

UNIVERSITY OF CALGARY

Policy Change in Aviation Security, Canada and the United States, 1985-2005

by

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Abstract

Civil aviation is an attractive target for criminals and terrorists in part because great harm can be done with relatively few resources. Why is it that some attacks against civil aviation prompt great change in government public policy towards aviation security, and others cause relatively little? Four independent variables were identified that cause the greatest variation in public risk perception in response to an attack: its size, target, nature of the perpetrators of the event, and ingenuity. The size and scope of policy change was categorized utilizing Hall's Order of Change model. It was found that events of large size, targeted against the state, by a credible and known perpetrators capable of repeating an ingenious attack causes the greatest shift in public risk perception, which results in the largest policy changes. The size and scope of policy change is proportional to changes in public risk perception.

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List of Symbols, Abbreviations and Nomenclature

Abbreviations	Definition
ATA	Air Transport Association
	Computer Assisted Passenger Profiling System
CAPPS	
CATSA	Canadian Air Transport Security Authority
CSIS	Canadian Security Intelligence Service
DHS	Department of Homeland Security
FAA	Federal Aviation Administration
GAO	General Accountability Office
GIA	Armed Islamic Group
IDF	Israeli Defense Forces
	The International Federation of Air Line Pilots Associations
IFALPA	
LAX	Los Angeles International Airport
MANPAD	Man-Portable Air Defence System
PFLP	Popular Front for the Liberation of Palestine
PLA	Palestinian Liberation Army
PLO	Palestinian Liberation Organization
PWA	Pacific Western Airways
RCMP	Royal Canadian Mounted Police
TSA	Transportation Security Administration
TWA	Trans-World Airlines

CHAPTER ONE: INTRODUCTION

There was a time when a passenger could carry-on a gun, a box cutter, and a bowling ball onto a flight. Some gates used to be strategically placed so close to roads that passengers could step out of a taxi and virtually board an aircraft. Passengers used to be able to check their bags at the curb side. Those times are over. The story of how aviation security has evolved warrants attention because dramatic change has occurred over a short span of time and because it has become a central security issue for developed states.

Aviation security policy has received considerable attention and study since September 11, 2001, yet the current North American regime did not suddenly appear on September 12, 2001. The roots of the current aviation security regime can be traced to 1968, where this thesis begins, in Israel. Israel inspired an entire set of policies which were ultimately emulated by the United States and Canada on several occasions in response to different events. Yet, the United States and Canada only selected a few Israeli lessons, and implemented them half-heartedly. Had the United States correctly drawn lessons from Israel, and chose to implement them, the events of September 11 may never have occurred. While it might not be possible to prevent all attacks all the time, a set of properly constructed policies can prevent almost all terrorist and criminal attacks.

Aviation security policy and the patterns of its change are important fields of knowledge given the threats posed by terrorists and criminals. Aviation is an attractive target for several reasons. The fuselage is an easily controlled space, owing to its

relatively small size, few entry-exit points, and once in air, its inaccessibility to law enforcement. An aircraft offers an attractive way of killing a large number of people with few resources. Also, it is easy to inflict large casualties in the airplane with a small amount of explosive, and relatively easy to kill many people on the ground by using the aircraft and its fuel as a guided missile. Some air carriers are national symbols of prestige, and as such, are symbols of the state. An attack against a national airline can be viewed as an attack against the state. Moreover, as a mode of transportation, civil aviation carries an additional perception of extra risk. From the public's point of view, some methods of death are far worse than others. While the drive to the airport carries a far greater chance of death than dying in an aircraft¹, many people view dying in the latter as a far worse manner of death. This is part because there is no in control over one's own fate, and in part because the idea of dying by fire or falling is far worse than by trauma. In short, dying in an airplane, and having no chance to control ones own fate, is terrifying for many people.

While counter-terrorism intelligence gathering and international efforts to attack the root causes of terrorism are important components in the broader prevention of terrorism, they are not panaceas for achieving aviation security. The security found at the airport and in the airplane form the last layers. As long as criminal and terrorist threats to civil aviation persist, this policy domain will exist. The patterns of policy change in this

¹ Figures from the National Transportation Safety Board indicate that there were 600 fatalities in U.S. Civil Aviation, and only 22 on scheduled air carriers (United States, 2005) in 2005, as compared to the 43,443 fatalities that took place on the roads that same year (National Highway Traffic Safety Administration, 2006).

domain are important because they bear directly on public safety and the perceptions of public safety.

This thesis seeks to explain the patterns of policy change in aviation security in Canada and the United States between 1985 and 2005. Why is it that the Air India attack, which killed hundreds of Canadians, did not evoke a larger policy response than the one to 9/11, in which only two dozen Canadians died? Why did the policy responses to other important events in aviation security differ from one another? This thesis argues that the four independent variables which characterize an event (briefly: relative size of the event, target of the event, nature of the attacker, and ingenuity of the attack) are the key factors that influence public risk perception. The amount of risk that the public perceives in response to that event determines the degree and scope of the policy change. This argument rests upon a considerable amount of public policy theory which must be defined.

The balance of this chapter lays out the framework, scope, and methodology used to support that thesis. First, the 'scope of policy change' is quantified and classified using the Order of Change model as put forward by Hall (1993). Several important concepts, such as First, Second and Third Order changes, and policy paradigms, are defined and situated in the broader literature. Secondly, risk perception is defined and the link between it and the demand for government regulation is made. Thirdly, the four independent variables that affect public risk perception are defined and operationalized. Fourthly, the two dominant paradigms in aviation security, the efficiency paradigm and

the effectiveness paradigm, and a defense of the incongruence of their overarching goals is made. Finally, a rationale for the cases selected concludes this chapter. The explanation of the tools used in this policy analysis begins with the Orders of Change model.

1.1 Orders of Change

Hall (1993) is widely quoted in public policy literature² since his Orders of Change model provided simplification and insight into a debate which had raged during the previous decade and which focused on a core issue in the study of public policy. The debate can be summarized as one between those who believed that the state was central and pivotal in policy formulation, and those who believed that the state was no longer pivotal because of increasing pluralist and international pressures³. For instance, it could be argued that decisions regarding a Canadian no-fly list are driven by the concerns and subsequent demands of American officials at the Department of Homeland Security (DHS). Moreover, an express security check-in for ‘verified’ or ‘trusted’ business travelers policy is being driven by domestic airlines responding to international competitive pressures. Hall provided an effective bridge between the two competing bodies of literature by differentiating sets of policy change, then matching the actors that

² A simple search on Google Scholar reveals that it has been cited 323 times since 1993.

³ For a more intensive summary, Hall suggests Stephen Krasner “Approaches to the State”, *Comparative Politics*, 16 (January 1984) 223-46; Martin Carnoy, *The State and Political Theory* (Princeton: Princeton University Press, 1984); and Peter Evans et al., *Bringing the State Back In* (New York: Cambridge University Press, 1985).

are responsible for each set. The bridge is a useful heuristic device which will be used in this thesis.

Hall's causal model and the purely Kuhnian foundation it was built upon have since been discredited for use in Canada, and as such will not be tested (Coleman et al., 1999). Kuhn (1962) in The Structure of Scientific Revolutions argued that paradigms are essential to scientific inquiry. He stated that "no natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation, and criticism." (16-17). Normal science becomes the struggle to explain nature through the paradigm. Nature however is not always so cooperative, and anomalies between what the paradigm predicts, and what nature does, become apparent. These anomalies are usually initially ignored and treated as novelties. As anomalies accrue, the paradigm's credibility erodes. Eventually a crisis ensues followed by a struggle to resolve the crisis. Ultimately, a paradigm that explains the anomalies within the context of previous knowledge is discovered. Once a new paradigm is accepted, all reference to the discredited one are deleted from the textbooks and the next generation of students only inherit the new paradigm, and the cycle starts once again. This entire process is the nature of scientific revolution. Hall's model assumes policy paradigms evolve in a similar way, with the twist that the public forces out politicians who continue to adhere to a failed paradigm. Coleman et al. demonstrated that in the instance of Canadian agricultural policy, Hall's model and its Kuhnian foundation failed to explain the process of policy paradigm change for a number of reasons, namely,

the public's dissatisfaction did not cause change, and the change occurred in a most un-revolutionary manner.

This thesis will draw on Hall, whose work focused on macroeconomic policy, but provides a useful heuristic device to categorize policy change. He classified all policy changes into three categories -- First-Order Change, Second-Order Change, and Third-Order Change.

First-Order Change is best understood as an adjustment to a policy instrument. For instance, First-Order changes would include the decision to raise the overnight lending rate from 4.00 to 4.25 percent to control inflation, or the decision to increase the number of hours of training that a security screener receives from four to twenty to improve the detection rate of dangerous weapons.

Second-Order Changes are changes in policy instruments. Hall argued that changes in the instruments did not alter the "hierarchy of goals behind policy" (282). For example, with the goal of controlling inflation in mind, policy makers might want to restrict the growth of the money supply instead of controlling the interest rate. With the goal of improving the effectiveness of airport screeners, policy makers might want to reward the screeners with 10 dollars for every piece of contraband found. In this example, introducing an incentive policy is a Second-Order change. Increasing the incentive from 10 dollars to 20 dollars is a First-Order change.

Hall likened policy paradigms to scientific paradigms in the Kuhnian sense (279). In this context, First and Second-Order changes are 'normal science' ... where experiments are conducted in a routinized fashion in an attempt to test the paradigm. Wholesale shifts in scientific paradigms are quite different in that they often rearrange how past knowledge is understood while substituting one index of jargon for another. To put this into terms of policy paradigms:

Policymakers customarily work within a framework of ideas and standards that specifies not only the goals of the policy and the kind of instruments that can be used to attain them, but also the very nature of the problems they are meant to be addressing. Like a Gestalt, this framework is embedded in the very terminology through which policymakers communicate about their work, and it is influential precisely because so much of it is taken for granted and unamenable to scrutiny as a whole. (279).

A policy paradigm effectively encompasses not only an entire set of goals, but also suggests how those goals should be achieved. When a paradigm fails to achieve those goals, then the goals themselves can come into question. Essentially, there has to be a point where dissatisfaction with the paradigm becomes so great that the cost of disposing of it, in terms of uncertainty, chaos, and effort, becomes desirable. Hall classifies paradigm shifts as Third-Order changes. This is analogous with a shift of governing macroeconomic policy paradigms. The very goal of Keynesianism is to protect an economy from a temperamental market cycle that could result in another Great Depression. One of the goals in Keynesianism was full employment. Its successor, Monetarism, has completely abandoned the belief that the economy is so fragile that it requires a large degree of state intervention, and has abandoned the goal of full

employment completely. As such, Monetarism and Keynesianism are two different paradigms that contain their own biases, technical jargon, preferential instruments, and goals.

It is important to clearly define the difference between a First-Order, Second-Order and Third-Order change in the aviation security context, since such classifications may be contested.

First-Order Changes are those, as described by Hall, which alter the settings on specific policy instruments. For this thesis, the decision was made to define First-Order Changes as interval modifications of existing policy instruments for two reasons. First, it corresponds heuristically to the idea that they are adjustments to a thermostat. Secondly, if Third-Order Changes can be thought of as nominal changes (nominal in the sense that paradigms cannot be classified as being interval or ordinal, in that they are simply different, much in the same manner that 'male' and 'female' are nominal variables), and Second-Order Changes as ordinal (between instruments of differing government intervention and effect), it follows that First-Order Changes are interval (as settings on a specific policy instrument). They are single settings that do not affect the settings on other instruments. These include the percentage of bags matched to their owners, the wage of screeners, the number of training hours screeners have, the number of banned items from carry on, the number of police officers on duty at the airport, the budget allocated for metal detection, the number of screening questions asked at the check-in desk, the number of air marshals that are employed and used, and the general size of fines

and the lengths of prison sentences towards those, both companies and individuals, who are found in violation of regulations. All of these are simple adjustments to existing policy instruments and as such are First-Order Changes.

Second-Order Changes are those that alter the policy instrument without in themselves shifting the paradigm. A policy instrument is defined as a specific method by which a goal or target is attained. The overarching goal does not change, just the manner of attainment. This can include the decision to implement air marshals to neutralize threats in an aircraft, use of heavy fines instead of incentives, use chemical trace technology, x-ray technology, or sonic technology, or the pursuit of multilateral treaties. It should be noted that the decision to use federal employees instead of private contractors to screen passengers is also defined as a Second-Order Change on the basis that they are two very different policy instruments. As will be demonstrated later, the use of private sector screeners often leads to confusion, either deliberately or unintentionally, over just which entity is accountable for security lapses. There are also typically marked differences in training, certification, compensation, and individual accountability with respect to private sector screeners.

It might be useful to note that Second-Order Changes may be conceptually ordered in terms of scale of state-intervention. Classes of Second-Order policy instruments might include laissez-faire, public exhortation, incentive, fining, regulating, criminalization, and outright state control. Put into the context of aviation security, a laissez-faire policy instrument is the choice to have no instrument at all. Public

exhortation might include a publicity campaign to encourage people not to bring firearms on board an aircraft. An incentive instrument might pay people for checking their firearms with their luggage. A fining policy would be to charge a \$500 fine on anybody caught trying to bring a firearm onto an aircraft. A regulation policy would be to search people for firearms before boarding. Criminalization would involve a one year prison sentence and a criminal record for bringing a firearm onto an aircraft. Outright state control might include putting people suspected of plotting to bring a firearm with them on board an aircraft on a special watch list and obtaining warrants for phone taps. These different classes of policy instruments can be ordered in terms of state intervention, from lowest to highest. Policy makers are not limited to just one policy instrument, as they multiple ones may be used, but the choices they make often depends on the goal that they are trying to achieve. This goal is embedded within a broader paradigm.

To be classified as a Third-Order Change, a policy shift must adopt an entirely new paradigm. The two paradigms in play in this field are the “effectiveness” paradigm and the “efficiency” paradigm. The efficiency paradigm has a hierarchy of goals. The overarching goal of the efficiency paradigm is to maximize private sector profits. There are a number of other goals which contribute to the overarching goal. One is to ensure that others endure the costs of the externalities generated by the private sector while minimizing its own costs. To that end, deregulation, privatization and enhancing shareholder value are desirable. However, the script changes when the paradigms adherent’s lobby government: customer value, convenience and access are emphasized.

Common values include freedom, risk, and innovation (Johnston, 2004, 268). These paradigms will be explained in greater detail below.

First, Second and Third-Order Changes may occur simultaneously in that Third Order Changes force corresponding Second and First Order Changes. For instance, in a Third-Order Change from the efficiency paradigm to the effectiveness paradigm, the overarching goal changes, and so it is expected that the underlining policy instruments would need to change to achieve that goal. If the goal changes from minimizing the impact security has on profit margins to preventing another 9/11, several policy instruments would have to change. Some examples would include: the introduction of new technologies, behavioral profiling, and federalizing screening functions would all be new policy instruments. As previously stated, to change a policy instrument is a Second-Order Change. There is also a large number of corresponding First-Order Changes, or changes in existing policy settings – such as the amount of pay that screeners receive, and an increase in the penalties for interfering with an aircraft. In this way, a Third-Order Change causes multiple Second and First-Order Changes.

The arrow of change can run the other way, as Coleman demonstrated in the case of Canadian agricultural policy. Small First and Second-Order changes made by politicians, elites and experts, can in fact accumulate into a broader Third-Order change. Yet, this method of Third-Order change is glacial. It takes many years, if not decades for First and Second-Order Changes to accumulate into a paradigm shift. In this way, Hall's

Orders of Change are nested and strictly hierarchical. Changes in aviation security policy are rarely glacial.

An interesting question arose during the formulation of this thesis related to the use of Hall's model: whose risk perception matters – the general public's, politicians, or experts? There is a limit at any given time as to what the public will accept with respect to how much they will sacrifice so as to be comfortable with the settings on their risk thermostat. A reasonable assumption is that experts in aviation security, airport administrators, and politicians are somewhat cognizant of those limits – especially given that in a democracy, public officials are often reliant on the willingness of the public to cooperate. Policy change may occur without a catastrophic failure initiating it. A catalytic event, such as a near miss or new threat, may adjust the risk thermostat of experts and politicians, enabling them to make small First-Order changes which typically go unnoticed by the public. However, for significant First, Second and Third-Order changes, public cooperation is often needed. In these instances, experts and politicians are making policy changes in tandem, or in anticipation, of what the public will expect and demand. It should be noted that government experts may play a role in shaping the public's perceptions through the selective release of information, and how that information is framed. In this context, and in the context of this thesis, the general public's risk perception is what matters. They determine the boundary between what is acceptable and unacceptable⁴.

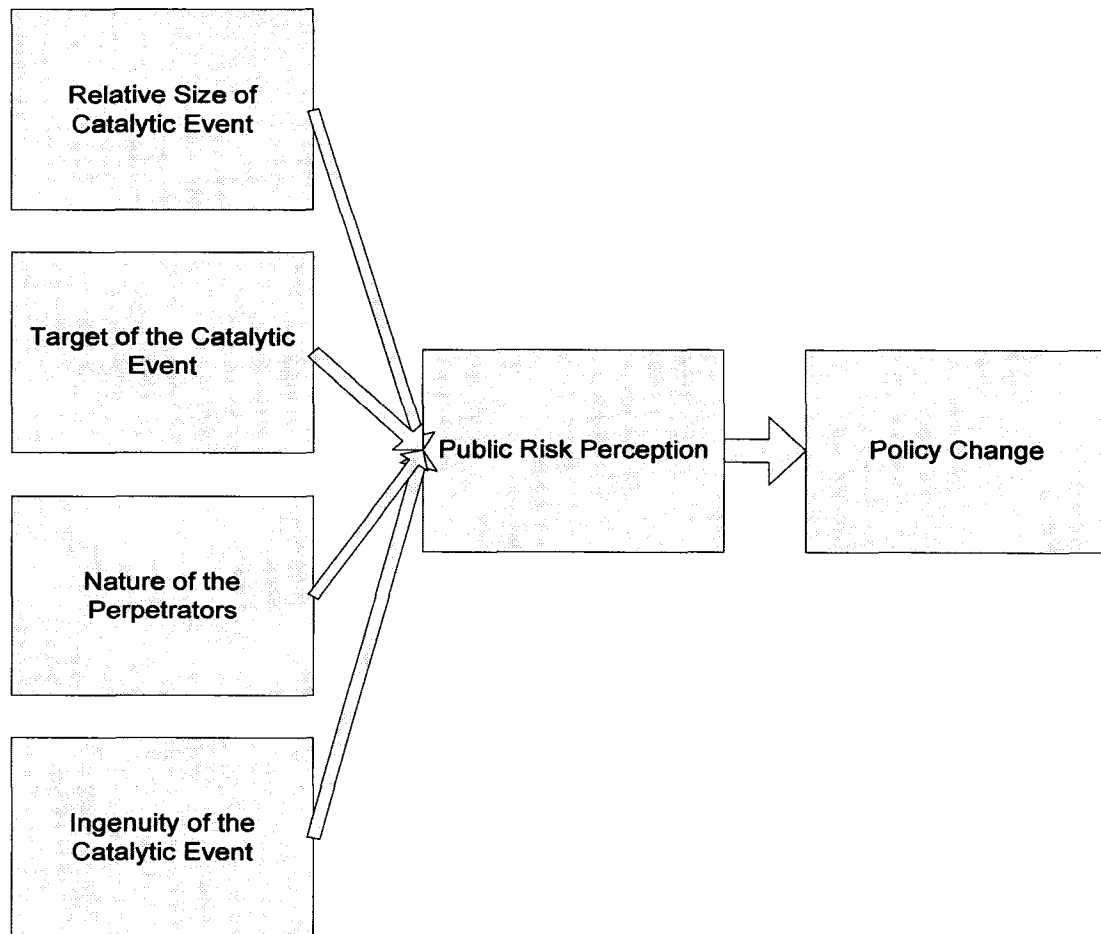
⁴ Public risk perception may be manipulated purposely so as to alter that boundary.

Hall's model allows for the categorization of policy changes, and as such, enables one to explain the policy outcome with greater success than if the model were not used. The dependent variable in this analysis is the degree of policy change, be it First-Order, Second-Order, or Third-Order.

1.2 Explanatory Model

The independent variable that drives varying air transportation security policy changes is public risk perception. There are four contributing variables to public risk perception: the relative size of a catalytic event, the target of the event, the nature of the perpetrator of the event, and the ingenuity of the event. These variables will be discussed in greater detail following an explanation of the terms 'catalytic event' and 'risk perception'.

Figure 1.1: Explanatory Model Policy Change



Johnston (2004) describes large policy altering occurrences as “catalytic events” (268). Catalytic events include the 9/11 attacks, Lockerbie, the repeated hijackings in the United States in the 1950’s, 1960’s and 1970’s, and the July 1968 El Al hijacking. As will be discussed, large policy change occurred as a result of these events, and as such, they are catalytic. However, not all events are catalytic.

An event is not catalytic if no one is dissatisfied enough to make any changes. There have many of such events. In September 1949, Mrs. Arthur Pitre took a taxi to the Quebec City airport and placed a package on board a Quebec Airways flight, and then drove off. The package contained dynamite and a timer. All twenty three people onboard were killed. The actual target was the wife of the man she was having an affair with, and the additional bonus of a \$10,000 life insurance payout (Stewart, September 24, 1949). Three were executed for the crime. Incidentally, a similar incident had occurred three months earlier in the Philippines (Mickolus, 1980, 28), which probably inspired the Canadian version of the attack. No significant policy change resulted in the Canadian instance. Politicians, the public, and authorities were not sufficiently dissatisfied with the state of aviation security to make any changes. In another instance, the successful seat bombing of a Pan-Am aircraft in August 1982, which killed a Japanese teenager instantly and another similar attack in April 1986 aboard a TWA flight, which killed four Americans (including an infant, the mother, and grandmother), prompted relatively little outrage. Both attacks occurred overseas on international American flights. In the former instance, the perpetrator was not initially known, and in the second instance, it was in retaliation for American attacks against Libya. Neither incident prompted any sort of policy change (MIPT Terrorism Knowledge Base, 2001). An event is deemed catalytic only if it causes policy change.

Moreover, not all catalytic events need be disastrous, as policies may be changed in advance of a perceived threat or close call. Policy change can be anticipatory of catalytic events. The security concerns raised by the foiled liquid explosives plot to bring

down 10 aircrafts over the Atlantic in August 2006 caused multiple Second-Order changes in Canada, the United States, and Britain, without a single fatality or injury⁵.

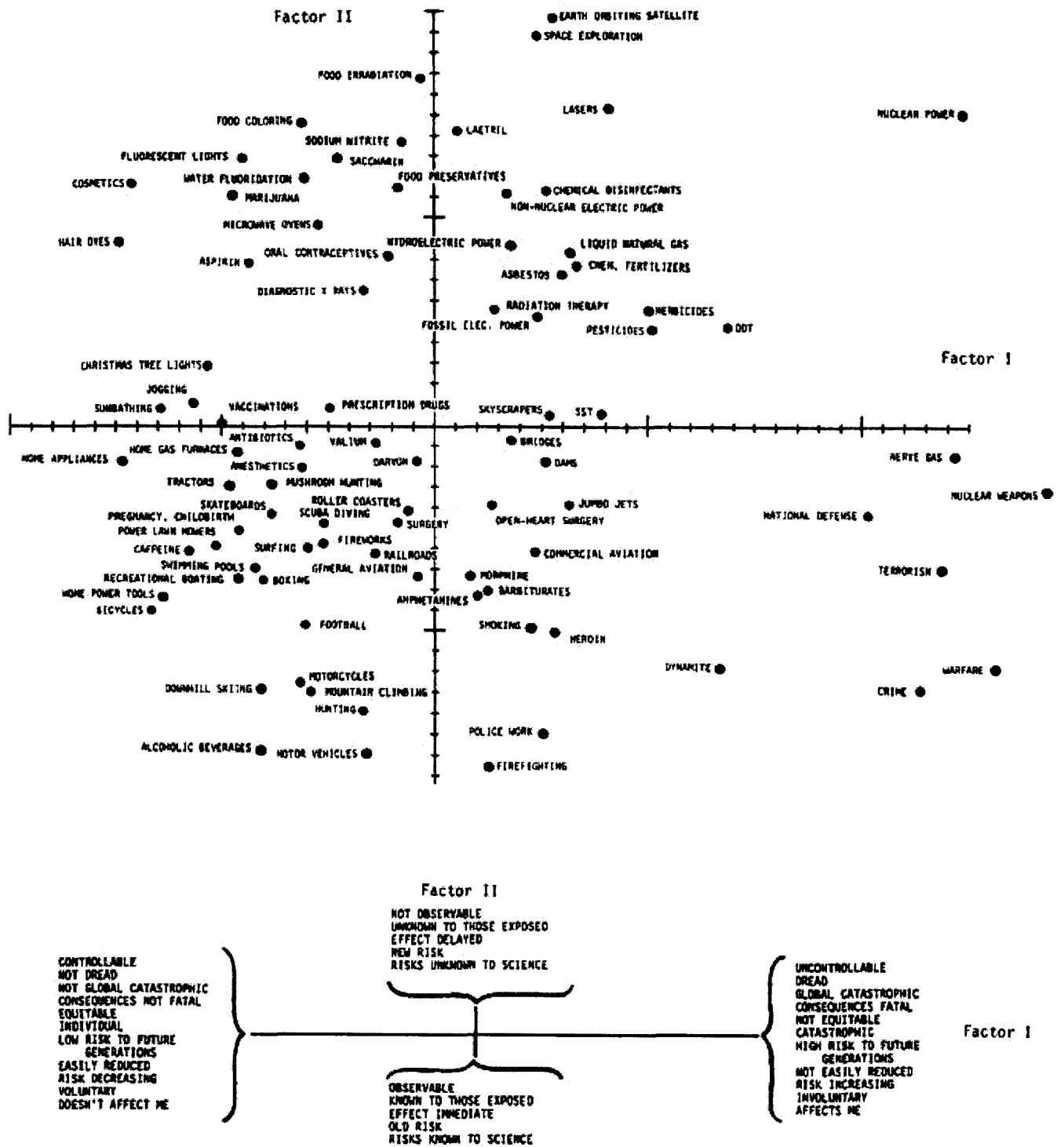
Risk perception is the degree of risk that an individual believes that an activity entails. Wilde (1982) put forward a homeostatic model of risk whereby individuals perceive risk using the information they have, compare it against the amount of risk they are willing to accept, and make a decision as to whether or not they are prepared to undertake that activity (211-212). Individuals seek to maintain a level of risk with which they are comfortable. Slovic, Fischhoff, and Lichtenstein (1982) plotted a number of risks associated with activities and events on a two dimensional scale. Along the X axis, activities and events were categorized in terms of individual controllability. Along the Y axis, they were categorized in terms of observability. When plotted, terrorism, nerve gas, nuclear weapons and national defense all rank in the midrange of observability axis, but on the extreme side of the uncontrollability axis. The values associated with this degree of uncontrollability include: “dread, global catastrophic consequences, fatal, not equitable, high risk to future generations, not easily reduced, risk increasing, involuntary, affects me” (86). They found that for risks that are the most uncontrollable, there was a very strong desire for government regulation (87). Aviation in general falls along the same level of observability, and slanted towards the uncontrolled side of the axis, resulting in some demand for regulation (87). In this context, whether or not a risk is observable or not is important. A highly observable risk is that of motor vehicle accidents – as the effect of trauma is generally well understood, the harm is

⁵ Chapter 6 and 7 argue that Third Order Changes occurred following 9/11. The Second Order Changes in

instantaneous, it is a relatively old risk, and it is known to science. A highly unobservable risk is that of food irradiation – the long term health effects of consumption of food that has been irradiated is not generally well known, the health effects may be delayed, it is unknown who would be more susceptible to such poisoning, and if introduced, it would be a new risk (87). Other quantitative analyses have found similar results. For instance, Savage (1993) found that the “willingness-to-pay [to reduce hazard] increases with the dread of the hazard but declines with degree of knowledge people have about the risk they are exposed to.” (75-90). People naturally fear new technologies and activities that they do not understand and cannot control. If a risk is more controllable and observable, the demand for regulation, and the willingness to pay for that regulation, diminishes.

response to the Atlantic Plot are within the context of the effectiveness paradigm.

Figure 1.2: Controllability, Observability and Demand for Government Regulation of Activities and Technologies.



Source: Slovic, et al., 1982, 86.

Powell and Leiss (1997) have argued that the actual risk involved in an activity is not as important as how it is communicated with the general public. Indeed, as Mueller (2006) argues:

...it is worth remembering that the total number of people killed since 9/11 by al Qaeda or al Qaeda-like operatives outside of Afghanistan and Iraq is not much higher than the number who drown in bathtubs in the United States in a single year, and that the lifetime chance of an American being killed by international terrorism is about one in 80,000 -- about the same chance of being killed by a comet or a meteor. Even if there were a 9/11-scale attack every three months for the next five years, the likelihood that an individual American would number among the dead would be two hundredths of a percent (or one in 5,000). (8).

Put in this context, using the latest 2005 data, with 43,443 fatalities (National Highway Traffic Safety Administration, 2006) and a population of 296,410,404 (US Census Bureau, 2005), the calculated risk of dying in a car accident is 1 in 6823 for that year alone. This is nearly 12 times greater than dying in a terrorist attack that, as calculated by Mueller, is spread out over a person's lifetime. Comparing apples to apples, accepting Mueller's estimation that quarterly 9/11 attacks over the next 5 years would result in 1 in 5000 fatality odds, the odds of dying on the roads is a staggering 1 in 1364, nearly five times greater. Yet, there is less demand for government regulation in road transportation than there is for aviation security (Slovic et al, 1982, 87). This comparison serves to illustrate the point that it is the perception of risk, not the actual absolute value of risk, which drives the public's demand for and acceptance of regulation. It follows that if the perceived risk involved falls outside of an individual's control, such that they cannot influence their homeostatic risk thermometer, they will demand regulation to reduce the perceived risk back to tolerable levels.

Four contributing independent variables which adjust the public's risk perception require definition and clarification: size, target, perpetrator and ingenuity.

The size of a catalytic event is relative. A seat bomb that fails to bring down an aircraft yet kills very few people, or a hijacking in which nobody dies, are in themselves serious incidents capable of causing fear and can harm the market demand for air travel. However, when compared to the downing of an aircraft killing 250 or more people, such events can be considered small. Similarly, the use of an aircraft as guided missiles into symbols of national importance, when compared to the downing of a single aircraft, is considered large. The sizes of catalytic events can thus be classified as being small, medium, and large. A small event is one which a crime is committed, but the damage to property and human life is nil or fractional. A good example of such a small catalytic event is that of Cooper, who hijacked a flight in 1972 and got away with a significant sum of cash by parachuting out the rear door of the aircraft. The FAA subsequently ordered that aircraft be modified to prevent those doors from being opened in flight. A medium catalytic event is one which there is a large amount of death and property damage, but falls within what is expected by such an occurrence. For instance, it is expected that a bomb will bring down an aircraft, destroying both it and everybody onboard, with fatalities in the 1 to 300 person range with low numbers of children and infant fatalities. A large catalytic event is one in which there is a record setting loss of life and property. The larger the catalytic event is, the greater the public's risk perception changes, as smaller events generally cause less alarm.

The specific target is the second independent variable. Mrs. Arthur Pitre's target was her lover's wife, and the insurance money. Most criminal extortion hijackers' targets were money or escape. In both instances, the target was not the state. If the target of an attack is the state, and by corollary its citizenry, the event will alter the risk perception of the public in a much more profound way than if an event was merely a criminal act.

The nature of the perpetrator is another important independent variable. If the perpetrator is known, organized, and determined, then it is very much more likely that an event will be repeatable. The repeatability of an incident is a key factor in assessing risk. A citizen often asks "if it's likely to happen again, I could be a victim". Credible, known perpetrators are more likely to cause augmented perceived risk.

Finally, the ingenuity of an attack is important in altering risk perception. An ingenious attack is one that often exposes vulnerabilities in an existing security regime. Unless something is done to fix the regime, that vulnerability might be exploited again. If the attack is conventional, then it is often a question of demanding improved processes, or demanding that processes which were already in place be improved or at least enforced. It may also be argued that ingenious attacks are more likely to instill a sense of dread in the public because it might be a new way to die, similar the feelings felt by World War I soldiers when confronted with chemical warfare for the first time, or by those living around nuclear power plants after Three Mile Island. Ingenious attacks cause a greater shift in risk perception than a conventional one.

Four independent variables – the size of catalytic events, the target of the event, the perpetrator, and the ingenuity each contributes to altering the public’s risk perception which in turn causes the variation within the size and scope of policy change in aviation security policy. To cause a significant shift in aviation security policy, the perceived risk must be significantly heightened by a large event, clearly directed towards the state, perpetrated by an organized, competent group capable of repeating the event, and ingenious – which in turn causes the public’s perception of the risk involved to become intolerable, which presses policy makers to implement changes.

One avenue of inquiry is the role that an intervening variable, ‘framing’, has on risk perception. Framing is defined as the manner in which an event is communicated to the public through various mediums be it via: newspapers, television, radio, Internet, and by reporters, experts, politicians, bloggers, posters, influential opinion leaders, or through social networking. Framing may have an important impact on how risk is perceived by the public. Chapter 5, which covers the case of TWA 800, offers the most direct evidence of how the media can shift even eye witness perceptions, and how that changed the risk perception of the public at large over time. There is a body literature and a broad debate around how experts assess, manage, and communicate risk with the public. This debate is far too granular and ambitious to be included in this thesis. It is however an important avenue for future research.

There are two paradigms in aviation security, the efficiency paradigm and the effectiveness paradigm. It is necessary to explain the hierarchy of goals and the language within each, beginning with the efficiency paradigm.

A relatively pure form of the efficiency paradigm, which generally shuns government regulation, has not always dominated North American aviation policy. It might be assumed that the regulation that preceded the wave of deregulation in the 1970's and 1980's had always been thrust on an unwilling aviation industry. However, this is not the case. U.S. Government intervention in civil aviation began after the First World War, when it created a rudimentary market for air mail. Industry itself asked for aid and regulation in the mid-1920's when it was faced with poor markets and poor infrastructure. The result was the Kelly Airmail Act of 1925 and the Air Commerce Act of 1926. Industry benefited from 7 million dollars of subsidy per year by 1930. Competition for the subsidies did not stimulate passenger traffic. Dissatisfaction prompted Brown, the postmaster general, to seek and receive the authority to change the status quo. Brown told the major companies to divide up territory, and then forced through a proposal which created three transcontinental routes, one each for American Airways, TWA and United. When these details of the cartel came to light in 1934, the public's reaction was extremely negative. The resulting Black-McKellar Act of 1934 was punitive in the extreme and restructured the industry in a manner that would remain locked-in for the next 44 years (Viotor, 1990, 61-66). American Airlines, United, TWA, and Eastern Airlines held major trunk routes, with seven other regional carriers holding regional feeder routes. Industry grew dissatisfied with this situation of 'excess

competition' (Victor, 66). In fact, "The airline industry lobbied hard for regulation." (Victor, 67). The Air Transport Association (ATA) complained loudly, and they succeeded. Congress passed the Civil Aeronautics Act in 1938, which created the Civil Aeronautics Authority (Board) which was responsible for regulation of prices and safety (Victor, 67). The safety function would later fall under the Federal Aviation Act of 1958 (Bailey, 2002, 13). The policies remained locked in as jet technology changed the nature of the industry (Bailey, 2002, 13). Dissatisfaction began to accumulate in the early-1970's when several air carriers started to go bankrupt. Senator Edward Kennedy chaired a committee in 1975 at which evidence of price aberrations were presented (Bailey, 2002, 13). Federal Express asked for, and received deregulation for premium air cargo (Bailey, 2002, 14), which was a success, and diminished the value of the regulatory paradigm. As a result, a regime of price regulation was replaced with the efficiency paradigm, which stressed deregulation and efficiency. The Airline Deregulation Act was passed in 1978 (Bailey, 2002, 15). This paradigm was reinforced with the advent of Reagonomics in the 1980's (Johnston, 2004, 263). In both instances of regulation and deregulation the industry got what it asked for. Government tended to give industry what it wanted. It has not always been the case that the aviation industry rails against regulation. Thus, the pure efficiency paradigm has not always been entrenched in North America.

Government regulation of the market and government regulation of safety and security are different, but linked. In a heavily regulated environment, the role of the regulators is to protect the public interest in the sceptical Great Depression spirit that what is best for private enterprise is not always best for society as a whole. Paradigm

shifts in one area of policy typically affects policies and attitudes in others. For instance, in a regulated environment, fares and safety can be increased at the same time, and the regulator takes the political blame while private enterprise benefits. In a deregulated environment, private enterprise is exposed to hyper-competitive pressures where safety and security are cost centers in the face of low occurrence incidents. Regulatory policing still occurs, but the role is harder because those being regulated are not quite as cooperative as before.

The effectiveness paradigm emphasizes state and public safety and security. The overarching goal is to prevent such attacks against the state and its citizens from happening again. There are a number of auxiliary goals involved, including intercepting plots before they are carried out, having a perfect weapon/explosive interception rate, and ensuring that 'a way of life' survives. That involves ensuring that civil aviation continues to operate, and that people feel safe enough to fly. The public's risk perception shifts such that they accept the consequences of their demands for greater security. Citizens become willing to accept longer waiting times, indignities such as removing ones shoes, and a marked relaxation of their (or a minority's) civil liberties. Since the threat is seen to be directed towards the state, state resources are used to subsidize aviation security, and regulations are enhanced. The overarching goal of the effective paradigm is to prevent attacks. Gone is the notion that the people will inform the market as to how much they are willing to pay. The state dictates the amount people will pay.

The two overarching goals of efficiency and effectiveness are entirely irreconcilable in aviation security. One either designs policy to achieve the overarching goal of efficiency, or the overarching goal of effectiveness. While it is possible and indeed necessary to have the appearance of some effectiveness as a feature under the efficiency paradigm, the cost of effectiveness cannot exceed the benefit. Effectiveness has commercial limits in an efficiency paradigm, just as efficiency has security limits under an effectiveness paradigm. One hierarchy of goals must take precedence. This conclusion, while obvious to many, is in the minority – and as such, requires justification.

A standard defense of the efficiency paradigm is that a completely free market will find the optimal level of effectiveness. That is, the free market will provide as much effectiveness as the public will pay for. If air travel is perceived as too risky, then potential passengers will choose to pay more. Therefore, it follows from this logic that both paradigms are compatible. Opponents of regulation will often cite market irregularities with respect to regulation to advance this argument. For instance, J. Bennet (1989) calculated that society pays 6 million dollars for each life saved because of security measures. He implies that the money could be much better spent elsewhere. To understand the fallacy of the logic behind the efficiency paradigm's criticism of the effectiveness paradigm, one has to consider marginal cost and marginal benefit.

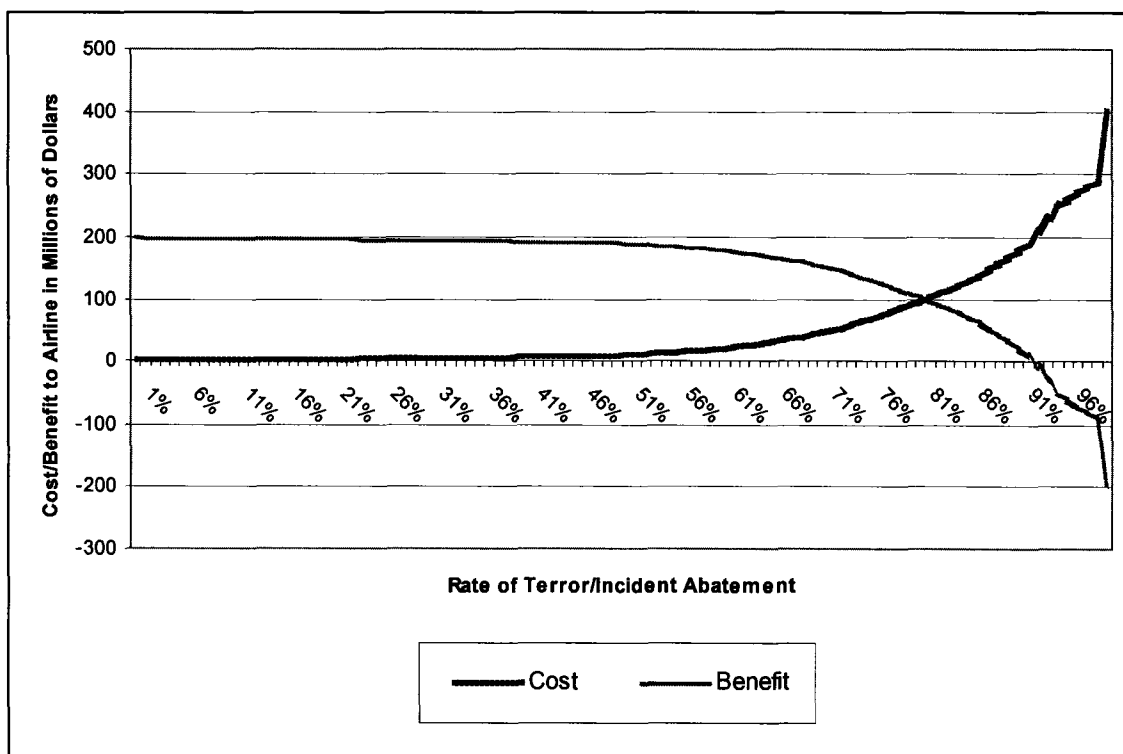
Suppose an airline can accurately forecast the number of attacks it would experience if nothing was spent on security and that the airline could also accurately forecast the reduction in the incidence of attacks for every additional dollar spent on

security. The airline would find that the marginal cost curve starts off relatively flat. Hypothetically, the first few millions of dollars spent on security are very efficient in reducing attacks. They might find that the first ten million eliminates 50% of the attacks, but the subsequent ten million only eliminates another 10%, and the subsequent 10 million only eliminates another 5%. If the airline spent thirty million dollars, it would eliminate 65% of the attacks, but it would face a decreasing return on each subsequent investment in security. In fact, the airline would find that the marginal costs become asymptotic to 100% security, that is to say, the cost of going from 99% security to 99.1% security is the same cost as going from 0% security to 50% security. The question the airline must face is: how much should it invest in security?

Suppose an airline can accurately forecast the benefits of every additional dollar invested in security. The airline would find that the first 10 million dollars had terrific effects. They would find that insurance costs come down as unions are not as angry and aggressive about security at negotiations, and passengers feel safer, and therefore are more likely to fly. However, the more that is invested, the more of those benefits get eaten up by the cost of the security itself. In a completely free-market efficiency paradigm, the question of how much an airline invests in security is: 'when marginal cost equals marginal benefit, and not a dime more.' The argument then follows that if consumers want more security, then they ought to be willing to pay more for it, shifting the marginal benefit curve to the right to justify higher marginal cost, and resulting in a higher degree of security for all. While security is certainly being provided, it is being kept to a minimum so as to maximize efficiency and therefore profits. Security is but one

variable of many. The goal is not to prevent another attack; it is to prevent security from getting in the way of profit. However, this assumes that airlines are capable of calculating marginal cost and marginal benefit accurately – something that even a government, with its massive information resources, finds difficult. To return to J. Bennet’s “six million dollar man”: fewer deaths result from higher effectiveness, and more money is often required for higher effectiveness. As a result, it is a sign of success, not failure, that the cost of every life saved escalates.

Figure 1.3: Hypothetical Benefit and Cost Curves for a US Airline⁶



The less orthodox fall-back point for proponents of the efficiency paradigm is to argue that government should pay for the cost beyond the marginal benefit/marginal cost equilibrium point, or better yet, the entire cost of security ('why can't somebody else pay?'). It could be argued that it is in private enterprise's best interest to get the government to assume the marginal cost so that the airline itself can reap additional marginal benefit. Yet, even if government assumed a large part, or all of the cost to bring security up to what it deems to be acceptable, this would still interfere with the overarching goal of the efficiency paradigm.

⁶ Note that these are the costs from an airline's point of view, not that of society. An airline is far more likely to go bankrupt than ever being able to pay for the full consequences of one of its aircraft striking a

Even if subsidized by the government, stringent security imposes non-monetary costs on airlines. These additional non-monetary costs severely erode marginal benefit, and ends up reducing private sector profits. The driving force behind this phenomenon is the elasticity of demand. For example, Edmonton features a municipal airport conveniently located near the centre of the city, mere minutes from downtown. It also has an international airport is located well outside of the city and is a thirty minute drive (in normal traffic) to downtown. In 1970, the Calgary-Edmonton corridor was Canada's third busiest, with 234,800 passengers. Pacific Western Airways had the right to use the municipal airport (Stevenson, 1987, 78). Air Canada only had the right to use the International Airport. The distance advantage conferred to PWA was so great that in 1970, Air Canada abandoned the route, giving PWA a monopoly (Stevenson, 1987, 77). In effect, on short haul trips, demand is more sensitive to time. That is to say, on a route with two cities separated by a two hour and forty five minute drive, demand is more sensitive to time delays than a route separated by a vast span. An effective security system must cause delays: 100% passenger baggage matching, advanced baggage inspection (both carry on and baggage), profiling, and the long walk down the concourse mall, all add time. On the most time-demand inelastic routes, those that are the shortest, simultaneous profit maximization and security effectiveness is impossible. On longer haul flights in countries where there are few alternatives, such as Canada or the United States, these costs are not as important, but still a consideration. In sum, the overarching goals of effectiveness and efficiency are incongruent.

nuclear facility, which could cost society billions of dollars in terms of lost lives, productivity, opportunity

That is not to say that both goals cannot exist within the same hierarchy, however, one goal must take precedence over the other. What follows are a series of possible archetypes for what these goal hierarchies, in their extreme, would resemble⁷. It is probable that most hierarchies of both paradigms are more moderate. However, in any given policy paradigm, a single overarching goal prevails, and most of the language and thought is driven towards the attainment of that goal. For instance, an airline's goal hierarchy may resemble the one illustrated in Figure 1.4. The overall goal to which all others is subservient is profit maximization. Two sub-goals to achieve this is to minimize cost and to maximize revenue. Below that are various sub goals, such as meeting minimum safety standards. The priority of each goal is based on where it lies on the hierarchy. For instance, if just meeting the minimum safety standards is endangering revenue because passengers are opting to fly with another airline, the safety goal will be revised.

cost, and absolute loss. In this chart, we assume that the airline's liability is capped at 200 million.

⁷ Each goal is typically associated with a policy instrument and a corresponding setting. Learning the exact configuration of these hierarchies and bias towards specific instruments, and how they changed in response to a catalytic event would be certainly worthwhile. However, this information is too granular and is out of scope for this thesis.

Figure 1.4: Example of Airline Goal Hierarchy Under the Efficiency Paradigm

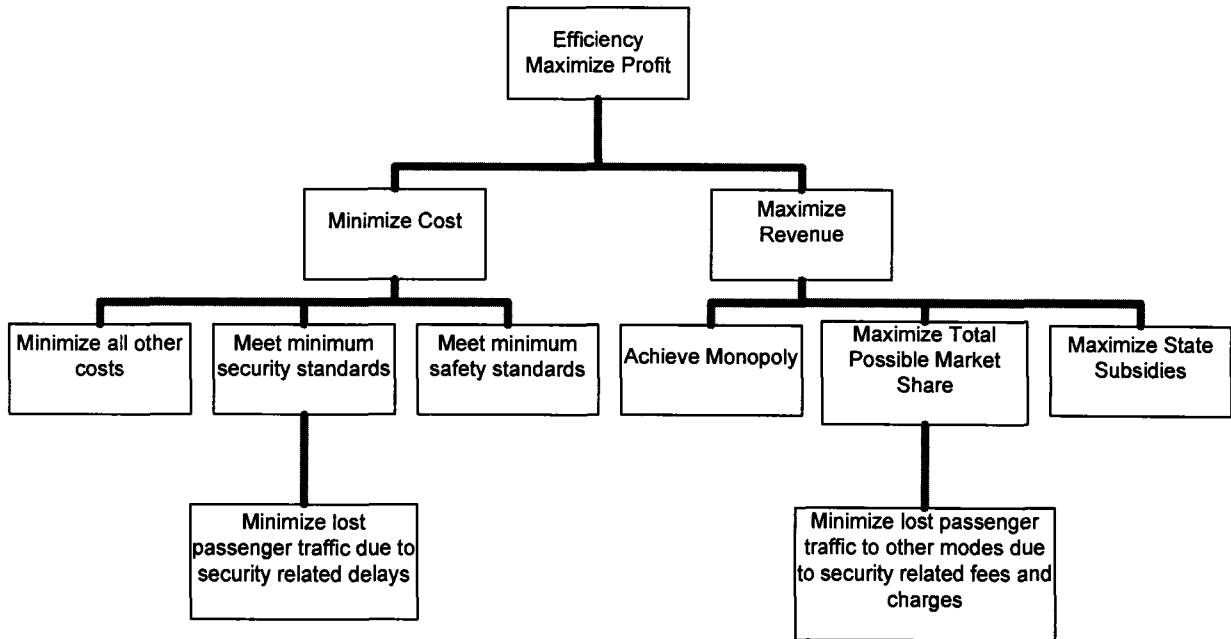


Figure 1.5 demonstrates one possible configuration of government's goals under an extreme form of an efficiency paradigm. The underlining belief might be "what's good for industry is always good for the government", which would involve putting the interests of industry ahead those of consumers and citizens.

Figure 1.5: Example of Government Goal Hierarchy Under The Efficiency Paradigm

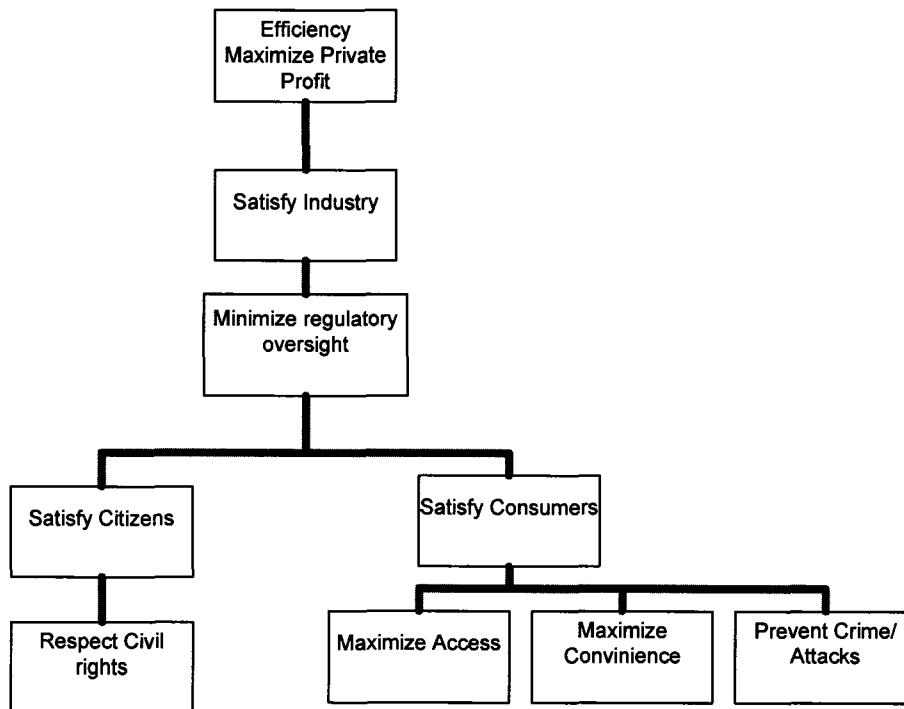
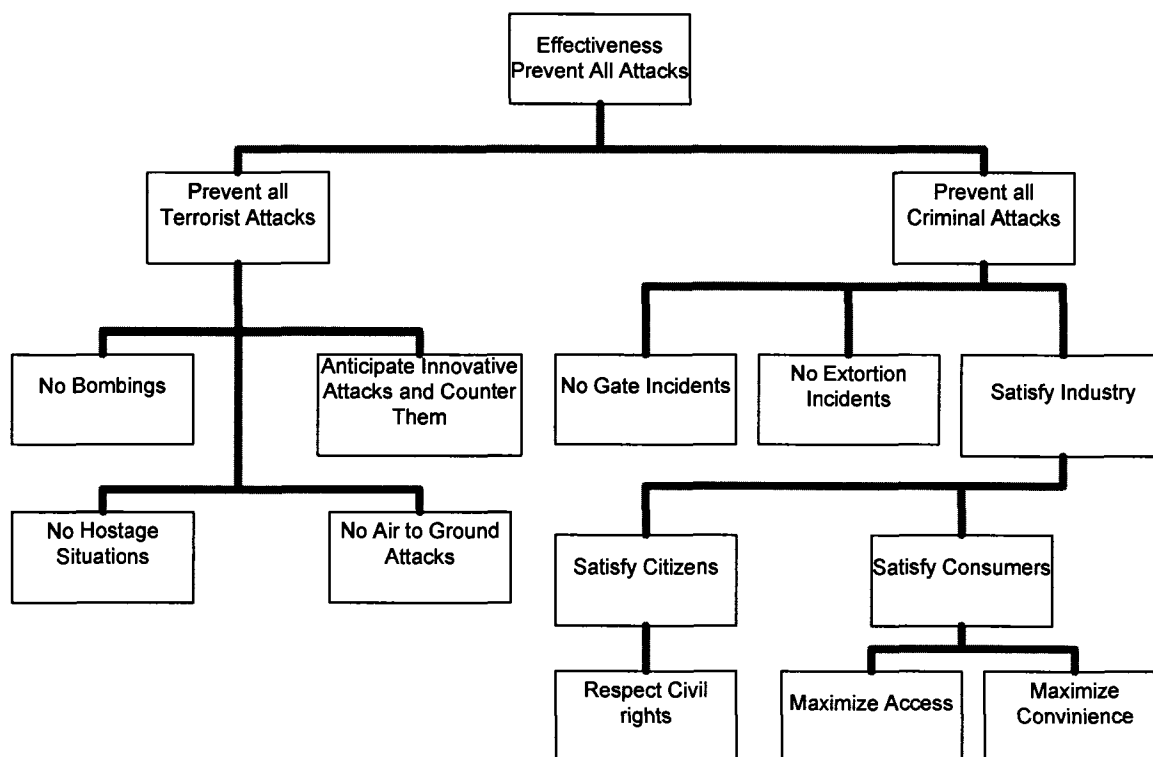


Figure 1.6 illustrates a possible configuration for the archetype under the effective paradigm, where the prevention of terrorist and criminal attacks are supreme, industry secondary, and the concerns for citizens civil rights are relegated to the bottom.

Figure 1.6: Example of Government Goal Hierarchy Under The Effective Paradigm



Politicians select the policy instruments to achieve the overarching goal within the context of how different goals beneath it are configured. Under an effectiveness paradigm, the instrument selection would reflect those of higher government intervention, whereas under the efficiency paradigm, the instruments would be more skewed towards the laissez-faire. Thus, under an effectiveness paradigm it is possible to have a semi-efficient, healthy private aviation sector, where many civil rights are respected just as it is possible (and even desirable to a certain extent) to have some security under an efficiency paradigm, however, one overarching goal, along with its respective technical jargon and values will prevail over the other.

The key indicator of a Third-Order change is the substitution of one goal over another at the top of the goal hierarchy⁸. In the instance of a transition from an efficiency paradigm to an effectiveness paradigm, the goal of effectiveness replaces the goal of efficiency at the top. This re-prioritization causes changes in the underlining goal hierarchy structure, and causes a number of First and Second-Order changes which can be directly observed. The nature of these First and Second-Order changes is such that they place the necessary premium on effective security, not efficient aviation. For instance, when introducing a new policy instrument in response to such a Third-Order change, the primary question is no longer ‘how will this affect the airlines?’ but rather, ‘how will this make aviation secure?’ The directly observable indicator that a Third-Order change from efficiency to effectiveness has occurred is if the resulting First and Second-Order changes significantly weaken commercial interests. A Third-Order change to effectiveness has occurred if the new policy instruments or settings do significant harm to commercial interests. These instruments tend to be skewed much more towards higher government intervention than towards the laissez-faire variant.

First and Second-Order changes may or may not be symptomatic of a Third-Order change. First and Second-Order change without Third-Order change is typical of satisficing policy-making and satisficing policy-learning. For example, if the particular policy instrument or setting has been demonstrated to be faulty, policy makers fix that

⁸ Other indicators include the commitment of officials to the new paradigm, a shift in the attitudes and language within the policy community, and large changes in underlining key performance indicators. These indicators are much harder to filter from rhetoric and much more difficult to measure with accuracy. As such, the key indicator is the context in which First and Second-Order changes occur with respect to the underlining goal.

one instrument or setting, while minimizing the impact on commercial interest. The method to determine if First and Second-Order change is symptomatic of a Third-Order change is to evaluate if that change is reflective of a reprioritization of the top goal. The introduction of x-ray screening of baggage (a Second-Order change) means very little to overall effectiveness if only 4 units, and 4% of baggage, is screened. If in response to a catalytic event that figure is increased to 25 and 100% screening (a First-Order change), with corresponding flight delays due to broken equipment and inevitable false-positives, this would be considered a response that is symptomatic of a Third-Order change. The context in which First or Second-Order change has with respect to the underlining goal is indicative of whether or not a Third-Order change has occurred⁹.

An alternative explanation for the post 9/11 policy changes, which will be enumerated in later chapters, is that the effectiveness paradigm does not exist and that government was responding only to commercial demands, not the public's. This alternative explanation contends that government instituted additional security measures in response to the demands of private enterprise, since private enterprise was trying to ensure ongoing passenger traffic. While the security measures taken by Transport Canada, CATSA, DHS and TSA did allow demand to recover quickly, these government agencies do not exist solely to cater and serve the interests of private enterprise. It will be demonstrated that government has gone above and beyond what the private sector deems

⁹ Whether or not paradigmatic Third-Order change can occur/is occurring within North American aviation security through a series of First and Second-Order changes implemented because of commercial pressure (in a fashion reminiscent of what Coleman et al described) is indeed an interesting question. It is strictly out of scope in this thesis. There is reason to believe that a case study of Great Britain in the ten years following Lockerbie might reveal some of these dynamics.

necessary, and has implemented policies that place effective security ahead of private sector efficiency.

1.3 Case Selection

Five case studies were selected to test the theory that changes in the public's perception of risk explain the variation in the strength of policy change. They were selected from several possible ones based on a number of criteria. To be selected, there had to be an observable policy change which could then be classified (ie. there had to be a dependent variable to measure). Moreover, there had to be a range in dependent variables, as well as some information that was indicative of the public's risk perception at the time. Israeli and United States examples from before 1980 were excluded as separate case studies because of the lack of accessible public opinion data or very strong qualitative evidence from the era. An understanding of the evolution of aviation security is crucial however, and so they have been included in a separate chapter that traces the history of aviation security.

The first case study focuses on the Canadian reaction to the bombing of Air India Flight 182 of June 1985. What should have been Canada's 9/11, the single largest mass murder in Canadian history, and the largest attack against civil aviation in history (up until 9/11) should have prompted a Third-Order change. Traditionally, Canadians tend to react vigorously (some might argue excessively) to domestic terrorism or perceived domestic threats. Some notable examples include the October Crisis, the various wartime

internments, and even back to the Red River Rebellion. One would have expected a similar reaction to the domestically planned murder of 329 people. Yet, it did not produce a Third-Order change. This case-study explores the reasons why a paradigm shift did not occur.

The second case study is on the American response to the bombing of Pan Am Flight 103 over Lockerbie of December 1988. It is a unique case because of the variation in a few of the independent variables: it was not clearly known who was responsible for the attack at the time, and it was done in a fairly conventional manner, namely an explosive in the cargo hold. This was a manner which was well known and successfully executed many times before. Policy change was hesitant, and was by and large First-Order.

The third focuses on the American response to the TWA Flight 800 tragedy of July 1996. This case study features changing independent variables which influenced public risk perception as a single version of events gained credibility, and the initial conclusions of an ingenious attack became less credible. As a result, the scope of safeguarding civil aviation waned. A couple of important Second-Order changes were implemented in the context of the efficiency paradigm.

The fourth focuses on the American response to the events of September 11, 2001. These events were large, directed against the state by committed and competent perpetrators, in a manner which was perceived as ingenious by the public. The event

augmented the public's perception of risk to the point where politicians went against their own heavily entrenched ideology to implement an effectiveness paradigm and its corresponding policy changes.

The fifth focuses on the Canadian response to the same events. This case study is used to contrast against the Air India case study in an important way. Here is an event in which Canada was not the primary target, where fewer Canadians died than in Air India, yet the government's response was a complete paradigm shift.

Three other catalytic events that could conceivably be used as case studies are Israel July 1968 hijacking (and subsequent incident at Dawson's Field in September 1970), the 1967-1973 spate of hijackings in the United States, and German and American responses to PLO terror in the early 1980's. Although all instances would make for excellent case studies in their own right, there is insufficient data available (in English) on the public record to be able to make reasonable conclusions about the degree of risk perceptions amongst the general public. The five cases were selected because they were all catalytic, centered on the United States and Canada, had enough public record documentation to make a convincing argument, and provided sufficient variation in the contributing independent variables to facilitate a discussion as to why the perception of risk varied, and why the policy responses varied in response to different events.

The case studies that follow provide a short narrative of the context in which the catalytic event occurred, the nature of the catalytic event, the change in risk perception

that resulted, and the size and scope of the policy change using Hall's Orders of Change model. First, a brief history of aviation security is presented, in part to explain the evolution of the policies preceding Air India Flight 182 and Pan Am Flight 103.

CHAPTER TWO: A BRIEF HISTORY OF AVIATION SECURITY

A historical review of the history of aviation security is necessary because Israeli aviation security is the archetype of the efficiency paradigm, and also because many of the policies which would be later implemented in the United States, and ultimately in Canada, originated there. An understanding of how the effectiveness paradigm evolved, and how different lessons were applied to the United States prior to 1988, is valuable for understanding subsequent policy changes.

North America's modern aviation security regime has its origins in Israel 1968, and the subsequent response in the United States to a cluster of hijackings. The June 1968 hijacking of an El Al flight was the catalytic event which led to a Third-Order change in Israeli aviation security policy from the efficiency paradigm to the effectiveness paradigm. The context of the attack is important in understanding why a fairly minor catalytic event in terms of damage and death resulted to a large policy change. While an entire thesis could be written on the origins of the Israeli-Palestinian conflict, this is not the place for such a summary or debate. Instead, a brief background of the nature of terrorism in the region and the circumstances specific to the Six-Day War follows.

While there were certainly dozens (if not hundreds) of attacks against markets and military installations, terrorism in Palestine tended to target modes of transportation early on. On June 21 and 22, 1936 Arabs attacked trains near Jerusalem, although they killed

principally Arabs (Mickolus, 1980, 12). 1938 saw the beginning of market bombings. In 1940, a French boat carrying 1771 Jewish refugees exploded, though most of them survived (13). Jewish terrorism towards the British in Palestine began in 1945 (15), and later included an attack against the Ras El airfield in October 30, 1946, and then a sustained campaign in November against railroad stations, trains and streetcars (18). The terror campaign, which was aimed at convincing Britain to leave Palestine, continued for the next two years, targeting oil refineries, pipelines, British administrators, and British soldiers (18-27) until Independence was declared in 1948.

One of the earliest targets of the Palestinian terror group Al Fatah was water. Between October 27, 1966 and March 16, 1967, there were at least four terrorist attacks against water transportation systems -- irrigation systems, reservoirs, and pipelines (72-74). This was the last phase during what Tal (2000) calls "The Water Battles" (131). Tal argued that Al Fatah (the precursor to the Palestinian Liberation Organization (PLO) and the Palestinian Liberation Army (PLA)) was created by a summit conference at Cairo in 1964 with the implicit purpose of provoking an Israeli military response. Israel, faced with a diversion of the Jordan River, would have to respond to prevent it. Following a general ratcheting up of tensions and rhetoric, troop levels increased around Israel. The situation escalated into the Six Day War, in which Israel, against all of its neighbors, won. It can be argued that Palestinian despair resulted in escalated PLA terrorism. The Marxist-Leninist wing of the PLO, the Popular Front for the Liberation of Palestine (PFLP) would be the first to strike against Israeli civil aviation.

On July 22, 1968, three PFLP hijackers pistol whipped the navigator and fired a shot into the cockpit of an El Al Boeing 707 on route from Rome to Tel Aviv. They threatened to blow up the airplane with grenades, and forced the aircraft to Algeria. Twenty-three non-Israeli hostages were subsequently freed and were flown by the Algerians to Paris. Twenty-two Israelis were subsequently held hostage in Algerian barracks at the airport. The PLO demanded the release of 1200 prisoners held by Israel. Other Arab nations began making demands: Iraq demanded a MIG21 stolen by a defector be returned while Syria demanded the Golan Heights. Pilots applied pressure. “The International Federation of Air Line Pilot’s Associations (IFALPA) announced on August 13 that it would begin a boycott of Algeria on August 19. Swissair, Alitalia, and Air France made similar plans.” (Mickolus, 1980, 94). They later called it off when they learned that negotiations were under way. On September 12, in a face saving gesture, Israel released sixteen prisoners – at the behest of a suggestion made by the Italians. Algeria released the Israeli hostages. The PFLP was angered that they had not been consulted before the trade. It has been alleged that Dr. Wadie Haddad had planned the hijackings, and that the real target was the kidnapping of general Ariel Sharon, a key general at the time (Mickolus, 1980, 94).

The attack on an El Al flight, and taking of only Israeli hostages, was viewed as an attack against the state of Israel itself. El Al was state owned, and as the national air carrier, it was a symbol of prestige. Air travel was also a key method that Jews could immigrate to Israel and the symbolism could not be mistaken. As a state owned corporation, it was relatively easy for the leaders to make the necessary policy changes

quickly, and in coordination with the state. The political significance of the attack was clear.

A Third-Order policy change followed. The paradigm shifted from one of efficiency and national service to one of effectiveness. There is scant evidence on the nature of the security apparatus that was in place prior to 1968 on El Al. El Al was a state owned enterprise, and took on humanitarian missions almost as an extension of the Israeli government. (Its first flight brought the first President of Israel from Geneva to Israel.) El Al was also instrumental in Operation Magic Carpet, although it did not initiate the program. In response to a pogrom against Yemini Jews in Aden, an American organized an effort with Alaska Airlines to pull them out (The New York Times, March 5, 1949). El Al joined the effort, and eventually the operation widened to bring an even larger numbers of Jews from across Europe to Israel (The New York Times, February 13, 1950). Aviation security was primarily ground based. Since there was not a significant (if any) domestic aviation market, all flights would have been international, and therefore subject to customs and passport control. Given this government presence, one might expect a unit of the Israeli Defense Force to be posted there prior to 1968. El Al was closely linked with, if not an outright extension of, the Israeli government. El Al had to be efficient, as there were several hundred thousands of Jews being repressed who needed repatriation.

Lessons were drawn from the military sphere and implemented in the aviation security sphere. Israeli military security policy is tailored to its unique reality. Israel is

geographically small, with most of its industrial base located in an even smaller area, surrounded by enemies that wish to annihilate it. Israel lacks 'strategic depth', in that it does not have very much land to absorb an attack. Israel also lacks staying power, as it lacks a large population, and most natural resources. Israel is simply incapable of a prolonged, World War I like, war of attrition. As a result, "Israeli national security doctrine can be summed up in a single phrase: an almost total forfeiture of the staying power in favor of optimal assault power." (Tal, 2000, 43) To supplement that, "...Israeli security doctrine is predicated on a defensive aim – deterrence, or prevention..." (Tal, 2000, 47). Inbar (1998) echoes the "deterrence, early warning, decisive victory, and self-reliance" characteristic of Israeli national security (62). Bar-Joseph (2000) argues that the Israeli security paradigm (the three pillars of which are the "primacy of security", "resort to force as a panacea to security problems", and "self-help") crystallized into its "ideal type" during the 1967-1973 period (104-107). Israeli leaders simply looked within for a solution, and emulated the existing national security paradigm for aviation security.

They did so by building strategic depth through a layered approach. They improved the final layer of security by locking and securing the cockpit door, and by putting air marshals on every flight. They trained special units to handle airport crises and hostage situations. They instituted behavioral profiling at the counter, and checked baggage for bombs before it got onto the airplane. They also enhanced cooperation with their intelligence agencies to spot threats before they could be executed. Each layer deterred a potential attack, warned them if one was about to happen, or, should one be

carried out, enabled Israel to strike quickly and decisively. In this way, aviation security emulated national security.

In an interview, the ex-president of El Al airlines Joel Feldschuh, pin-pointed the greatest shifts in policy to the direct response to the hijacking in 1968 (Alva, 2001). Feldschuh points out that in 1968, the cockpit door was locked and secured, and “that air marshals were put on every flight in both directions.” Pilots and flight attendants are not trained to fight terrorists and do not carry guns, as that is the role of the air marshals. A system of profiling was put in place, which is integrated with the Israeli Security Services (Alva, 2001). The national security paradigm had been emulated and that Israel continuously learned from past incidents.

The author could not verify the exact date when air marshals were added to all Israeli flights. It can be deduced from the public accounts of later events that they were added to flights either immediately in 1968 or after an attack in 1969. The next attack came on December 26, 1968 when two PFLP members attacked an El Al flight in Greece with grenades and machine gun fire. It is unclear whether or not an air marshal was present in that attack. (The response to the incident was still rigorous. Two days later, Israel retaliated by flying commandos into Beirut, where the hijackers had come from, to destroy 13 civilian aircraft. No civilians were killed, but they caused over 40 million dollars of damage (Mickolus, 106).) The first public instance of an air marshal being involved in fighting attackers came in February, 1969, an El Al flight from Zurich was attacked on the runway using the same tactics used in Greece. This time, an Israeli

security officer, acting as an air marshal, was instrumental in preventing the attack from going any further (The Globe and Mail, February 19, 1969). (When it became clear that the attackers trained in Jordan, and Egypt offered the attackers free medical attention, the Knesset issued a terse statement against the “compliance [by Arab governments] with hijacking and with scheming against and assault upon our air routes will cause serious damage to all, including the Arab States.” (Mickolus, 114). Israel never retaliated.) The incident proves that Israel responded to the threat by adding air marshals to flights.

Israeli trained special operations units in aviation security operations. In 1972, members of the Black September group hijacked a Sabena flight and proceeded to fly to Tel Aviv airport and made demands. The Sarayat Mat’kal Special Forces unit stormed the aircraft and ended the incident with few injuries (Sweet, 2002, 196). Incidentally, this was the same unit that destroyed the aircraft in Beirut in retaliation for the first hijacking. The Sarayat Mat’kal’s tactics have long since been copied by other countries, including Canada’s JTF-2.

El Al introduced racial and behavioral profiling as part of its security regime. It is commonly known that passengers must arrive at the airport 3 hours before their flight departure time (reduced to 2 hours since the mid-nineties) (Alva, 2001). El Al frequently changes its screening questions to avoid routinization and to keep the questioning and profiling protocols effective. The questions have been effective in detecting would-be hijackers and ‘duped passengers’ alike. A duped passenger is one who does not know they are carrying an explosive. For instance, in the early eighties, a German man

believed that he was hired to smuggle drugs into Israel. The terrorists bought his ticket for him. The screener asked why he had purchased his ticket in another country. He had no answer. A hand search turned up nothing, but a further, more intense, inspection turned up explosives. A screener knowing which simple questions to ask averted a bombing (Black, 2003).

Baggage handling policy also changed. El Al has 100% baggage matching. Baggage only goes onto an aircraft if the passenger is on board – which includes transferring flights. El Al also puts all baggage into a decompression chamber to test for altitude detonator bombs, and also employs advanced explosive detection techniques. There is also purportedly a zero tolerance policy for the staff – “almost nothing slips through...And if it does, screeners are fired on the spot.” (Black, 2003). The costs are shared between El Al and the Israeli government.

Many of these policy instruments were pioneered by Israel. Recall that the introduction of, or the changing of policy instruments each represents a Second-Order Change. These Second-Order Changes came about because there was a Third-Order Change – a paradigm shift from largely an efficiency paradigm to an effectiveness paradigm.

Whereas the Israeli implementation of aviation security was rapid and complete, sparked by a traumatic catalytic event, the early experiences of the United States were characterized by a slower, gradual process which led only to a series of Second-Order

changes. The United States experienced a rash of hijackings beginning from the 1950s up until the mid-1970s. In this instance, it was the series of catalytic events that caused a gradual increase in the general public's risk perception. The resulting policy change however was only Second-Order, as the underlining efficiency paradigm was not dislodged.

The roots of the American spate of hijackings can be traced to Eastern Europe and the Cold War. In the late 1940's and early 1950's, hijacking was seen as a means of escape from Communism, and such escapes sometimes involved entire planeloads defecting over the Iron Curtain (Mickolus, 1980, 26-30). Such actions, given the nature of the tensions at the time, were commonly excused by Western nations, and the defectors were given asylum. It was considerably more domestically peaceful in the United States. According to Sweet (2002), "From 1930-1967, only 12 US commercial aircraft hijackings were attempted and only seven were semi-successful." (62). This figure masks the true roots of the American experience. Holden (1986) states that "Of the 177 worldwide hijacking attempts between 1958 and 1969, 80% originated in the Western Hemisphere and 77% either originated in Cuba or were efforts to divert planes to Cuba (88). That would change in 1968 when both the United States and the World would be engulfed by a hijacking 'virus'.

There were a large number of catalytic events that occurred between 1968 and 1973. There are three distinct sets of them to complicate matters. One is the rise of international aviation terrorism that began in 1968. The second is a series of 'hijackings

for the purpose of transportation' which increased dramatically thereafter. The third is a series of criminal extortion hijackings which followed.

The PFLP turned its attention to Western targets after 1968, which resulted in a number of high profile hijackings. On August 29, 1969, the PFLP hijacked a TWA flight, ensnaring a number of American, French, Italian, Greeks and Israelis and taking them to Syria. Once again, IFALPA and the International Red Cross applied pressure, and the hostages were released. The PFLP had been told that Yitzhak Rabin, Israel's ambassador to the United States, was supposed to be on board that flight. However, he had taken an earlier one. All of the hijackers were released by Syria following the incident (Mickolus, 1980, 131-133). On February 21, 1970, six Americans and two Canadians were among the 47 dead when an altimeter controlled bomb in the rear of a Swissair flight detonated (Mickolus, 1980, 159; *The Globe and Mail*, February 23, 1970, 1). The most famous incident was that at Jordan's Dawson's Field between September 6 and 9, 1970. Initially, the PFLP plan was for four men to hijack an El Al flight destined for New York. When El Al security proved to be too tough and two were prohibited from boarding, they hijacked a TWA flight instead. They ordered the plane to fly to Beirut and then onto Jordan. The other two managed to board the El Al flight, where their attempts were foiled by air marshals, passengers, and luck (several grenades failed to explode owing to rust and age). Three other flights were successfully hijacked – one from Swissair, one from Pan Am, and one from BOAC (British) (Mickolus, 1980, 212-217). The conditions for the hostages were appalling in the desert heat, reduced rations, and fear. These events were well publicized, with the international media attending PFLP

press conferences, and the events garnered several front page headlines (The Times, September 10, 1970, 1: Martin, September 11, 1970, 1: The Times, September 14, 1970, 4). All the passengers were removed from the aircraft and ultimately released. Jordan nearly collapsed into civil war over the incident, and in the end, all four empty airplanes were blown up while the world watched.

The second set of catalytic events involved hijackings for the purposes of transportation. In February and March of 1968, there were three hijackings to Cuba. There was one in June and five in July. Between November 1968 and March 1969 there were 25 hijackings, 24 of them to Cuba, and until March of 1971, there were on average two hijackings to Cuba a month (Holden, 1986, 882). Recall that the Black-McKellar and Civil Aeronautics Act had divided the United States domestic market into major trunk routes which gave specific carriers a virtual monopoly over each. Eastern Airlines had most of the routes that ran adjacent to the Atlantic Ocean. The result was that Eastern Airlines suffered disproportionately in general and not the broader aviation industry¹⁰.

The third set of catalytic events was with respect to purely extortion hijackings. In June 1970, Arthur Barkley hijacked a plane at Dulles Airport and demanded 100 million dollars to walk away. He was the first American to ever try such an extortion hijacking. The attempt failed (Holden, 1986, 883). Two more unsuccessful extortion hijackings occurred in the United States the next year. A man on a Canadian flight

attempted the first ‘parajacking’ on November 12, 1971 by demanding a ransom and a parachute, but the attempt failed. Twelve days later, D.B. Cooper demanded 200,000 dollars and two parachutes. He succeeded in his escape, but it is uncertain as to whether or not he survived the descent. His success spawned a wave of copy-cat attempts -- 15 more in 1972 alone (Holden, 1986, 885). Perhaps one of the most frightening extortion attempts came on March 7, 1972 when TWA was targeted again. “An anonymous caller warned that four TWA planes would be blown up at six-hour intervals unless he was paid \$2 million.” One did indeed explode on a TWA flight. Another bomb was found after a flight had taken off and returned with less than an hour left on the timer. “An attempt to pay the money failed.” (Mickolus, 1980, 303).

These incidents provoked dissatisfaction on the part of both the public’s and US President Richard Nixon’s. In a 1970 Gallup Poll, 39% of respondents said that somebody convicted of hijacking an airplane should receive 10 years or more in prison, 16% said life, and 4% for the death penalty (The Gallup Poll, 1970, 2246). House Republicans, dissatisfied with hijackings even before the situation became very bad, intended to toughen penalties against hijacking as early as 1968 (The New York Times, December 1, 1968). Nixon, a traditional law and order conservative, was dissatisfied with the spate of terrorist extortion hijackings, the Cuban hijackings, and criminal extortion hijackings (Smith, September 12, 1970). Nixon began directing plans for dealing with the Cuban issue as early as 1969 (United States, Memorandum, February 7, 1969). Airline pilots and other experts were extremely dissatisfied with the situation,

¹⁰ Eastern Airlines ultimately succumbed not to hijacking, but to the no-frills airlines that were permitted to

with suggestions that pilots should start arming themselves. Such solutions were rejected with same argument used against instituting El Al style air marshals on US flights: the specter of in air shoot outs crashing the aircraft (Lindsey, September 9, 1970). IFALPA, as early as 1968, instead suggested implementing metal detectors as a method of keeping all guns off the aircraft (The Times, July 16, 1968). They eventually went on strike over the issue of security in the early 1970's. Frustration grew as the catalytic events accumulated.

A number of interesting proposals were gathered from public consultations on how to address the problem. One of them was to build needles directly into the seats. Should a hijacker make a move; the pilot could activate the needles, injecting the hijacker with a disabling drug. Others included the use of sleeping gas to disable the threat, or the mandatory wearing of special 'flight suits' so as to eliminate the ability of hijackers to smuggle weapons on board (Sweet, 2002, 66). To a large extent, both government and industry wanted to solve the problem, but neither was willing to pay the cost. When it became obvious that private enterprise was unwilling (and unable due to its financial situation) to pay more for increased security, the FAA regulated and forced the carriers to carry the additional cost. Any potential bankruptcies were mitigated the way they usually were: by forcing mergers and regulating higher prices on certain routes. However, the FAA and private enterprise only went so far.

fly following the Airline Deregulation Act of 1978. It eventually folded in 1991.

Although there were a number of First and Second-Order Changes, these did not add up to a Third-Order change. The Nixon administration and air carriers did not take a holistic approach to the problem, but rather, decidedly focused on specific aspects in a piecemeal fashion. First we focus on the international remedy line of policy changes.

Henry Kissinger advised President Nixon in early 1969 that it would be advisable to begin talking with Cuba over the prosecution of hijackers in Cuba (United States, Memorandum, February 7, 1969). The imagined solution to the hijacking problem was prosecution. The reason why criminals hijacked commercial airliners was so that they could use it as a method of transportation or defection, and not be prosecuted upon arrival at the destination. It was an act of impunity. The solution therefore was to ensure prosecution. Since relations between the United States and Cuban relations were frosty, Cuban cooperation was not entirely forthcoming. It took several years of negotiation before Cuba eventually agreed to prosecute hijackers in 1973. The United States also participated in several treaty negotiations because it was unclear which country had jurisdiction in the cabin of an aircraft, and different countries had different perceptions. These efforts began well before 1968-1973 with the Convention on Offenses and Certain Other Acts Committed on Board Aircraft, also known as the Tokyo Convention of 1963. The Convention required all 122 signatories to detain hijackers and return passengers, crew and aircraft in a timely fashion. The Tokyo Convention was not always honored and contained loopholes, so another convention was drawn up to plug them. The Convention for the Suppression of Unlawful Seizure of Aircraft was completed in December of 1970 and proclaimed by Nixon in October of 1971. This convention

however did not include acts of bombing and sabotage, so the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation was drawn up in Montreal in September of 1971 (Prime Minister Trudeau was anxious to appear tough on terrorism in the face of the FLQ, and Montreal is the home of the ICAO and IATA). The Montreal Convention mandated legislation which directed the FAA to draw up regulations for the provision of detection services and onboard baggage screening. It also mandated the stationing of a “federal air transportation security force” at major airports (Sweet, 2002, 38-43). These treaties sought to ensure that hijacking was a crime that would be enforced in all jurisdictions. They were not designed to address the domestic epidemic of extortion hijackings. This was an attempt by several Western powers to export their solution of prosecution to other jurisdictions. Recall that First-Order changes represent interval increments to existing policy instruments. Since policy makers were only trying to increase the number of places where hijacking was illegal, this in itself only represents a First-Order policy change under the efficiency paradigm. The Montreal Convention contained several provisions for the implementation of new, more robust policy instruments which are Second-Order policy changes.

Several other Second-Order changes took place to address the domestic problems of extortion hijacking and the international one of terrorist hijacking. Nixon’s immediate reaction to the Dawson’s Field crisis was to bomb PFLP targets in Jordan – copying the Israeli policy of retaliation. This policy would have been carried out if it was not for Secretary of Defense Melvin Laird. The idea was dropped after he countered that the weather was poor. In reality, he was fearful of another American military quagmire such

as Vietnam (Public Broadcasting System, 2006b). Nixon's second reaction to Dawson's Field incident was to emulate the Israeli air marshal policy. Instead of placing air Marshals on every flight as the Israelis did, Nixon only provided for 100 federal agents...to be expanded later (Public Broadcasting System, 2006a). Initially, these 100 federal agents were temporarily pulled from other federal agencies such as the FBI and the CIA (Cashman, 1970), and later replaced with 1500 properly trained Marshals (Sweet, 2002, 71). Although the policy of retaliation was not executed with respect to Dawson's Field, President Reagan would later execute the policy against Libya in April 1986 in relation, in part, to the Berlin Discothèque bombing (Boyd, April 15, 1986). Both the threat of, and actual use of retaliatory strikes would be trotted out in response to subsequent terrorist attacks, both against aviation and against military targets.

On another front, there were calls for the installation of bullet proof, locked doors on all aircrafts (The Times, July 16, 1968) but it pointed out that no pilot would keep the door locked while terrorists threatened to, and would, kill crew and passengers on the other side. There was recognition after the program of air marshals started that the best place to deal with hijackers might not be in the air, but rather, on the ground. In fact, the preference for a ground based solution was obvious as early as 1969 (Evans, 1969, 703).

In 1972, public pressure forced the FAA to regulate terminal security much faster than the airlines would have preferred. The recommendations of the President's Commission on Aviation Security and Terrorism did not help the FAA's efforts either, as several amendments were made to the regulations shortly after the first set of changes had

been made. Specifically, the regulations called for the creation of a 'sterile area' where all passengers would be screened before entering. The implementation of the magnetometer (metal detector) aided tremendously to that end. They were also cognizant that charging people after detection was important, so a requirement for a law enforcement officer to be available within a short amount of time was implemented. Airports also had to create disaster and emergency plans (Sweet, 2002, 101). The aviation industry only had months for implementation. They continued to resist the regulations by missing their deadlines, and the FAA continued to delay their implementation (Sweet, 2002, 103). The industry finally gave up resistance in late 1972 when fleeing felons hijacked an airplane and flew it to Cuba, escaping with a hefty ransom. In another incident, three hijackers threatened to fly the airplane into a nuclear power plant (The New York Times, November 12, 1972, 1). Both incidents were particularly expensive for the air carriers involved, prompting them to accept the policies and ended their resistance (Sweet, 2002, 105). These incidents also caused the FAA to mandate a police officer at every screening point. Local police authorities balked at the expense. All of the regulations were in place by January of 1973 with the public, generally outraged by the lawlessness in the skies, and accepting them (Sweet, 2002, 106).

These regulations entailed a shift in airport architecture. The creation of a 'sterile concourse' was not entirely bad for airport administrators and airlines either. Before the regulations, airlines had to have security at each gate. With the advent of the sterile concourse, they needed just one centralized point where passengers could be checked.

Moreover, the sterile concourse provided airport administrators with the ability to gain more revenue by putting in shops, duty free stores, and restaurants for their newly captive customers. The concourse had the additional benefit of placing an aircraft far away from an attacker, and gave security the opportunity to stop a hijacker in the time it would take them to run all the way to the aircraft. There were special savings and profits to be had.

However, there was resistance from civil libertarians. Thus far in this thesis, aviation security has been thought of as a dilemma – between efficiency and effectiveness. There is a third libertarian paradigm. The goal of the libertarian paradigm is to maximize individual freedom and privacy from government encroachment. The libertarian paradigm is intensely suspicious of augmenting aviation security, not because they side with the terrorists, but rather because they are concerned about government abuse of the new regulations. Indeed, their concerns are valid given that some elements of American law enforcement often tried to use legislation architected for aviation security for other purposes. Early on, airlines embraced this set of arguments for their own: the new regulations would hurt consumers, it would inconvenience them, and then there were questions surrounding the constitutionality of these searches. The United States Fourth Amendment guards against unreasonable search and seizure. Do airline employees have the right to frisk people or to rummage through baggage? The use of the magnetometer and later use of x-ray devices at security alleviated, but did not eliminate these concerns. There have been dozens of court cases that have arisen since 1973 – the results of which we take for granted today. For instance, it was argued that it was acceptable for somebody to refuse to have their bags searched if an x-ray revealed that

there might be a bomb inside in that the person should be able to withdraw their bag and leave the airport. This argument was struck down on a technicality, but in principle, people who are trying to take down aircraft should not have the ability to ‘try again and again’ until security succeeds in grabbing them (Sweet, 2002, 209-259). There is also the instance of a man, while in the airport, who remarked that he had a bomb in his bag. He argued that such speech was protected under the First Amendment. That argument was also defeated in court (Sweet, 2002, 209-259). Finally, there are multiple instances of law enforcement agencies using the Second-Order Changes in aviation security for their own efforts. For instance, use of the machinery to look for drugs or large caches of money, objects which are of no threat to the aircraft. In one instance, a screener received a 250 dollar reward for noticing a large quantity of money in a suitcase and alerting the relevant authorities. In court it was argued that screeners might be spending more time looking for money (and their reward) than actually looking for explosives. Such abuse has been ruled illegal. (Sweet, 2002, 209-259). Such law enforcements actions might have a negative impact on aviation security because they erode the confidence and cooperation the public has with the regime.

In several ways, these Second-Order Changes were the least expensive to the airlines. There were very few air marshals in the air at any given time, and moreover, there were no provisions for air marshals to ‘deadhead’¹¹ back, reducing the airline’s cost. Moreover, security had been aggregated to specific bottlenecks, where the airlines could control the amount of staff. Since airline staff were the ones doing the screening,

they could also write the customer service policies so as to minimize inconvenience to their own passengers (although admittedly – bearing the brunt of the blame for queuing). Many costs were passed onto local authorities to solve what was a federal problem (Sweet, 2002, 106). Airline administrators had the opportunity to build larger terminals, predicated in part on security. Sterile areas needed to be larger to hold increased passenger volumes (who had passed through the security checkpoint and now had to wait). Moreover, a larger terminal put more distance between a security checkpoint and most aircraft. Airport administrators were only too happy to lease the newly created commercial real estate so that businesses willing to cater to the captive audience. Even though the threat of bombing was very well known, 100% baggage matching and 100% baggage screening was not implemented, in spite of how effective the practice was in deterring such attempts. Both the federal government and airlines sought to minimize their costs throughout the process. President Nixon had indicated that a small increase in the 8% Federal ticket tax, and a 3 dollar surcharge on foreign fares would cover the entire cost, “but the airlines’ top spokesman in Washington vow[ed] to fight the fare boost” (The New York Times, September 13, 1970). In fact, the entire issue of aviation security was intertwined with the broader issue of crime in general, and was by and large a wedge issue against the Democrats (Finney, September 27, 1970, E6; Witkin, September 27, 1970, E6). The overall goal was not an ‘effective security system’...the goal was to do something to placate the public, as FAA and Cabinet efforts demonstrate¹². The airlines

¹¹ To ‘deadhead’ or ‘deadheading’ means to not work in-flight, typically on the way home or to the next work location. The term usually used by airline pilots and attendants.

¹²For example: “Deeply distressed by the wave of Arab commando hijackings and worried that repetitions could shatter the public confidence so necessary to viable airline services, the Nixon Administration named General Davis to the new post of Director of Civil Aviation Security.” (Witkin, September 27, 1970, p. E6).

repeatedly balked and stalled on security compliance, and the FAA lacked the will to severely punish the airlines (Sweet, 2002, 103). It is reasonable to conclude that the airline's goal was to increase security to a point where it made economic sense vis-à-vis their marginal benefit. Prior to the December 1972 incidents, it did not make much sense to do so. Following December 1972, it did. Although there were many Second-Order Changes, the overarching goal and attitude never changed, and as such, there was no Third-Order change. Rather, aviation security crept up the efficiency paradigm goal hierarchy, but never replaced efficiency at the top. The gaps created by the rush-implementation of 1972-1973 would have severe consequences 15 and 29 years later.

Canada's aviation security regime largely complied with the stipulations of the Montreal Convention. However, attitudes towards security remained fairly lax two years later in 1973. Metal detectors were not used to screen all passengers (although a 'high percentage' were checked), and should a weapon be found at Toronto International Airport, "Mississauga police are called" (Claridge, April 30, 1973, 5). The quote suggests that there was not a permanent police presence at the airport. Moreover, it is also striking just how many people were allowed to carry a gun onto an aircraft:

"Hunting rifles carried in a case may be carried onto a plane. Police, servicemen and authorized aircraft employees are also permitted to carry their weapons on board. Authorized businessmen such as diamond merchants are also allowed...[and] track and field officials are permitted to carry starter guns..." (Claridge, April 30, 1973, 5).

The root of the concern is not the political significance of the attacks, but rather, that a collapse in public confidence could hurt airlines. The article goes on to state that he is in charge of Air Marshal's, but has no real power over the FAA.

Although bomb sniffing prototypes were under development at the behest of the Department of Transportation as early as 1982, these were not developed solely in the interest of making aviation safer. Rather, Canadian air carriers were requesting the technology to save money. It took up to six hours to search an aircraft for a bomb in response to a threat, costing the airline as much as 60,000 dollars in opportunity and other costs. Bomb sniffing technology could reduce that time to mere minutes (Mackenzie, August 25, 1982, 1). Effectiveness and efficiency may contain complimentary goals up to a point. Prior to 1985 and indeed 2001, the emphasis was on efficiency.

CHAPTER THREE: CANADA, 1985, AIR INDIA FLIGHT 182

The attack against Air India Flight 182 was large, targeted against the state of India, by a semi-credible group with an uncertain capacity to repeat the attacks, and in a non-ingenuous manner. The public's perception of risk changed very little owing to the perceived target and perpetrators of the attack, and the resulting policy changes were merely of the First-Order as a result.

Up until September 11, 2001, the attack against Air India Flight 182 was the deadliest terrorist attack against civil aviation. It remains the largest instance of mass murder in Canadian history. The origins of the Sikh community in Canada trace back to the 1890's. However, it was not until 1967 when immigration policy was greatly liberalized that it really began to grow. A number of problems relating to domestic Indian politics and the desire for an independent Sikh republic led to a violent showdown at the most holiest Sikh site, the Golden Temple. These events sparked outrage amongst most Canadian Sikhs. There were calls for violence amongst the fundamentalist Sikhs against India. On June 20, 1985, reservations were made for two Canadian Pacific Airline flights which were to be connected through two separate Air India flights – one through Tokyo's Narita Airport, the other through Toronto's Pearson Airport, both with an ultimate destination of India. The RCMP was aware of threats against Air India, and had taken heightened security measures at Pearson. However, there were no threats against CP Air, and as a result, the luggage that was checked was not scanned or x-rayed, and was subsequently interlined directly onto the Air India flights. Air India had a

security process for screening for explosives, but it is unclear as to whether or not the suitcase with the explosive in it was ever checked. There was no mandatory 100% passenger-bag matching at the time, and the perpetrators never boarded the targeted aircraft. At around 7AM on June 23, 1985, one bomb detonated and killed two baggage handlers at Narita airport. Fifty-five minutes later, the second bomb exploded aboard Flight 182 off the coast of Ireland, killing 329 people – including 80 children and 280 Canadian Citizens (Bolan, 2005, 1-11).

At the time, the event was of large size, targeted at India but killing mostly Canadians, from a semi-credible group, and using a fairly un-ingenious method. It was the largest aviation terrorist attack at the time and the largest instance of mass murder in Canadian history, and as such, may be classified as a large event. It was planned in Canada and killed mostly Canadians, but the event was directed towards India and its symbols. The groups involved were radical Sikhs, who could possibly repeat their actions if there was not so much attention placed on them, but the method, a bomb in the cargo hold, was fairly standard for the era, even though Canadian aviation security policy was principally aimed at preventing hijackings. Yet the general public's risk perception did not shift very much. Risk perception of flying Air India had shifted amongst some members of the Sikh and Indian community prior and after Air India (Bolan, 2005, 12), but there is very little evidence of any anxiety by all other segments of Canadian society.

Although the event dominated headlines for a full week in Canada, and had far reaching consequences for aviation security around the world, there is a disturbing lack of

hard public opinion data available on what the public thought, and what exactly their perception of the risk was. The popular sense that one gets from reading articles from the era is that the public was largely indifferent. It was not until June, 2005 that Prime Minister Paul Martin, while observing an Air India memorial ceremony, publicly conceded that it was a 'Canadian tragedy' (Canada, 2005, Privy Council Office). The Air India Commission echoes this sentiment: "Let it be said clearly: the bombing of the Air India flight was the result of a conspiracy conceived, planned, and executed in Canada. Most of its victims were Canadians. This is a Canadian catastrophe..." (Canada, "Lessons to be Learned...", 2005, 2). Although these words might seem like common sense to an outside observer, it was not at the time of, and following, the attack. The report expanded on the notion, held by the families, that "Canada still doesn't get it", and although there is no evidence of racism on the part of the authorities who bungled the criminal investigation that followed, there remains a sense that the reaction on the part of the Canadian public would have been much different had the majority of the victims been white (Canada, 4). "Why did the murder of 331 people not do more to shake our complacency?" (Canada, 4). Almost immediately after the disaster, attention very quickly turned to the Sikh community and the problem of terrorism in general.

The attention directed towards the Sikh minority served only to reinforce the idea that this was a Sikh problem and that Sikhs were to blame. The problem became so bad that a Tory pleaded with Canadians not to shun Sikhs (Canadian Press, June 3, 1986, A8). Indeed, this sentiment was repeated in a Globe and Mail editorial:

“The families of the victims suffered heartbreak that was, initially, exacerbated by a Canadian Government slow to appreciate that most of the dead were citizens of this country rather than of India... Despite (or perhaps because of) the lack of arrests, public opinion has focused on the Sikh community indiscriminately as the source of the crime.” (June 24, 1986, A6.).

The risk perception amongst the general public barely shifted. It was a Sikh-India problem. The solution was to avoid Air India and prosecute through the justice system as normal.

The federal government’s policy response was largely of the First-Order. Fisher et al. reported that the Transport Minister Donald Mazankowski had ordered more equipment and heightened security. Transport Canada officials expressed doubt that much could be done, citing problems with the regulations and resources, including a lack of x-ray machines at Vancouver International Airport, and procedures mandating that luggage be opened in front of a passenger should it set off some form of alarm or bomb-sniffing dog, although extra RCMP officers were being brought in to examine luggage (June 24, 1985, 10). Meanwhile, Prime Minister Mulroney began deflecting blame, stating that security at Canadian airports as among “the most stringent in the world” as suspicion zeroed in on the Sikh community (Wren, June 25, 1985, A8). This theme was echoed and strengthened on June 26, 1985 when the “Conservatives declared a war on terrorism in Canada” (Yaffe, 8). That same day Donald Mazankowski announced that 20 new X-ray machines would be purchased to inspect overseas bound baggage, and that the decision to cut 40 RCMP security officers at eight regional airports had been deferred at least until after the investigation (Yaffe, 8). Furthermore, when the NDP and Liberals

demanded that Mazankowski take the lead in stiffer regulatory guidance, Mazankowski replied “there is clear evidence the Government can take a leadership role to deal with the very important issue.” But he said it should be done in a “co-operative rather than a dictatorial way.” (Yaffe, 8). Mazankowski’s reply was in line with efficiency paradigm language and goals. The Conservative government tried to deflect further blame the next day when Mulroney was reported to have argued that “there is no evidence that a breach of security occurred Sunday at Canadian airports” (The Globe and Mail, June 26, 1985).

A Globe and Mail editorial argued:

“In hindsight, it appears incredible that Transport Canada has required close scrutiny of all hand-held luggage while leaving to the discretion of individual airlines any examination of the luggage checked into the cargo hold.” (The Globe and Mail, 6)

The Globe and Mail also laid out a number of its own recommendations, such as the mandatory screening of all cargo, the use of bomb-sniffing dogs as a standard procedure, improved training for screeners as well as giving them authority (One report stated that the airlines, which pay for the security, “tell them to let people through with carry-on luggage that does not conform to regulations”), for Transport Canada oversight of these independent contractors, and the harmonization of terrorist watch lists with the check-in procedure (The Globe and Mail, 6). Many of these suggestions are Second-Order changes, and it would take 9/11 to get them implemented. What did the federal government do instead?

The federal government implemented “more rigorous screening of all passengers and carry-on baggage”, the physical inspection or x-ray inspection of all checked

baggage (international destinations).”, “A 24-hour hold on cargo except perishables received from a known shipper unless a physical search or x-ray inspection was completed”, “The acquisition and deployment of 26 explosive detector units”, and “the acquisition and deployment of additional carry-on luggage x-ray units, hand-held metal detectors, and walk through metal detectors.” (Canada, Lessons To Be Learned...The Air India Commission, 19).

The hold on cargo from unknown shippers is indeed a new policy instrument, and as such, a Second-Order Change. However, most were First-Order Changes. All of the following changes were interval: screening was made “more rigorous”, 26 more explosive detector units were added, additional x-ray units and passenger metal detectors were added. Interval increases to existing policy instruments are by definition First-Order Changes. Most of the federal government’s implementation was of the First-Order and by and large did not harm commercial interests.

As additional proof that no paradigm changed, little was done on the human front, as Champion-Smith reported in 1991 that airport security personnel were decrying extremely low wages, likening them to ghettos. They reported wages of \$7.25 an hour, and such abuses as severe as sexual harassment, and deliberate racism. Transport Canada argued that it was its responsibility to provide the equipment, and the airlines’ to provide the staff. As such, Transport Canada argued it was only their responsibility only to inspect and ensure that standards are met, not to ensure proper working conditions and a professional aviation security work force. Air Canada argued that the conditions were a

matter between Transport Canada and the security company. Yet, as it was pointed out, Air Canada decided on the number of guards hired and the number of hours worked. Moreover, there was a sense that the risk was on the decline, in spite of Air India. One telling quote was “saying it's simply good business to seek the best possible price for security.” (July 2, 1991, A8). The system ensured maximum efficiency with minimum accountability. The efficiency paradigm was firmly locked-in.

The event was of sufficient magnitude, from a semi-credible source that continued to make threats against India after the disaster, to warrant at minimum, significant Second- Order changes, if not an outright paradigm shift. Yet, this never happened. The general public's risk perception was not altered sufficiently to force the federal government to make many Second-Order Changes or a Third-Order change. Quite to the contrary, the issue was framed in terms of a conventional terrorist action which happened to be initiated in Canada, directed towards another country, which killed a large number of people who, by the standards of the day, were not considered 'real Canadians'. The Progressive Conservative government, in its attempts to deflect blame, did the Sikh community no favours by shifting the debate from aviation security to combating terrorism immediately after the disaster. While most Canadians certainly evaluated their risk thermostat following the disaster, they by and large would have compensated for it by shunning Air India and potentially CP Air because of the perception that it was 'their problem'. Low public risk perception generated few demands on the Conservative government to abandon its efficiency paradigm, and in fact, changes were seemingly kept to a minimum, with the domestic screening of check-in baggage continuing to be minimal

to non-existent, and a wilful ignorance of the threat posed to international carriers due to interlining from smaller, regional airports. It was a risk Canadians were willing to live with. The contrast between June 23, 1985 and September 11, 2001 will be expanded on further in the conclusion.

CHAPTER FOUR: UNITED STATES, 1988: PAN AM FLIGHT 103

The attack on Pan Am Flight 103 was of moderate size, targeted against the state by an (initially) unknown perpetrator of unknown competence, in a non-ingenuous way. Public risk perception increased slightly, and mostly First-Order changes, with a minor Second-Order change, resulted.

On December 21, 1988, Pan Am Flight 103 exploded near the town of Lockerbie Scotland, killing all 259 people on board, and 11 on the ground. United Kingdom investigators concluded that a bomb brought the aircraft down and that the attack was not survivable (United Kingdom, 1990, 4). At the time, Pan Am, along with TWA, was viewed as the national airline of the United States, which caused both to be frequent targets. On December 5, 1988, the FBI received a threat specific to a Pan Am flight from Frankfurt. The FBI forwarded this warning to Pan Am, which the Frankfurt security team promptly lost until a day after the attack. Lockerbie could have been prevented had the FAA enforced its own rules regarding Pan Am's lax security measures at Frankfurt, and acted on information that pointed towards a terrorist threat (Malik, 1999, 116). Many groups claimed responsibility for the bombing; however, the United States and the United Kingdom ultimately blamed Libya. There were reasonable suspicions that the Iranians were responsible and not the Libyans. Iran had motive to take such action in response to the shooting down of an Iranian Airbus carrying 290 passengers to Mecca by the American Aegis warship Vincennes (St. John, 1999, 38). The ambiguity over which group was responsible lingered for a number years after the attack.

The attack was of medium size, by an ambiguous enemy with unknown capacity for repetition, directed against the state, in a fairly conventional way. The initial reaction to the bombing was outrage to the fact that travelers had not been warned beforehand (Cohen, December 27, 1988, A15). There was an open debate as to whom to retaliate against: the Guardians of the Islamic Revolution (a Hezbollah offshoot, sponsored by Iran), Abu Nidal, or Libya: “Why not? Given the world revulsion with Moammar Gadhafi’s chemical-weapons plant, and his proven vulnerability, another raid just might be enough to assuage an outraged public’s pain” (Thompson, December 27, 1988, 10A). In fact, a full 25 days after the attack, it was still unknown how the bag got onto the aircraft, what kind of bomb it was, and who was really responsible (Greenberg, January 15, 1989, 10).

The American public’s perception of the risk slightly increased. Table 4.1 details the public opinion response to the events. Although the attack killed people on the ground, the attack was not targeted at the ground, which in part explains why the public concern was not as great as it would be on 9/11. The data suggests that the public agreed that steps had to be taken on international flights only. Public opinion was fairly split on the policy of military retaliation against the perpetrators of the attack. On the specific issue of public notification, when asked if the government should announce all threats, the public was supportive, however, when the question was expanded to ask about the ramifications of such a policy (inability to discern credible threats from valid ones), public opinion turned against the policy. There was not much overall public concern that

they themselves would become victims to an attack, possibly because the solution was simple: stay off international flights and you will be safe. A question asked both before and after Lockerbie, specifically if one felt if air travel had become safer over the past five years, showed a 25% shift towards a less safe bias. This shift is fairly mild when compared to the other cases. Moreover, when asked what is the most important problem facing the country, only 2% responded 'terrorism' (CBS News/New York Times Poll, January 19, 1989). This is fractional when compared the 37% who listed terrorism after 9/11 (The Gallup Poll, November 19, 2001) and 8% after TWA 800 (The Gallup Poll, January 10-13, 1997). However, in spite of all the concern, people controlled their risk by avoiding Pan Am in general, to the point that the company folded in 1991.

Table 4.1: Public Opinion Data, in %, from late 1988 to early 1989

Question	Date	Yes	No	Don't Know/No Answer
Generally, do you think airline security on international flights is adequate, or not? ¹³	12-Jan-89	28	56	16
The federal government has directed US airlines to X-ray all checked baggage on flights from Europe and the Mideast. Should foreign airlines be required to do the same thing? ¹⁴	12-Jan-89	96	2	2
Would you support or oppose requiring airlines to hand-search all checked baggage on international flights, even if that means passengers have to show up three hours before takeoff/ a ban on carry-on luggage on international flights? (Hand Search) ¹⁵	12-Jan-89	73	22	5

¹³ Media General, (January 12, 1989), Poling the Nations.

¹⁴ Media General, (January 12, 1989), Poling the Nations.

¹⁵ Media General, (January 12, 1989), Poling the Nations.

Would you support or oppose requiring airlines to hand-search all checked baggage on international flights, even if that means passengers have to show up three hours before takeoff/ a ban on carry-on luggage on international flights? (Carry On) ¹⁶	12-Jan-89	49	45	7
Should the US government publicly announce all terrorist threats it receives against airlines, even if it gets such threats on a daily basis and cannot tell if they're legitimate? ¹⁷	12-Jan-89	45	45	9
		Terrorism	Inadequate Maintenance	Don't Know
Which do you think poses a greater danger to air travelers -- terrorism or inadequate airplane maintenance? ¹⁸	12-Jan-89	24	64	12
		Yes	No	Don't Know
Should airlines be required to announce all terrorist threats they receive? ¹⁹	12-Jan-89	57	38	6
Do you think the US government is doing all it can to protect American citizens against terrorism, or should it be doing more? ²⁰	12-Jan-89	36	57	7
Do you think the US government can do anything to significantly reduce terrorist attacks that affect American citizens, or not? ²¹	12-Jan-89	61	26	13
If it is determined who is responsible for the bombing of the Pan Am flight that crashed in Scotland, do you think US government should attempt to kill those who were responsible for this, or not? ²²	27-Jan-89	41	49	
		Very	Some-what	Not Very
How concerned are you that there will be violence from international terrorists near where you live or work? ²³	27-Jan-89	24	21	53

¹⁶ Media General, (January 12, 1989), Poling the Nations.

¹⁷ Media General, (January 12, 1989), Poling the Nations.

¹⁸ Media General, (January 12, 1989), Poling the Nations.

¹⁹ Media General, (January 12, 1989), Poling the Nations.

²⁰ Media General, (January 12, 1989), Poling the Nations.

²¹ Media General, (January 12, 1989), Poling the Nations.

²² NBC News/Wall Street Journal Poll, (January 27, 1989) Polling the Nations.

²³ NBC News/Wall Street Journal Poll, (January 27, 1989) Polling the Nations.

		Great concern	Mild concern	No concern
Should bombs placed aboard the aircraft be of concern?	5-Feb-89	82	13	3
Should hijackings aboard the aircraft be of concern?	5-Feb-89	72	21	6
Should lack of regulation [in aviation] be of concern?	5-Feb-89	55	31	11
		Safer	Less Safe	About the Same
Compared with five years ago, do you feel that air travel is safer, less safe, or has it remained about the same? (Dec 1988) ²⁴	Dec 1988	17	32	49
Compared with five years ago, do you feel that air travel is safer, less safe, or has it remained about the same? (Jan 1989) ²⁵	Jan 1989	8	53	27
		Safer	Less Safe	About the Same
Compared to five years ago, do you think flying on commercial airlines in the US has become safer, less safe, or stayed about the same? ²⁶	23-Feb-89	9	52	36

The FAA's immediate action was to tighten security on all overseas flights, including the addition of questioning passengers regarding their luggage, over the busy holiday period (Tuohy, December 31, 1988). Very little else was done in the months following Pan Am Flight 103. It was not until March 19, when the FAA got caught lying regarding the warning, that the families of the victims began publicly attacking the FAA for its lax response (Seavy, March 19, 1989). Over the next few months, they mounted a campaign for a probe into the attack. When it became known that the bomb was in a stereo, the FAA ordered only airlines operating in Europe and the Middle East to take

²⁴ Harris Poll (February 5, 1989) Polling the Nations

²⁵ Harris Poll (February 5, 1989) Polling the Nations

special care to screen them for explosives (Aviation Daily, June 23, 1989). It was not until August 4, 1989 that President Bush, pressured by family members, ordered a commission to look into Lockerbie and aviation security. The commission faulted Pan Am and FAA laxity for the disaster, and for the inadequate security response following the attack (Philips and Lardner, May 16, 1990). The Aviation Security Improvement Act of 1990 came about as a result of the Commission's work. The Act entailed a number of First-Order changes, such as additional money for explosive detection research, mandating the deployment of those technologies once developed, and the creation of more and new security positions within the FAA. There were a couple of valuable Second-Order changes included in the act, such as the mandatory screening of air mail and cargo, and public notification of credible threats. However, the devil in the details of the legislation was that the FAA should 'study' and 'consider' the screening of air mail and cargo, not implement it. The Act also put into place a number of policies to assist the families of the victim after a terrorist attack. The Act did very little by way of fundamentally changing aviation security.

There would be conflicting reports as to who was really responsible for Lockerbie before the Libyans accepted responsibility, and the requisite rewards that come with confessing. In the end, a Libyan intelligence officer, Megrahi, was convicted. The attack was of moderate size, and directed against the state. Yet, it was not known who was to blame, and it was not known how the aircraft was brought down for several months. The root of the public's, and the victims' families' dissatisfaction was in part centered over

²⁶ Gallup Poll (February 23, 1989) Polling the Nations

the practice of not telling the public about the risks. The fact that several government officials and their family and friends knew enough to avoid the flight, while the general public took advantage of a seat sale, reinforced the idea of a two-tiered security, a situation which drove much of the dissatisfaction. Numerous Second-Order changes that could have been made were dropped. The only real Second-Order change was the practice of publicizing specific threats against specific routes, a practice that, in the era before the mass marketing of the Internet, would not be terribly effective. Ultimately, the policy response in the face of an ambiguous enemy and a fairly standard explosive that got through because of the lax enforcement of existing policy policies meant that very few additional Second-Order changes were sought. The existing policies, had they had been enforced properly, would have succeeded in saving Pan Am Flight 103. The indifference to those regulations by Pan Am and the FAA allowed the attack to be successful. The most obvious solution was to fix the existing policy instruments using First-Order augmentations – more technology, more detection equipment, more personnel and a higher emphasis on security within the FAA. The public attacked the existing policies, not the paradigm, and ultimately, grudgingly, many policies were fixed.

CHAPTER FIVE: UNITED STATES, TWA FLIGHT 800

The entire instance of TWA Flight 800 is unique because of the shifting perceptions of risk. Initially it was thought that the attack was of moderate size, directed against the state, by an Islamic terrorist group with some repeatable method, in an ingenious way – using a Man-Portable Air Defence System (MANPAD). Risk perception shifted to moderate level, and the resulting First and Second-Order policy changes were very swift as compared to the glacial Lockerbie reaction. However, as it became clear that it was not a MANPAD or a bomb, but a mechanical failure, (or as it was believed for a time, a US Navy missile that had struck the aircraft, and was subsequently covered up by the military) that was responsible, risk perception waned and so did the government's commitment to the policy changes.

On July 19, 1996, TWA Flight 800 left New York's JFK airport for Paris. It exploded off the coast of Rhode Island, killing all 230 aboard. The debate as to what caused that explosion and the resulting shifts in risk perception and policy responses makes this a very interesting case study. Declining belief that TWA 800 was brought down by a bomb or MANPAD decreased the scope of the policy deliberation. The Gore Commissions' recommendations were largely First-Order. While the debate as to what really brought down TWA Flight 800 is often dismissed derisively as a bizarre internet conspiracy theory, the shifting perception of the risk, and the implications on the evolution of American aviation security, is important.

The National Transportation Safety Board documented 755 witness interviews and expended considerable effort in determining the cause of the event (NTSB, 2000). Early media reports quoted Major Fred Meyer, a national guardsman who was flying a helicopter nearby, as seeing a “streak of light heading towards the aircraft” (The Times, July 23, 1996, 11). A few media outlets misreported this statement as confirmation of a missile. Indeed, two days later, the New York Times issued a clarification: “While he described a streak of light that preceded two explosions and a fireball, he said he saw no indication of a missile.” (The New York Times, July 25, 1996, 2). There were also reports that Pentagon satellite photos corroborated this theory. “An American spy satellite positioned over the Brookhaven National Laboratory on Long Island is said to have yielded important information. A law enforcement official said satellite pictures show an object racing up to the jet, passing it, changing course and smashing into it.” (The Times, July 23 1996, 11). There were other such reports as ‘streaks of light’ heading towards the aircraft which were repeated both on television and in the print media. Witness statements included seeing a “orange flash, similar to a roman candle or a rocket” (NTSB, Witness 36), “a shooting star with an orange color” (NTSB, Witness 1) and one witness, while on a US Airways Flight 217 (also-known-as the ‘streak-of-light witness’ on US Airways Flight 217), reported observing “a light which appeared to be a “flare” and looked like the shooting of an unexploded firework into the air” (NTSB, Witness 32). Some reports dismissed the possibility of a MANPAD. As Pyle reported for the Associated Press (July 19, 1996), in “Experts All But Rule Out Theory That TWA 800 Hit By Missile”, several unnamed experts stated that the aircraft was outside the range of a Stinger Missile, that the missile would have hit the engines (which the aircraft

would be able to withstand), and that it would be very difficult to fire a Stinger from a small boat.

There was also reason to believe that there was a bomb onboard. CNN had reported that bomb residue was found on some of the wreckage (The Times, July 23, 1996). The aircraft had been in Athens prior to having taken off from New York, which given the history of incidents there, should raise concerns. Commentators on television and newspapers argued that catastrophic failures typically only happen on new, untested aircraft, and “there was a bomb on board without a doubt... You do not get these kinds of midair explosions on commercial airlines without a bomb on board,” (Dowling and Leavitt, July 18, 1996). Finally, the ‘Movement for Islamic Change’, the same group that claimed responsibility for the Khobar Towers Bombing of June 25, 1996 (which killed 19 American soldiers), sent a message to the London branch Al-Hyat newspaper stating “The [US] invader must prepare to leave [Saudi Arabia], dead or alive, and his deadline is dawn. The dawn is near.” (Vulliamy and Black, July 21, 1996, 18). TWA 800 exploded shortly before dawn in the Middle East and London.

The final NTSB report, released in 2000, stated that three different types of explosives were found, and could be traced to “a dog training explosive detection exercise at St. Louis-Lambert International Airport...on June 10, 1996.” (NTSB, 2000, 118). Furthermore, with 95% of the wreckage recovered and examined, no evidence of an explosive device or suggestion of missile impact could be identified (65). The forensic evidence concluded that no explosive had gone off near a passenger or crew

member (84). Radar returns examined by the NTSB could not identify any evidence of any missile (87). All the holes which were initially thought to have been caused by high velocity fragments consistent with an explosive were ruled to be caused by the disintegration of the aircraft (112-114). As for the witness interviews, the NTSB concluded that the FBI's initial assumption that it was a missile, combined with the influence of media reports, skewed witness perceptions (233-237). They point specifically the line of questioning used with respect to the aforementioned Witness 32 ('the streak of light witness'), specifically "how long did the missile fly" and "what does the terrain around the launch site look like?" (234). Furthermore:

"According to the Witness Group study report, some witness documents noted that witnesses acknowledged that they did not realize that they had observed an airplane accident until they saw media accounts of the accident, and some documents specifically stated that witnesses made conclusions about what they observed after learning about the accident in the media." (235).

The report suggested that witness accounts had been skewed by post-event information (242). Most witnesses reported hearing a boom along with what they saw, and since the sound would have taken forty seconds to reach most of them, what they observed was the end of the event. The report concludes that "there is no evidence that anybody saw a missile shoot down TWA Flight 800." (248), instead, what the eye witnesses actually saw was either burning fuel or some portion of the breakup sequence of the aircraft (270).

The attack occurred at a time of heightened awareness of terrorism, namely the April 1995 Oklahoma City bombing and the trial of Sheik Omar Abdel-Rahman, who masterminded the 1993 bombing of the World Trade Center and the aforementioned Khobar Towers bombing a month earlier. Risk perception was also potentially heightened by the Centennial Olympic Park bombing which occurred eight days later on July 27, 1996. The NTSB, in its final report, speculates that the reason for the assumption of a bomb or missile was related in part to heightened security concerns relating to the Olympics, the fact that it was an international flight, and the sudden and catastrophic nature of the in-flight breakup (2000, 65).

Initially, the attack is characterized as being of medium magnitude, directed against the state at a sensitive time, by an organized Islamist group which was establishing a competent track record, using a relatively ingenious method for the time – a MANPAD. Fewer than 300 hundred people had been killed, and the damage confined to the aircraft itself.

Risk perception shifted moderately. Table 5.1 shows that the TWA attack concerned 8% of the population to the extent that they rated it as the most important problem facing the United States. When asked how much confidence people had that aircraft were protected from terrorist attack, nearly a third replied ‘not too much’ or ‘not at all’. When asked if they were less likely to fly TWA or another airline, one in five said yes. Although it was an international flight, it originated in the United States, and as a result, more attention was paid to domestic aviation security in general. Newspapers soon

exposed embarrassing flaws in TWA's security (Kocieniewski, and Sullivan, August 11, 1996, 1A). Whereas the Lockerbie disaster faded from the public's view after relatively short period of time, the policy debate was kept alive by the victim's families. In the instance of TWA, it was kept alive by conspiracy theory, the role of the internet, and the domestic security situation.

Table 5.1: Public Opinion Polling Data, in %, from 1996

Question	Date	Mechanical accident	Terrorist act	US Navy Missile	Something Else
Thinking about TWA Flight 800 that crashed over Long Island last year, from what you've heard or read, what do you believe was the cause of that crash? ²⁷	6-May-97	44	8	27	6
		Bomb	Missile	No Opinion	
(Asked of those who replied "terrorist attack": Which kind of terrorist attack do you think was more likely to have occurred – a bomb explosion on the plane or a missile strike? ²⁸	6-May-97	49	44	7	
		Great Deal	Moderate	Not too much	No confidence
How much confidence do you have that the airplanes that are flown by the major airlines in this country are structurally sound and properly maintained? ²⁹	18-Jul-96	26	45	18	10
How much confidence do you have that the airlines that fly in this care adequately protected from terrorist attack? ³⁰	18-Jul-96	17	51	20	11

²⁷ The Gallup Poll (May 6-7, 1997) CNN/USA Today/Gallup Poll Survey #GO 118023. 82.

²⁸ The Gallup Poll (May 6-7, 1997) CNN/USA Today/Gallup Poll Survey #GO 118023. 82.

²⁹ The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

³⁰ The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

		Yes, less	No	No opinion	
Asked of those who have flown on a commercial airline (81%): As you may know, a TWA jet crashed near Long Island last Wednesday night [July 17]. As a result of that crash, are you less likely to fly on the TWA airline or not? ³¹	18-Jul-96	17	79	4	
Also asked of those who have flown on a commercial airline: As a result of the TWA crash, are you less likely to fly on major commercial airlines or not? ³²	18-Jul-96	20	78	2	
		Worth Taking	Not Worth Taking	No Opinion	
Also asked of those who have flown on a commercial airline: Now I am going to read you two types of actions that could be taken to increase the safety of airline travel. Please indicate whether you think each action would or would not be worth taking if it increased costs and inconveniences to passengers, such as longer waiting time: More extensive inspections of the mechanical safety of the airplanes? ³³	18-Jul-96	87	11	2	
Also asked of those who have flown on a commercial airline: Now I am going to read you two types of actions that could be taken to increase the safety of airline travel. Please indicate whether you think each action would or would not be worth taking if it increased costs and inconveniences to passengers, such as longer waiting time: More extensive inspections of passengers and their baggage? ³⁴	18-Jul-96	78	20	2	

³¹ The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

³² The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

³³ The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

³⁴ The Gallup Poll (July 18-19, 1996) CNN/USA Today/Gallup Poll Survey #GO 107434. 192-194.

	Jan 12-15, 1996	May 9-12, 1996	July 25-28, 1996	July 10-12, 1997	
What do you think is the most important problem facing this country today?: Terrorism: TWA Plane Crash ³⁵	0	0	8	0	

In response, President Clinton established “a Commission by issuing Executive Order 13015 on August 22, 1996 with a charter to study matters involving aviation safety and security, including air traffic control and to develop a strategy to improve aviation safety and security, both domestically and internationally.” (United States, 1997), also known as the Gore Commission. This commission returned twenty recommendations on September 9, 1996, and Clinton urged Congress the next day to push through one billion dollars for anti-terrorism efforts, in addition to improved aviation security (Pudrum, September 10, 1996). This issue had become mixed with the Presidential election, and in the context of a Republican dominated House of Representatives. Nevertheless, Congress approved 400 million dollars for aviation security, primarily for improved explosive detection, devices, but also for FBI security clearance of security screeners, and for the initial adoption of a Second-Order Change, the Northwest Airlines CAPPS system, in October 1996. There were also a few First-Order Changes, namely, increasing the number of existing x-ray devices, and increasing the number of bomb-sniffing dogs by 114 (United States, 1997). When risk was perceived as being heightened, these First and Second-Order changes were being approved and implemented. There was also an

³⁵ The Gallup Poll (January 10-13, 1997) CNN/USA Today/Gallup Poll Survey #GO 116007. 20-21

aggressive push by the FAA to review Part 107 of Air Transportation Security Act launched on August 1.

Doubt as to what really happened began to grow in late August. Engines were ruled out as a factor as early as August 20, 1996 (Portland Oregonian, A6), and media reports began pointing to a fuel tank blast (Laurence, August 22, 1996). By late September, media reports pointed increasingly to mechanical failure (Usborne, September 21, 1996, 11) and started to treat the alternative conspiracy theories circulating on the Internet with contempt (Adams, September 22, 1996). As the facts became more widely available, the public's perception of risk changed. In a poll taken in May 1997, 44% believed that mechanical failure brought down TWA 800, 27% a U.S. Navy missile, and 8% a terrorist attack. Of those who replied terrorist attack, 49% believed it was a bomb, 44% believed that it was a missile strike. Gallup found that most Americans had rejected the terrorist theory in favour of the mechanical failure and the U.S. Navy cover-up conspiracy (The Gallup Poll, May 6-7, 1997, 82). When asked what was the most important problem facing the country today, 8% replied terrorism/TWA plane crash (the same as health care, and more than social security) in July 1996. That figure fell to 0 by January 1997 (The Gallup Poll, January 10-13, 1997, 20-21). A similar 'most important problem' question in a CBS News/New York Times Poll taken January 19, 1989 shortly after Pan Am Flight 103 found that just 2% cited terrorism. A Gallup Poll taken November 19, 2001 found 37% cited terrorism. The public's perception of risk declined.

As the perception of higher risk waned, so too did the commitment to some of the more significant Second-Order Changes, yet, there was still enough public concern to implement a few First and Second-Order Changes. For instance, 100% passenger bag screening was compromised for partial bag matching (Jenkins, 1999, 105). 100% bag matching is an effective way to improve aviation security, but is expensive, especially when one factors how absent passengers can cause delays in finding and removing baggage. These delays can be compounded throughout an entire airline when one considers their effects on a hub-spoke system, which incidentally TWA itself pioneered. Moreover, the Gore Commission sought to work within the existing efficiency paradigm by requiring the FAA step up its standards on private screeners, as opposed to addressing the real institutional problems surrounding the issue of screening (Jenkins, 1999, 107). The promise of more money also fell through as “Federal funding for aviation was increased, although not at the sustained \$100 million a year recommended by the Commission” (Jenkins, 1999, 111). One result was the slow implementation of an ineffective Computer-Assisted Passenger Pre-screening System (CAPPS) which was to be used to aid in giving high risk passengers’ baggage special scrutiny (Jenkins, 1999, 111.). The issue of MANPADS was marginalized by the Gore Commission. They favored a recommendation to assess the potential risk that MANPADS posed in recommendation “3.16 Establish an interagency task force to assess the potential use of surface-to-air missiles against commercial aircraft.” (United States, 1997) and this telling ‘non-committal but important to note it for future I-told-you-so partisan use’ passage:

“The terrorist threat is changing and growing. Therefore, it is important to improve security not just against familiar threats, such as explosives in checked baggage, but also to explore means of assessing and countering emerging threats, such as the use of biological or chemical agents, or the use of missiles. While these *do not present significant threats at present*, it would be short-sighted not to *plan* for their possible use and take prudent steps to counter them.” (United States, 1997). (emphasis added).

The real risk posed by missiles was much higher. According to Bott (1997), “Since the late 1970s, at least 26 civil aircraft have been shot down by man-portable air defense systems (MANPADS).” Given the events at the time, the fact that a number of Stinger missiles were provided to resistance fighters in Afghanistan, and the strong suspicions of associated terror groups attacking US interests, it would have been prudent to begin research on countermeasures. Public risk perception of the threat had collapsed, the paradigm had not changed, and as such, the question of MANPADS was mooted. As late as 1999, the implementation of some policies, such as the certification of security screening companies, remained stalled (United States, GAO, 1999).

The public’s risk perception waned as new facts emerged, as did the commitment of politicians and officials to some of the Second-Order changes they had committed to. Initially, the event could be categorized as medium in size, targeted against the state, by an unknown but thought to be organized group, and in an ingenious manner. The MANPAD story had become discredited. Since that story was discredited, the general threat that MANPAD’s and terrorists in general posed to the United States was also

discredited. Instead of asking ‘what if’ and several other important questions and taking steps to properly resolve them, the public was left with half measures. If the existing policy framework was not to blame for the disaster, then there is very little wrong with the existing policy. Thus, finish some of the commitments we have made, and ignore the rest. The public did not hold the FAA, or the Clinton administration accountable on the proper implementation of these First and Second-Order changes. Moreover, there was no Third-Order change. There was still a heavy emphasis on efficiency. The attitude that security was more of an obstacle than aim would continue to persist. This attitude would ultimately contribute the success of the 9/11 attacks. With respect to hijackers of United Flight 175, “according to the United ticket agent, they had trouble understanding the standard security questions, and she had to go over them slowly until they gave the routine, reassuring answers.” (United States, 9/11 Commission Report, 2004, 2)

Moreover, CAPPS just alerted authorities to screen their checked luggage, not pay any more attention to them at the checkpoint or at boarding (United States, 9/11 Commission Report, 2004, 2). The primary goal was to get passengers in their seats, not to secure those seats.

CHAPTER SIX: UNITED STATES 2001-2005

The attacks of September 11, 2001 against targets in the United States were large, targeted directly against the state, executed by a competent organization capable of repetition, and used an ingenious method. The public perception of risk increased, and the result was a Third-Order Change.

The efficiency paradigm remained firmly locked in up until September 11, 2001, as any previous challenges to that paradigm had been soundly defeated. It had been reinforced by twelve years of Reaganomics³⁶ and eight years of Clinton free market liberalism. There had been a few important First and Second-Order changes that had been previously implemented in response to previous events. In 1994, Northwest Airlines began work on a Computer-Assisted Passenger Pre-screening System (CAPPS) which had been implemented nationwide in 1998 as a result of the recommendations stemming from the Gore Commission (United States Congress, 2001). CAPPS respected the libertarian paradigm goals somewhat by ensuring that race, religion and national origin were not factors for screening. Additional money was set aside for screening at major airports. Yet, as the 9/11 Commission Report revealed, CAPPS failed to screen out the 9/11 hijackers as the system was being treated as an obstacle to efficiency, not as a method for effective security.

³⁶ Reaganomics is a term commonly used to describe a set of economic principles espoused by President Ronald Reagan, and his successor, George Bush Sr. The term can be best summed up as 'small taxes, small government, big debt'.

The 9/11 Commission report erroneously claims that no national surveys were done on terrorism prior to 9/11 (United States, 2004, 341). There were several, and the most relevant are in Table 6.1. The public was generally split on whether or not the government was doing enough to prevent terrorism in the US, yet nearly two thirds of Americans were not very concerned about the possibility of an attack. A majority believed that the government could do more, but what exactly was unclear.

Table 6.1: Select Public Opinion Polling Data, in %, Prior to 9/11

Question	Date			
		Yes	No	Not sure
Do you think the federal government is doing enough to prevent terrorist activity in the US ³⁷	10-May-01	41	37	22
		Very Concerned	Not Very Concerned	Don't Know
Would you say you personally are very concerned about a terrorist attack in the United States, or not? ³⁸	2-Jan-00	36	62	2
		Very Concerned	Somewhat concerned	Not at all concerned
(Of those not very concerned)... Would you say you are somewhat concerned about a terrorist attack in the United States or not at all concerned? ³⁹	2-Jan-00	37	39	22

³⁷ Opinion Dynamics/Fox News (May 9-10, 2001), Poling the Nations

³⁸ CBS News Poll (January 2, 2000), Poling the Nations

³⁹ CBS News Poll (January 2, 2000), Poling the Nations

		Can do something	Can't do more	Don't Know
Do you think there is anything the United States government can do to significantly reduce terrorist attacks that affect American citizens or is this something the United states government can't do much about? ⁴⁰	2-Jan-00	53	38	9

The term “the events of September 11” refers to four separate, nearly simultaneous hijackings. The definitive account of what happened can be found in the 9/11 Commission Report, so there is no need to go into great detail about the actual events themselves. These were hijackings not with the traditional aim of pure extortion, but rather, for the purpose of turning each aircraft into a guided missile.

Putting aside Japanese World War II Kamikaze attacks, the idea of using a civil aircraft as a guided missile in itself was not completely new. Sam (Samuel) Byck hijacked an airplane in 1974 for the purposes of assassinating President Nixon by flying it into the White House, however he failed do so (Kammen, August 29, 1982, BR9). In 1972, three gunmen hijacked an aircraft, demanded 10 million dollars among other things, and warned “If conditions are not met, they will drop this airliner into the atomic energy plant.” (The New York Times, November 12, 1972, 1). The Armed Islamic Group (GIA) hijacked an aircraft in 1994 with the intent of overloading it with fuel and

crashing it into the Eiffel Tower. French troops stormed aircraft in Marseilles after three hostages were executed. All the hijackers were killed (Riding, December 27, 1994, A1).

The 19 al-Qaeda hijackers were more successful than their Algerian GIA counterparts. American Airlines Flight 11 left Boston at 7:59AM and was crashed into the North Tower of the World Trade Center at 8:46AM. United Airlines Flight 175 left Boston at 8:14AM and was crashed into the South Tower of the World Trade Center at 9:03AM. American Airlines Flight 77 left Dulles Airport in Washington D.C. at 8:42AM and was crashed into the Pentagon at 9:37AM. United Airlines Flight 93 left Newark Airport at 8:42AM and was crashed into a field at Shanksville Pennsylvania at 10:07AM (9/11 Commission, 2004, 32-33). In summary, the hijackers had been able to enter the United States, train for their mission, and carry it out while multiple opportunities to prevent the attacks were squandered.

The attacks were facilitated by failures in air security. The 9/11 Commission Report found fault with the manner in which intelligence was gathered and shared, the gaps in security, as well as problems with CAPPS – namely that the questions were asked of a few hijackers repeatedly until they answered correctly (United States, 9/11 Commission Report, 2004, 2). Moreover, there is a possibility that had policies used by El Al been implemented, such as behavioural profiling and randomized questioning, the hijackers would never have been able to board the aircrafts. They would have been flagged, and would not have been able to give the reassuring answers to routine

⁴⁰ CBS News Poll (January 2, 2000), Poling the Nations

questions. They probably would have been singled out for additional screening, and questions with respect to the box cutters would have been asked. They also cited repeated intelligence failures. Moreover, the hijackers did not use guns or large knives, items which are traditionally screened, but relied on innocuous articles such as box cutters instead. The immediate policy reaction of the FAA was to shut down all airspace and reroute all incoming international flights to Canada, where they remained stranded for several days.

The events caused instant fear and shifted the amount of risk perceived by the public at large. Most notably, on United Airlines Flight 93, the passengers were so concerned with the situation that they took it upon themselves to prevent the plan from being fully implemented. Their efforts prevented the aircraft from being guided into the White House or Congress, or in the best case scenario, getting shot down by the Air Force. In effect, the old generally accepted policy, cooperate with the hijackers and wait for demands, was deleted during the actual attack itself. (Recall that during the 1960's IFALPA rejected the solution of locking the cockpit door on the basis that no pilot would continue flying while terror reigned in the cabin.)

The attacks wrought devastation, toppling two symbols of American economic might, damaging the symbol of American military power, and threatening the symbols of American democracy such as Congress and the White House. The attacks were organized by al-Qaeda, which had a track record of successful bombings and terror. It was a credible, known group, and capable of repeating the attacks. Finally, the

conversion of an aircraft into a missile, though strictly speaking not new, was fairly new to the public, and so appeared ingenious.

The political leadership was also extremely distressed by the attacks. The attack was recognized by President Bush as an attack against the country itself. In his 8:30PM address to the nation that night, he said “America was targeted for attack because we're the brightest beacon for freedom and opportunity in the world. And no one will keep that light from shining.” The symbolism of the attack was fairly clear without knowing who was actually responsible. The symbols of American economic power – the World Trade Center – were attacked. The symbol of American military power – the Pentagon – was attacked. And the symbol of American democracy was targeted – although that attack was thwarted. Moreover, two of the predominant national carriers, American and United, were attacked.

There is a large body of polling evidence that the risk perception of the general public shifted following the attacks. Table 6.2 summarizes some of the more important results. More than two thirds of those surveyed reported that their confidence in airport security decreased significantly. There was majority support for a large number of domestic security measures, with the exception of a 100 dollar ticket security surcharge. Table 6.2 also demonstrates that a majority of Americans were dissatisfied with the status quo, with most respondents putting the blame on the airport security, and demanding new policy instruments including the federalization of screeners. Most of the polled policies which received majority support were implemented.

Table 6.2: Select Public Opinion Polling Data, in %, Post 9/11

Question	Sampled Date				
		Gone up a lot or a little	No Change	Gone down a little	Gone down alot
For each, please tell me whether your confidence has gone up a lot, gone up a little, gone down a little, or gone down a lot, or has not been changed one way or the other by today's events (terrorism attacks on the Pentagon and World Trade Center). Airport security. ⁴¹	12-Sep-01	9	22	28	41
		Could have been prevented	Would have happened	Don't know	
US commercial planes were hijacked and used in the attacks. Do you think these attacks could have been prevented if airport security was tightened up, or do you think they would have happened anyway? ⁴²	12-Sep-01	57	36	7	
		Acceptable	Not Acceptable	Not Sure	
It may be necessary to tighten airport security in order to reduce the chances of other hijackings. Please tell me whether each of the following is acceptable or unacceptable to you personally as a way to increase airport security. Using profiling by age, race, and gender to identify potentially suspicious passengers. ⁴³	13-Sep-01	57	38	5	

⁴¹ Ipsos-Reid, (September 12, 2001) Polling the Nations.

⁴² CBS News, (September 12, 2001) Polling the Nations.

⁴³ Time/CNN. (September 13, 2001) Polling the Nations

It may be necessary to tighten airport security....Increasing airplane ticket prices by \$100 to pay for increased security. ⁴⁴	13-Sep-01	30	65	5	
It may be necessary to tighten airport....Increasing airplane ticket prices by \$50 to pay for increased security. ⁴⁵	13-Sep-01	64	33	3	
It may be necessary to tighten airport... Eliminating all curbside luggage check-in. ⁴⁶	13-Sep-01	82	15	3	
It may be necessary to tighten airport....Requiring all passengers to answer questions about their travel plans. ⁴⁷	13-Sep-01	87	11	2	
It may be necessary to tighten airport security... Requiring passengers to check in two hours before departure. ⁴⁸	13-Sep-01	67	31	2	
It may be necessary to tighten airport security....Requiring passengers to check in one hour before departure. ⁴⁹	13-Sep-01	95	4	1	
		Very	Somewhat	Not too	Not at all
How effective do you think each of the following would be in preventing similar (World Trade Center and Pentagon) terrorist attacks in the future? What about more security at airports to prevent weapons from being brought aboard planes? ⁵⁰	15-Sep-01	76	19	3	1

⁴⁴ Time/CNN. (September 13, 2001) Polling the Nations

⁴⁵ Time/CNN. (September 13, 2001) Polling the Nations

⁴⁶ Time/CNN. (September 13, 2001) Polling the Nations

⁴⁷ Time/CNN. (September 13, 2001) Polling the Nations

⁴⁸ Time/CNN. (September 13, 2001) Polling the Nations

⁴⁹ Time/CNN. (September 13, 2001) Polling the Nations

⁵⁰ Newsweek. (September 15, 2001) Polling the Nations

		A lot	Some	A little	None
How much of the blame, if any, do you think each of the following deserves for allowing this week's (World Trade Center and Pentagon) terrorist attacks to happen? What about inadequate security at airports to prevent terrorists from bringing weapons on planes? Does this deserve a lot of the blame, some, only a little, or none? ⁵¹	15-Sep-01	57	27	9	5
		Much Safer	Somewhat safe	Less safe	No difference
Will having more airport security procedures help you feel safer about flying or will you feel less safe, or won't it make a difference to your feeling of safety one way or another? Will that make you feel much safer or only somewhat safer? ⁵²	16-Sep-01	51	23	2	23
		New Procedures	Enforce Existing	Not Sure	
Do you think we need new safety procedures at airports, or do we just need to enforce existing safety procedures better? ⁵³	20-Sep-01	70	27	3	
		Federal government	Private Contractor	Neither	No Opinion
Do you think the people who handle security screening at airports should be federal government employees, or should they be employees of private companies that are overseen by the federal government? ⁵⁴	6-Nov-01	55	36	4	5

⁵¹ Newsweek. (September 15, 2001) Polling the Nations

⁵² Newsweek. (September 15, 2001) Polling the Nations

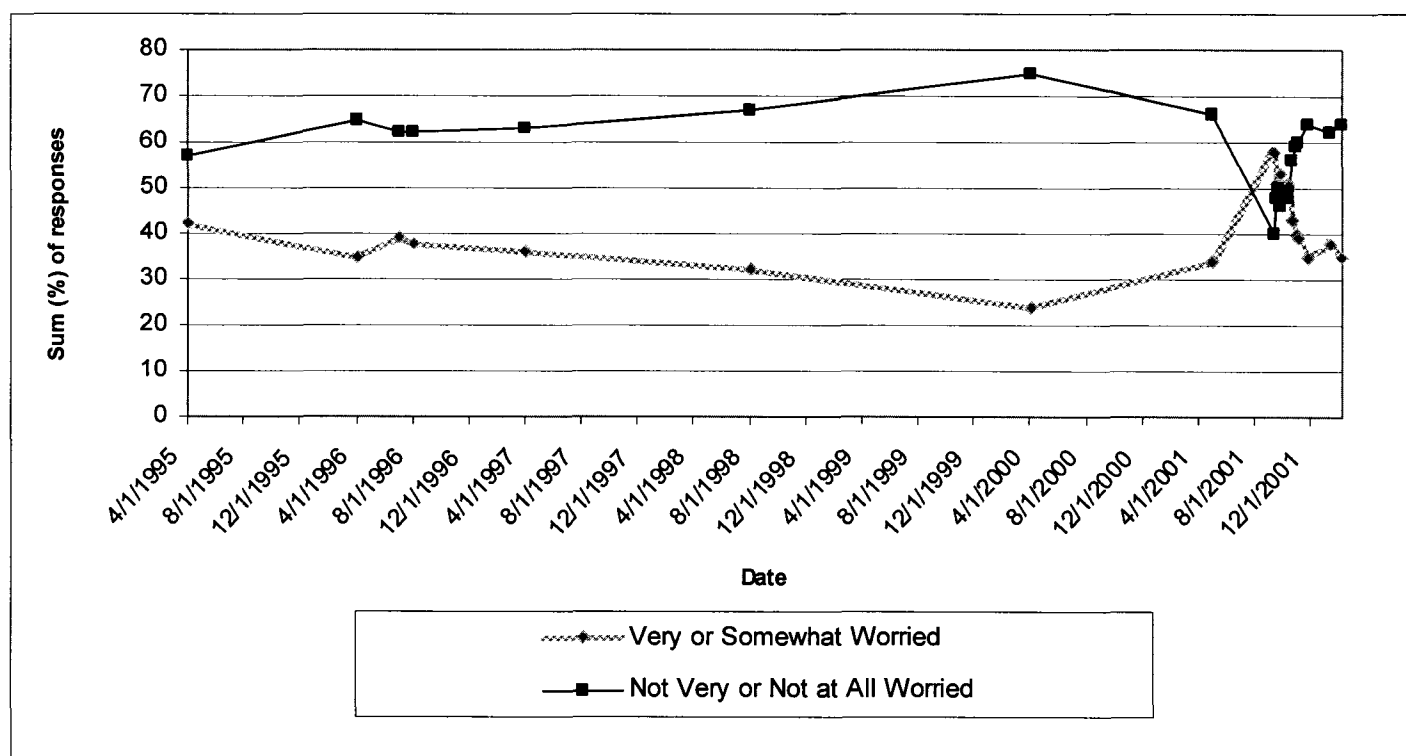
⁵³ Fox News/Opinion Dynamics Poll, (September 20, 2001) Polling the Nations

⁵⁴ Washington Post/ ABC News Poll. (Nov 7, 2001), Polling the Nations

		Very safe	Somewhat safe	Not Very safe	Not at all safe
How safe do you believe air travel is in the United States today? ⁵⁵	16-Nov-01	30	46	14	7

Figure 6.1 was created using data compiled by Huddy et al (2002, 436) from different sources over the span of 7 years. It shows the trend of how people replied to the question “All in all, how worried are you that you or someone in your family might become a victim of a terrorist attack?”, or a similar question.

Figure 6.1: Trend in Worry of Self or Family Member Becoming a Victim of a Terrorist Attack, United States, April 1995-February 6, 2002, from Different Sources.



⁵⁵ Fox Broadcasting Company. (November 16, 2001), Polling the Nations

Figure 6.1 demonstrates how risk perception changed following the TWA disaster in July of 1996, in sync with the 8% response to TWA/terrorism being the top challenge facing the country recorded during that period (The Gallup Poll, July 25-28, 1996, 1996). Risk perception waned even in the face of the millenarian terror threats. Risk perception then increased markedly on September 11, 2001, and then returned to the pre-1996 highs, which were marked by domestic terror threats. Huddy et al also found a trend of gradually improving satisfaction with airports following 9/11, from 82% saying that the airports were doing too little immediately after 9/11, falling to 54% in February of 2002 (435). The data suggests that the receding risk perception might be in part explained by improving satisfaction with aviation security.

The poll numbers alone do not completely capture the public's reaction. In one letter to the New York Times editor, Suzanne E. Evans wrote "Shock. Anger. Terror. Confusion. Unspeakable sadness. Grief. Fear. These are just some of the emotions Americans are feeling today in the wake of the monstrous terrorist attacks on the United States." (September 12, 2001, New York Times, A26). Normally a busy intersection, Time-Square came to a standstill as people stood and watched TV screens in silence and in horror (Dwyer and Sachs. September 12, 2001, A6). Most Americans felt some sense of terror and anger on that day.

The public and the media alike attacked the status quo and there was generally a wide contestation of ideas, and the polls certainly reflect this. Whereas many were predicting the end of high rises, others responded with suggestions of 'plane-proofing'

them. Others correctly pointed out that that would make no economic or logical sense. Congress favored an effective security regime, and actively opposed to the alternative that President Bush had been proposing (Benton, 2001, 2215). There was a distinct fear of accountability on the part of some politicians, and a drive to legitimately change the aviation security paradigm.

A Third-Order order change resulted⁵⁶. The most observable key indicator of a Third-Order change from efficiency to effectiveness is if there are multiple First and Second-Order changes that demonstrate that the overall goal has indeed changed. To be precise, that commercial interests are deliberately harmed in favour of enhanced security. Indeed, multiple commercial interests were harmed in a significant manner in favour of enhanced aviation security.

The first most noticeable change was the elimination of permitted commercial flight in US airspace. The grounding of commercial aircraft for two days (flights did not resume until September 13, 2001 at 11AM) meant not only lost revenue on the dates directly affected, but also in the week following the attack while the aviation system was rebooted. Commercial interests suffered from the deliberate delay in resuming air travel. This was however a very brief response.

⁵⁶ Some of the literature around US-Canada relations and aviation security seems to be predicated on the argument that paradigm has indeed shifted in the US. Hornbarger (2005) argues that “security trumps economy” in the United States.

President Bush initially responded in much the same way that President Nixon had three decades earlier. Out of the 40 billion from the emergency funding passed immediately following 9/11, 3 billion was earmarked for increasing the number of Air Marshals. This represented an interval increase to an existing policy instrument, and as such, was a First-Order Change. This failed to address what was widely seen as part of the broader problem: air security on the ground and the effectiveness of airport security screeners.

The efficiency paradigm had led to a system of aviation security where inspectors routinely smuggled illegal weapons passed screeners, with little consequence or improvement (Benton, 2001, 2216). Federalization is generally believed to be superior to privatized air security, and there is evidence to prove it. To federalize airport screeners is to make screeners federal employees, under federal oversight, and directly accountable to the federal government. Hainmuller and Jan Martin (2003) have shown that the federalization of screeners results in greater effectiveness in security. The United States under the efficiency paradigm suffered from 126% screener turnover per year. In Germany and Belgium, where screeners are federalized, there was 11% turnover and less than 4% turnover respectively (5). Turnover in 1998-99 at Frankfurt International was 6-8%. Turnover at O'Hare Chicago International was 200%, and at Lambert St. Louis International – 416% (6). Compensation varied as well. In the US, the average pay was \$5.15/hour, with no vacation benefits and typically no health care or retirement benefits. In Germany the average wage was \$12/hour, with health care, vacation and retirement benefits (6). The number of hours of training also varied – in the US, screeners got 10

hours of classroom training and 40 hour on the job. In Germany screeners received 120 and 40 hours respectively. Moreover, one had to be an EU citizen to work at an airport in Germany. Other federalized states require 5 years of residency (7). The end result is that German screeners caught more illegal items than their American counterparts, even though the United States has a larger population and is arguably has more firearms and weapons per capita. The implication is that federalized screeners are better at finding contraband. Federalization of screening results in a more effective security regime.

Congress, which is more directly exposed to public pressure owing to shorter election cycles, pushed back against President Bush, who was initially favouring a more Nixonian approach. Congress wanted federalization of airport security screeners and a \$1 ticket surcharge to pay for it (Benton, 2001, 2216). President Bush initially rejected such federalization, but later relented. Congress ended up getting both federalization and a \$2.50 fee per flight segment up to a limit of \$10 one way maximum under the supervision of the newly created Transportation Security Administration (TSA) (United States, TSA, 2006). The amount of time and inconvenience to passengers probably hurt short-haul traffic more than the actual increase in fee itself. These inconveniences increased with the introduction of federalization.

As a result of the Second-Order Change of federalization, multiple First-Order changes occurred simultaneously. Starting wages for screeners are \$11.30/hour with benefits in 2006, with the ability to earn as much as \$17.00/ hour with benefits as the screener progresses. Screeners now receive 56 to 72 hours of classroom training and

112-128 hours of on the job training. Notably, they must also be an American citizen or a U.S. National⁵⁷⁵⁸ (United States, TSA, 2006). Initially there was a requirement of having a high school diploma or G.E.D.. However, this limited the labor pool from which the TSA could recruit from. It has since been relaxed such that if a candidate does not have the prerequisite education, they need only one year of related experience in the security field (United States, TSA, 2006). The TSA reports the measures have worked – with 4.8 million items being intercepted between January 2002 and March 2003 (United States, TSA, 2003). Admittedly, this may be because the list of prohibited items has also increased. A key First-Order change was the increase in the number of screeners – from 19,000 in 2000 (United States, GAO, 2005) to over 55,000 in 2002 (Wolfe, Kady, 2003, 2560).

The move towards federalization is a key Second-Order Change that resulted from the broader Third-Order one. Under the efficiency paradigm, federalization is not desirable because it is not in line with conservative notions of the free-market. Federalization protects aviation security from market forces. Recall that under a purely efficiency paradigm, the private contractor is simultaneously accountable to the air carrier and to the regulators, as the airline seeks to minimize its costs in a race to the bottom in a hyper-competitive market. Federalization removes the incentive to marginalize security in favour of cost cutting. Federalization resulted in a host of First-Order Changes which made aviation security more effective – namely increasing wage, training, and

⁵⁷ A U.S. National is from a U.S. possession, but is not legally a citizen.

accountability. Moreover, federalization directly harmed the commercial interests of private security screening contractors and certain airlines in some markets. They lost their contracts, and some airlines lost their leverage.

There were other First-Order changes. Additional and more sophisticated screening equipment was purchased in an effort to bring American airports up to European standards (Hainmuller and Jan Martin, 2003, 24). New technology is not without problems, namely those caused by false positives, and it is probable that the resulting delays harmed the airlines. The number of items on the prohibited items list also expanded, which has undoubtedly caused delays and problems for the airlines. Namely, there are transaction costs associated for every passenger who misses his/her flight as a result of the enhanced security, in particular when new threats are revealed and the list is suddenly expanded to include previously innocuous items. The integration and expansion of various no-fly lists has also impacted commercial interests. Demand is dampened by banning a large number of people from accessing commercial air services on the basis of suspicion or error⁵⁹. The number of names has gone from 16 prior to 9/11, to 44,000. This does not include the 75,000 who are on an 'additional screening' list. Moreover, the list is not accurate, and it contains the names of multiple dead and incarcerated terrorists (CBS News 60 Minutes, October 8, 2006). Moreover, there are

⁵⁸ All things equal, it is more reliable to conduct a security check on a citizen or a national of ones own country than it is to enlist the support of another country in conducting that said security check. Nativism should not be a consideration for hiring.

⁵⁹ Children's names often appear on the no-fly list. One such 'terrorist toddler' was four year old Samuel Brady Adams. He was not allowed to board, and by extension, neither were his parents. (The Sydney Morning Herald, October 12, 2006).

the additional costs associated with the forced landing of an aircraft because a name matches one on the manifest⁶⁰.

Not all changes have directly harmed aviation efficiency however. There have been recent attempts to reinvent CAPPS (CAPPS II). Those efforts have so far ended in failure. Reforms to America's intelligence agencies have also been positive. Various al-Qaeda plots to crash aircraft have been thwarted because of the efforts of these agencies (Baker, Glasser, October 7, 2005).

Yet, it should be noted that American aviation's security is far from being fully effective. Whereas Israel is experimenting with anti-MANPAD (Man-Portable Air Defence System) technology, some experts have dismissed such solutions as being too expensive – proposing relying on volunteer 'spotters' to keep an eye out for such threats (Airport Security Report, 2005). IFALPA concedes that the threat from MANPADS is actually low, as only one attempt since 9/11 has been successful in bringing down a wide bodied aircraft (IFALPA, 2006). Moreover, not everyone agrees that federalization has resulted in a more effective security regime. There has been growing dissatisfaction with security lapses at a number of airports (Airport Security Report, December 14, 2005), and over the size of the TSA screening program – which resulted in a cut of nearly 6000 screeners in 2003 (Wolfe, Kady, 2003, 2560). Also telling – an official from the Airports Council International (ACI) complained that “The TSA has a better workforce, but on

⁶⁰ There is no convincing evidence that a no-fly actually makes aviation security more effective. This author believes that since identity can be faked, it is best to apply a uniform and consistent screening regime for all passengers. However, many experts believe that no-fly lists do add a layer of security.

responsive aspect and customer service, airports have found them lacking.” (2560). Essentially, when screeners were accountable to the airlines and airports who hired them, they were nicer and let more go with respect to security. Yet, dissatisfaction with interception rates is indicative that an effective paradigm has taken hold. Under the efficiency paradigm, reports of even dismal security are treated with apathy and inaction, as decades of General Accountability Office (GAO) reports can attest to.

In the instance of American aviation security, there are shortfalls, blind spots, and failures, yet that is not to say that all those involved do not hold the fervent belief that a repeat of 9/11 is unacceptable. The overarching goal remains the attainment of an effective security system while some of the underlining goals might be prioritized differently than Israel’s. For instance, under the American aviation security paradigm, civil liberties appear to be higher up the goal hierarchy⁶¹. Whereas prior to 9/11, the goal of effectively preventing attacks had been sidelined by the efficiency paradigm, the TSA, and indeed many airlines, continues to put security ahead of efficiency concerns⁶².

September 11, 2001 is to the United States as July 23, 1968 and Dawson’s Field is to Israel. Dramatic shifts in the public’s perception of risk are caused by large attacks, directed against the state, by competent organizations with the ability to repeat, and done

⁶¹ There is resistance to incorporating racial profiling into aviation security in the United States. This might not be incompatible with the overarching goal of effectiveness as public cooperation is crucial. Any gains in security through racial profiling could be completely wiped out, and even result in worse security, by the erosion of public confidence and cooperation.

⁶² The restrictions on carry items, such as gels, pastes and fluids, applied in spite of commercial concerns in 2006 are good examples of this commitment. It should be noted that Duty Free operators were also greatly harmed by the restrictions.

in an ingenious way. There was a Third-Order Change from the efficiency paradigm to the effectiveness paradigm which resulted in many First and Second-Order Changes. The nature of these changes were comprehensive, featured elevated levels of government intervention and directly harmed commercial interests. Many politicians, mainly the Republicans, demonstrated their commitment to the new paradigm by voting in favor of Second-Order changes which were contrary to their ideology, but which would result in greater effectiveness.

CHAPTER SEVEN: CANADA 2001-2005

Although Canada was not directly attacked on 9/11, 25 Canadians were killed, and Canada did become the recipient of hundreds of aircraft and the 33,000 travelers that the United States would not allow to fly into their airspace. Even though the events did not directly occur in Canada, nor were aimed directly at Canada, there was still a considerable shift in the Canadian public's risk perception, accompanied by the fear that the border could be shut down for even longer if it was revealed that the hijackers originated from Canada in the future. The event for Canada was also large, targeted at the American state, organized by a credible organization capable of repeating the attack, and ingenious. Risk perception changed and a Third-Order change resulted.

Canadian aviation security, as in the United States, was especially lax prior to 9/11. Canada had experienced its own period of heavy government intervention in the aviation sector, which often pitted provinces and regions against one another (Stevenson, 1987). That era had ended in the 1990's, and the Federal Liberal Government was privatizing other aspects of aviation – air traffic control under NavCanada was privatized to a certain extent, and airports were allowed to be controlled locally.

US border policy, aviation security and counter-terrorism policies are intimately linked and are extremely important to Canada and its economy. In 2000, exports to the United States accounted for 87% (359 billion \$CND), of all Canadian exports (413 billion \$CND) (Canada, Industry Canada, 2006). Prior to 9/11, Canada enjoyed a very

lax US northern border policy regime, this “despite examples of terrorists entering from Canada, awareness of terrorist activity in Canada and its more lenient laws...” (United States, 9/11 Commission Report, 2004, 81). Indeed, Canada continued to enjoy an open border in spite of the Los Angeles International Airport (LAX) Millennium bombing plot in 1999. In 1994, Ahmed Ressam illegally entered Canada with a false story and false passport and claimed asylum. He was allowed to operate and plan attacks from Montreal, and in 1999, decided to attack LAX. An alert American border guard at Port Angeles found the explosives in his trunk and foiled the attack (177-178). The incident was hugely embarrassing for Canada and exposed key weaknesses in Canada’s immigration and anti-terrorism policies. The incident sparked concerns and awareness of the liability Canada posed. However, such fears receded along with the Y2K anxiety.

Although Canada was not directly struck by the attack, many Canadians were, and many more felt as though they had been. Twenty five Canadians died in the 9/11 attacks. Two were in the airplanes that struck the World Trade Center, and twenty-two died in the Towers. There is one ‘honorary’ Canadian death counted. No Canadians died in the Pentagon or Pennsylvania. Many Canadians felt initially as though they themselves had been attacked, and is best summed up by the Le Monde quote “we are all Americans.” (Colombani, September 12, 2001). Canadian airspace was shut down in lock-step with the United States, and incoming Atlantic and Pacific flights were directed to land in Maritime and Newfoundland airports. The greatest disruption to Canada, however, was the closure of the US-Canada border as American officials tried to seal off their country. Nearly 90% of trade, much of it concentrated in Liberal vote-rich Ontario, came to a halt.

Indeed, if Canada was not an intentional direct target, the indirect effects of the attack certainly made many Canadians feel as though it was. There was no trade or direct economic repercussions by the Air India attack. 9/11 impacted a much broader spectrum of Canadians in a direct manner than Air India had, which affected a smaller group of people in a very severe and horrible way.

The events caused a major shift in public risk perception which is depicted by opinion polls. Table 7.1 shows that the public was willing to give up civil liberties and give the policy greater powers. A majority of Canadians did not have confidence in the ability of the government to prevent terror attacks in Canada. A majority also believed that there were terrorists in Canada ready to strike Canadians. Most Canadians were satisfied with how aviation security had been improved by December, 2001. There was also a strong desire to copy American policies. 76% said that Canada “should move quickly as possible to harmonize anti-terrorism laws with the U.S. because such action is the best line of defence against terrorism”, while 71% stated that it was also “the best way to safeguard Canadian access to the U.S. export market” (Duffy, 2001). There were two Canadian drivers of dissatisfaction with the status quo: genuine fear and concern for personal safety amongst the public, and a sense that Canada must copy, even comply, with the United States to retain economic benefits.

Table 7.1: Select Public Opinion Polling Data, in %, Post 9/11, Canada

Question	Date	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Do you strongly agree, somewhat agree, somewhat disagree or strongly disagree with the following statement? Increased security at airports and in aircraft should be paid for by the government. ⁶³	7-Dec-01	51	32	9	7
		Too much	Not enough	Enough	Don't Know
Since the events of September 11th, the federal government has done a number of things to deal with Canada's national security and our economy. For each one, I'd like you to tell me if what the federal government has done in this area is too much, not enough, or enough. Do you think that the federal government has done too much, not enough, or enough with respect to its efforts to provide airline and airport security for travellers? ⁶⁴	25-Dec-01	7	35	54	4
		Very Concerned	Somewhat Concerned	Not Very Concerned	Not Concerned At All
How concerned are you about the security officers at airports or other public places going through your personal belongings - very concerned, somewhat concerned, not very concerned, or not concerned at all? ⁶⁵	26-Dec-01	11	22	42	25
		Yes	No	Don't Know	
In order to curb terrorism in this country, do you think it will be necessary for you to give up some of your civil liberties, that are currently protected in law, or not? ⁶⁶	4-Oct-01	52	46	2	

⁶³ Ipsos Reid/Globe and Mail/CTV. (December 7, 2001) Polling the Nations

⁶⁴ Ipsos Reid/Globe and Mail/CTV (December 25, 2001) Polling the Nations

⁶⁵ Harris Poll, (December 26, 2001), Polling the Nations

⁶⁶ Ipsos Reid/Globe and Mail/CTV, (Oct 5, 2001), Polling the Nations

		Do not give	Give	Don't Know	
Which of the two following statements is closer to your personal point of view? Charter and due process of law should be respected; do not give police the security tools they want/ terrorism threats outweigh protection of individuals rights and due process of law; give police the security tools they need. ⁶⁷	5-Oct-01	38	58	3	
		Helped	Hurt	Neither	Don't know
In [Canada], will exports be helped or hurt in the coming year by the war on terrorism? *** ⁶⁸	19-Dec-01	30	36	27	7
		Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
For each of the following statements, I would like you to tell me if you agree or disagree. I would feel safer flying if I knew that there was an air marshal onboard my flight. ⁶⁹	12-Nov-01	52	26	11	10
	21-Sep-01	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
I'm going to read you some statements about last week's (World Trade Center and Pentagon) terrorist attacks and the United States' declaration of war on terrorism. For each one, I'd like you to tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree. I am confident that the government of Canada and its security services are capable of preventing terrorist attacks in Canada. ⁷⁰		10	29	33	27

⁶⁷ Ipsos Reid/Globe and Mail/CTV, (Oct 5, 2001), Polling the Nations

⁶⁸ Pew Research Center, (December 19, 2001). Polling the Nations ***Elites only.

⁶⁹ Ipsos Reid/Globe and Mail/CTV, (November 12, 2001) Polling the Nations

⁷⁰ Ipsos Reid/Globe and Mail/CTV, (September 21, 2001) Polling the Nations

I'm going to read you some statements about last week's (World Trade Center and Pentagon) terrorist attacks and the United States' declaration of war on terrorism. For each one, I'd like you to tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree. I would be prepared to see our police and security services get more power to fight terrorism, even if it means that they might tap my phone, open my mail or read my personal e-mail. ⁷¹		24	29	18	29
I'm going to read you some statements about last week's (World Trade Center and Pentagon) terrorist attacks and the United States' declaration of war on terrorism. For each one, I'd like you to tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree. I believe there are international terrorists within Canada who are just waiting to attack Canadian civilians. ⁷²		21	34	29	13

While the polls offer some quantitative evidence of how public risk perception changed, newspapers offer excellent qualitative evidence. In Toronto and Vancouver, Canadians evacuated tall towers, “some on their own initiative”, businesses shut down across Canada, premiers fretted about dams and oil and gas plants being possible targets, and schools in the Northwest Territories were evacuated out of fear that a wayward Korean Airlines Jet might slam into a target (Saunders and Seguin, September 12, 2001, 1). Young children, seeing images of people cheering the attacks, realized that there was

⁷¹ Ipsos Reid/Globe and Mail/CTV, (September 21, 2001) Polling the Nations

⁷² Ipsos Reid/Globe and Mail/CTV, (September 21, 2001) Polling the Nations

going to be a war, and felt anxiety (Fine, September 12, 2001). Many Canadians saw the exact same images that Americans saw, in real time, and based on the actions of many, felt as though they were under attack as well.

With Canadian air traffic falling by 17.9% in October and 8.4% in November and another 2.5% in December, Air Canada and Air TransAt suffered enormously. WestJet also suffered, but managed to do well because of their business model. (Canada, Transport Canada, 2003). Industry was far too busy asking for bailouts and insurance guarantees – which they got, and promptly lost control of the aviation security agenda.

There was an overall Third-Order Change as there was resolve to ensure that such an attack would never be initiated from Canada at the United States, or initiated from Canada at Canada. Although sceptics might argue that Canada merely implemented Second-Order Changes and made several First-Order Changes in an effort to placate the Americans and retain access to markets, many Canadians were indeed afraid to fly following 9/11. Moreover, in many respects, the Canadian air security agenda was more aggressive than the American. The nature of many of the First and Second-Order changes also directly harmed commercial interests.

Whereas the United States created the TSA to handle transportation security, Canada created the Canadian Air Transport Security Authority (CATSA), which would essentially serve as an interface between private enterprise and Transport Canada. Rather than being funded by \$2.50 per passenger unit as in the United States, CATSA would get

\$12.00 per passenger one way – or \$24 dollars roundtrip. This fee harmed WestJet in particular, which operated on many demand elastic routes (Calgary-Edmonton, Calgary-Vancouver) and relied heavily on a low-cost model. The fee went through regardless.

CATSA worked with the RCMP to implement a Second-Order Change – the Canadian Air Carrier Protective Program – Canadian for the term ‘air marshals’ (Canada, CATSA, 2004). Air Canada found the air marshal program desirable to a certain extent as it enabled it to fly into Reagan airport when it reopened. However, Canadian fleets utilize aircraft which are generally smaller than most American fleets, so the impact of losing a seat to an Air Marshal both ways is proportionally greater. Once again, this Second-Order change probably hurt WestJet and the charter airlines greater than any other.

It is interesting to note that Canada opted for neither outright federalization of screeners nor retention of the status quo. Canada instead opted for quasi-federalization. CATSA contracts out specific human resource functions to private companies in different regions. These private companies are responsible for recruiting and general administration while CATSA is responsible for close training and supervision. The effect of this change on effectiveness vis-à-vis the United States and Germany is not well known, and will not be published here. Quasi-federalization still reflects a Second-Order change as it can be classified as a new policy instrument with resulting First-Order changes. Commercial interests continue to be harmed because of enhanced security screening by CATSA as security scares cause flight delays (National Post, September 18,

2006, A4: The Province, January 7, 2004, A5). Moreover, the resistance to the implementation of a 'trusted traveller program' by Transport Canada is said to be harming Air Canada's commercial interests on Pacific and Atlantic routes out of Toronto and Vancouver. Namely, high yield business travellers will cease using Vancouver and Toronto as hubs if they are subject to the same treatment by CATSA as the general public. There is a significant case in the Canadian context for effectiveness. While it may make sense to implement such a program in the United States or Israel with minimal impact to effective security, it is reasonable to believe that public cooperation in Canada could be damaged by such a two-tiered program.

Money from the high surcharge went directly to general revenue, where it was then earmarked for various departments, including CATSA. Yet, a considerable amount of it was used for making a number of First-Order enhancements. CATSA spent approximately 241 million dollars in 2004 and 170 million in 2003 (Canada, CATSA, 2005, 70). A Senate report estimates that 480 million dollars a year is being collected from the air security surcharge (Senate: Standing Committee on National Security and Defence, 8). Yet, the government of the day frequently argued in the House of Commons that the excess was going to CSIS and the RCMP for the additional layers of security. More and better equipment was purchased and installed. One key First-Order Change was the achievement of 100% domestic baggage screening (Canada, Transport Canada, 2006).

Another Second-Order change was the introduction of static (never changing) questions when checking in luggage. They were initially designed to be effective, ceased to work and became openly mocked, such as the ‘three questions at check in’ and were subsequently scrapped. These questions asked if you were aware of the contents of your bag, if you packed it yourself, and if you had left it alone, unattended, since having packed it. The notion that a terrorist might confess “you got me” upon hearing these questions was a frequent joke. Moreover, public cooperation with the questions eroded – as admitting that one had allowed a taxi driver to take their bag to the trunk often resulted in a lengthy examination of ones bags. It became easier to lie rather than cooperate.

Another Second-Order Change, the creation of a no-fly list (officially referred to as the passenger protect program), has been underway for a number of years. It was delayed in part because of human rights and Charter concerns, but has finally received a go-ahead. An official from the Air Transport Association argues that the list will improve security; however, another expert cites that there is no evidence that it will (Tuck, October 28, 2006, A4). There is already some opposition to implementation of the no-fly list. Opponents highlight how the no-fly list was used to wrongly deport Maher Arar (Shephard, November 18, 2006).

There have been embarrassing gaffes and security gaps in Canada as well. These include missing CATSA uniforms and badges. (The Transport Minister would later reveal during an awkward exchange in Question Period that a CATSA employee would not be fired because he lost his uniform when his house burnt down.). There was another

gaffe on the CBC's Fifth Estate in which Mark Duncan, CATSA's Executive Vice President and Chief Operating Officer, told Hana Gartner that it was alright for somebody to access restricted areas in an airport because that person passed inspection to get into the sterile area (Canada, Canadian Broadcasting Corporation, 2005). CATSA however has been very proactive in addressing many of these gaps. In response to a scathing 2003 Senate report on baggage screening, CATSA increased it to 100%. However, other gaps persist from that Senate Report, such as the issues of air mail, air cargo, the hardening of the exterior of the airport, private civil aviation, and worker access to sterile areas. Progress is being made on some of these fronts.

Even the most committed of institutions commit gaffes and fall short on goals. Canada's action on implementing significant changes in aviation security demonstrates its commitment to a goal of effective security. Many crown corporations and departments are generally uncooperative with the Senate. CATSA took the criticism and responded. In reality, there are indications that CATSA is frustrated with the lack of cooperation from other government departments in addressing these outstanding issues. It is this commitment to effectiveness and the fact that commercial interests have been repeatedly overridden by this commitment that is also indicative of a Third-Order Change.

The rapid expansion of the prohibited items list following the Atlantic Plot of 2006 also directly harmed the commercial interests of airport shops in particular. The

security delays associated with the expansion of the list and subsequent breaches also damage the airline's commercial interests.

A Third-Order Change was prompted by 9/11, motivated by genuine security fears of another ingenious attack either directly against Canada or Canadian interests by a well organized, competent terrorist organization which may use some other ingenious form of attack. Commercial interests have been directly impacted by the First and Second-Order changes which resulted from the Third-Order one. Many Canadians agreed with the Bush thesis that the attack was against Western values, and as such, Canada itself was indirectly under attack. In retrospect, this is not a politically popular opinion, however, why else were Canadians so ready to hand such sweeping powers to the police if they truly felt as though they had nothing to fear? Five years later, Canadians are starting to question those sweeping powers.

CHAPTER EIGHT: CONCLUSION

Four independent variables: the relative size of the catalytic event, the target, the nature of the organization responsible for the attack, and the ingenuity of the attack, each influence the public's perception of risk, which in turn determines the size and scope of the policy change. The case studies suggest that large ingenious attacks, clearly targeted against the state by credible groups capable of repetition tend to cause the largest shifts in public risk perception, which in turn causes a large shift in policy change.

Table 8.1: Summary of Explanatory Model

	Size	Target	Organization	Ingenuity	Risk Perception	Policy Change
Air India 182	Large	India, Canadian collateral	Semi-Credible	Low	Low	First-Order
Pan Am 103	Medium	US	Ambiguous	Low	Low	Mostly First-Order
TWA 800	Medium	US, later none	Credible, later none	Moderate, later none	Moderate, later Low	Second-Order
9/11 US	Large	US	Credible	High	High	Third-Order
9/11 Canada	Large	US – Canadian collateral	Credible	High	High	Third-Order

The contrast between what should have been Canada's 9/11 (Air India) and 9/11 is especially striking. Two large attacks, with Canada taking collateral and direct damage, resulted in two very different levels of risk perception, resulting in two completely different policy responses. Part of this can be explained by the ingenuity of the attack. The Air India attack was done through a typical, though powerful, suitcase

bomb. In short, a weapon was used to bring down a commercial aircraft. 9/11 appeared ingenious to the public because it turned the aircraft into a weapon which was then used to kill and destroy symbols on the ground. Although fewer Canadians died on 9/11 than on Air India, the ingenuity of the attack combined with the repeated images of aircraft striking the World Trade Center had a special effect. Moreover, there was the powerful consideration that Canada's economy could be severely damaged, and that Canada itself could be a target for a similar attack. Whereas Air India Flight 182 was an attack against India with a large number of Canadian casualties, the Canadian public felt as though the risk was contained to Indo-Canadians. Many Canadians felt as though they had been attacked during 9/11, and with the weaponization of commercial aircraft, the risk was not contained amongst a specific sub-set of Canadian society. In fact, had the flights originated in Canada, there would be very serious repercussions for Canada.

The instances of Pan Am Flight 103 and TWA Flight 800 demonstrate that risk perception is key in causing policy change. If the perceived threat recedes before the implementation of new policies is complete, the commitment to see through policy change, be it First or Second-Order, also recedes. In the instance of Pan Am Flight 103, the victims' families, backed up by public support driven by a small increase in risk perception, led to the implementation of threat publication and a handful of First-Order changes and one Second-Order change. Why was the perceived risk lower in the instance of Pan Am Flight 103 than it was it was for TWA Flight 800? The initial assumption of a missile attack against TWA Flight 800 posed a new threat. The bombing of Pan Am Flight 103 was a well known method of attack which had been successful due to the

laxity of regulations. When the FAA came down hard on Pan Am, and later when the federal government came down hard on the FAA, the problem was solved. The TWA 800 incident initially focused on solutions around MANPADS, but then quickly shifted to other issues of aviation security, in part to look tough on terrorism during an election year, and in part because the public initially demanded it. In the instances of 9/11 in the United States and Canada, public perception of risk decreased in part because of the tangible improvements in airport security. However, even as the perceived threat had receded, so did the commitment to the changes, in particular federalization in the United States. However, the underlining goal of effective security in both the United States and Canada persists, albeit the hierarchy of goals does not perfectly resemble the Israeli archetype. Large shifts in public risk perception both enable and force public experts and politicians to undertake large shifts in policy.

One possible alternative explanation for the large post 9/11 policy shifts is that a paradigm shift never truly occurred, and that the government continues to behave as an agent for private enterprise. For this explanation to be valid there would have to be proof that for whatever private enterprise wanted, government gave. There is ample evidence both in this thesis, and in public testimony (Canada, Senate, 2002) that private enterprise has not gotten its own way with respect to aviation security, and that the effectiveness paradigm has taken hold.

It would be valuable to explore the link between goal hierarchies, policy instruments, and stated goals. To be successful, such an effort would require the use of a

card sorting technique with policy makers, politicians, and the public. Such factors as institutional capacity and culture would also have to be taken into account. This effort would enhance our knowledge of policy change and remains an open opportunity for anybody willing to undertake it.

Paradigm shifts in aviation security requires a large-scale augmentation of public risk perception which is extremely difficult for policy-makers to initiate without a catalytic event that clearly demonstrates the inadequacies of the previous paradigm. Sadly, the path of aviation security change is littered with corpses. With the adoption of the effectiveness paradigm in Canada and the United States, policy that changes in response to threats, not events, is increasingly becoming the norm. Quick-strike matches and lighters are banned, as well as thick soled shoes are screened because of the foiled Shoe-Bomber plot aboard American Airlines Flight 63 in December 2001. Liquids and pastes were initially restricted and are now closely screened as a result of the foiled Atlantic Plot of 2006. There is hope that if public commitment to improving security remains strong, another mass-fatality catalytic event will not be required to prompt necessary policy changes. The next catalytic may even prove to be more costly in terms of human lives and property damage.

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