system on a smaller scale in a rigorously studied pilot program. The amount of funds allocated each fiscal year to such a project should never be more than 10% of the entire estimated cost; much like the Senate and House appropriations committees have handled the development of U.S. Customs' Automated Commercial Environment. Such oversight and scrutiny ensures that the program can be sufficiently analyzed and adjusted when necessary to yield the desired end state.

Finally, understanding the barriers to private sector-governmental security partnerships similar to the Customs-Trade Partnership Against Terrorism (in the United States) and the Customs Self Assessment & Partners in Protection (in Canada) along the U.S.-Mexican border has important implications for U.S. border security policy. The dynamics of the U.S.-Mexican border are different than those of the U.S.-Canadian border.

U.S. political leadership must recognize these differences and address them.

Domestic pressures, a negotiating environment (framed over the past decade) in which Mexican transportation officials do not trust U.S. transportation officials, and an inferior industrial infrastructure in Mexico have so far prevented a well-developed pre-clearance regime between the United States and Mexico. Domestic pressures in Mexico center on Mexican truckers, who have traditionally resisted the following: participation in long-range infrastructure planning; opening Mexico's transportation market up to competition; and loosening national transportation restrictions. Conversely, U.S. domestic interests have spurred an ongoing battle over permission for Mexican trucks to operate in the United States. U.S. officials have used the lower safety and operating standards of Mexican trucks as a non-tariff barrier to protect U.S. trucking jobs. The resulting mutual mistrust prevents a spirit of cooperation regarding transportation issues to materialize. Finally, the lack of information management systems and financial resources inherent in the Mexican private sector trade industry has so far prevented a private-sector/governmental partnership comparable to the U.S.-Canadian model to emerge. Since only the largest private sector trade businesses in Mexico can afford such infrastructure, much of the commerce crossing the southern border is still significantly scrutinized at the border, creating bottlenecks and slowing down the economies of both Mexico and the United States.

While developing the infrastructure for an electronic Customs manifest system in Mexico may be a significantly more long-term and difficult step, extending the hand of cooperation

is not. The United States cannot expect Mexico to bow to its wishes for a more secure land border if the United States fails to keep its NAFTA commitments. To this end, a significant first step in improving land border security on the U.S.-Mexican border is for the United States to muster up the political will to grant Mexican trucking access to U.S. markets. To some, this may seem completely unrelated to border security. But if the United States continues to place more emphasis on its domestic interests at the expense of Mexico—which is what U.S. political leadership is doing by not keeping its NAFTA commitments—then there should be no surprises when Mexico refuses to cooperate with U.S. border security measures.

The tone of the conclusions in this thesis is not designed to condemn increased manpower and resources (or any federal inspection agencies) as potential solutions to the border dilemma. Rather, the argument is that increased manpower/funding *alone* is not the solution. An appropriate mix of increased manpower/resources, technological advances, and cooperation between countries, federal agencies, and the private sector is probably the best solution to the current border security question. This thesis has not attempted to define just what "an appropriate mix" of these variables is. However, continued research focusing on the contributions of each of these variables (or the appropriate mix of these variables) to a border security policy that protects U.S. citizens from undesirable people and goods is both desirable and necessary.

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