タイトル	Aerial Refueling and Threats in the Sky
著者	O'Brien, Patrick
引用	北海学園大学人文論集, 34: 203-274
発行日	2006-07-31

Aerial Refueling and Threats in the Sky

Patrick O'Brien

ABSTRACT

Hollywood has shown an unending affection for the airplane for nearly one hundred years. From fantasy, to war, to salvation, to heroism, to romance, to adventure, airplanes have been and continue to be a powerful symbol in American film. Two intertwined themes based on flight are menace and hope, and the tension between them has successfully driven many flying films. This may explain why film has featured the airplane as the archetypal machine of the twentieth century, just as, according to Leo Marx in *The Machine in the Garden*, the locomotive served as the archetypal machine in American literature of the nineteenth century. Specifically, this dissertation will focus on how cargo planes, bomber aircraft, commercial airliners, and all those aboard have been portrayed in film from 1950-0004. The current essay is comprised of chapters five and six of the dissertation.

CHAPTER 5
"PASSIN' GAS": AERIAL REFUELING SCENES

Initially, a chapter devoted to the image of aerial refueling in cinema may seem odd, but it is a common flying film scene and fulfills any number of roles. First, it introduces yet another element of suspense in the air: the leading characters' plane is low on fuel; will the

tanker arrive? Will the receiver plane be given a second chance, or will it be consigned to a hasty return to earth? Second, it allows creative filmmakers the chance to insert a fanciful device for advancing the storyline, which generally means using the refueling boom in ways never intended by the U.S. Air Force. Finally, we might consider the sheer visual appeal offered by these two heavy pieces of machinery speeding through the skies as they perform their aerial ballet.

Before delving into the movies that use aerial refueling scenes, I will first briefly sketch the history of aerial refueling and some of the technical details associated with it in order to help the reader and viewer better appreciate what is taking place on the screen. Next, I will consider whether aerial refueling scenes evoke one or another subconscious sexual image, that of sexual copulation or that of a mother nurturing offspring via an umbilical cord or through breast feeding. After laying out a case for both, I will argue why it is one, rather than the other, that is the chief image embedded in scenes of aerial refueling. Finally, I will present a textual reading of the most prominent aerial refueling scenes in American film.

Aerial Refueling: The Need, the Equipment, and The Symbols

War and defense have been the driving forces behind the development and deployment of the aerial refueling tanker.[1] As far back as 1929, the Douglas Aircraft Company used two Douglas C-1s to refuel an Army Fokker C-2 tri-motor, keeping it in the air for a remarkable seven straight days, but no refueling system was thereafter implemented. Further experiments were carried out during World War II, but given the forward bases in Europe and the Pacific, aerial refueling was not considered a strategic necessity. This changed with the end of

World War II and the birth of the Cold War. Soviet intransigence in Berlin, their detonation of an atomic bomb in 1949, and the fall of China to Communists convinced American leaders that a strong projection of force worldwide was necessary. As overseas bases were increasingly threatened, the U.S. responded by building strategic bomber aircraft, among them the B-36, B-47, and B-52. The first of the three, the massive propeller-driven B-36, had favorable range and payload capabilities, but it was thought much too slow to avoid enemy defenses. In contrast, the jet-powered B-47 and B-52 flew high and fast, but range was their Achilles' heel. Therefore it was decided to refine the technique of in-flight refueling in order to give the fast bombers the global range needed to project American power to critical parts of the world.

Before discussing the aircraft that have been used as American aerial refueling tankers, however, a visit to the mechanics of the fuel conveyance system is in order. Today, we generally see images of jet-to-jet aerial refueling in film, but this advanced procedure necessarily developed in steps, the first of which were initiated on existing propeller-driven airplanes. With a surplus of WWII B-29s, the Air Force elected to convert some of them into tankers and others into bombers capable of aerial refueling, with the former designated KB-29s.[2] By 1948, these aerial refueling units were activated. Unfortunately, the method used by these early pairs, the "looped hose system," was so demanding of flight crews that only a few of the very best crews were considered qualified, a deficiency that led to the development of the two forms of aerial refueling that continue to be used to this day.

Probe and Drogue vs. Boom and Receptacle

The two forms of subsequent aerial refueling for post-WWII

aircraft were, first, the probe and drogue method in which a probe extending forward from the craft to be refueled is mated with a drogue, or "basket," that is trailed at the end of the refueling hose. The receiver maneuvers his plane so that his probe will engage the basket with enough force to engage the coupling device. Once engaged, fuel transfer begins. This method remains most suitable for small fighter aircraft and helicopters, two types of aircraft that fall outside the scope of this dissertation.[3] This, plus the relative lack of film scenes employing this method, dictates that its image on the screen will not be discussed in depth, an exception being the scene from *The Perfect Storm*, which was based on a true story.

Movies generally show the second method of refueling, known as the boom and receptacle system. Here, a rigid telescoping boom is trailed from the tanker, while the receiver craft maneuvers into place. The boom is then mated to a receptacle on the front or top of the receiving craft. Boeing succeeded in perfecting what came to be known as the "Boeing Flying Boom." Here a rigid boom was lowered from beneath the tail of the tanker, while small aerodynamic surfaces known as "ruddevators" were used to "fly" the rigid boom into place. This system was quickly put into place aboard B-29s and B-50s (an updated version of the B-29), and became operational in 1951. One of its chief strengths was its ability to download greater quantities of fuel in a short time. Most moviegoers should be familiar with this operation, as it has appeared in countless films, ranging from military stories such as *Bombers B-52* to the action thriller *Air Force One*.

Propeller Tankers and Bombers

Though America appeared to have a powerful nuclear deterrent at

the end of World War II, this was "largely illusory" insofar as few B-29s were equipped to delivery a nuclear payload, few crews were trained to man these rare ships, and it was compounded by the fact that the U.S. inventory of atomic bombs at times dropped to as few as six. It fell to SAC, or the Strategic Air Command, to remedy this.[4] The driving force behind SAC's decision was Major General Curtis E. LeMay, Chief of Staff of the U.S. Army Strategic Air Forces in the Pacific. Upon assuming command of SAC in late 1948, LeMay was instrumental in increasing the number of atomic capable bombers from a few dozen to over 250 by 1950.

The Air Force's vision for delivering nuclear bombs was of a sleek and fast jet-powered bomber, but that vision was bound to take time to realize. In the meantime, two more practical options were exercised, the first being the transformation of B-29 variants into tankers and bombers capable of aerial refueling. This interim measure proved effective, as demonstrated by an around-the-world flight by *Lucky Lady II* in early 1949. Requiring four in-flight refuelings, this plane covered 23,452 miles without landing, prompting General LeMay to utter his famous phrase, "We can now deliver an atomic bomb to any place in the world that requires an atomic bomb."[5]

The B-36

The second solution was to improve existing propeller technology to build a plane that would hold internally enough fuel to carry the tremendous load of a nuclear weapon thousands of miles to its target — and then return to base within American borders. This idea had its roots in the early days of the war in Europe when it was conceivable that Hitler's troops could take Britain along with continental Europe.

If such were the case, American bombers would have to begin and end their missions from American soil. As aerial refueling was not an option then, designers considered their options. After stiff competition from rivals — as well as heated opposition from detractors (not least in the U.S. Navy) — the newly formed Consolidated Vultee Aircraft Corporation, or Convair, was awarded contracts in August 1944 for 100 of its mammoth bomber, the B-36.[6]

The size and power of this bomber — its "giganticism"— needs to be again stressed. As Convair noted in a press release, the wingspan of the B-36 was longer than the 1903 Kitty Hawk Flyer. Its ten engines (six radial and four jet) delivered the equivalent power of nine locomotives. Its bombload of 84,000 pounds exceeded the weight of a fully-loaded B-24 bomber. The anti-icing equipment on the B-36 could heat either a 600-room hotel or 120 five-room houses. Finally, this bomber could fly 10,000 miles non-stop (without refueling) and deliver a payload of 10,000 pounds halfway,[7] which makes the point that this plane simply did not require aerial refueling. Thus, no one has ever witnessed a movie scene in which this bomber is refueled, ending our discussion of this fascinating aircraft.

From Prop to Jet Power

The B-36 is credited with maintaining an effective nuclear deterrent against the Soviet Union for a number of postwar years, but the Air Force continued to work with Boeing on the creation of a jet bomber fleet. Boeing's work on a jet-powered bomber came to fruition in 1951 when its B-47 was delivered to the Air Force. This radical new plane featured sweptback wings and six jet engines mounted on pylons beneath the wings. This fast, high-flying bomber met many of the Air

Force's demands, but it lost some of these advantages because of the limited capabilities of the current tankers.[8] To meet these demands, the Air Force eventually began using a distant version of the B-29 for its tanker needs. First, a cargo version (the C-97) of the B-29 was built using a "double bubble" method of fuselage construction based on the civilian Boeing 377 Stratocruiser, though the wing, tail, and engines still came from the B-29. Properly modified, this became the workhorse KC-97 tanker, with 816 aircraft produced.[9]

Because the straight-winged KC-97s had a low maximum speed and the swept-winged B-47 (and later the B-52) a high minimum speed, a mismatch was created. As one expert explains: "Because of its slow cruising speed and low cruising altitude, the KC-97 had difficulty being an efficient refueler to high-speed jet aircraft. To refuel a faster, jet aircraft, it performed a maneuver called 'tobogganing.' The refueling connection would be made high up and then the tanker and jet flew 'downhill' together enabling the tanker to pick up more speed."[10] The penalty for this mismatch was substantial; flying at an operational altitude of 35,000 feet, a jet bomber would have to descend to half that altitude to meet the tanker, which was flying at its *maximum* altitude. Given the delicacy of this midair hook-up, plus the bomber's return to altitude with a heavy load of fuel, this propeller tanker/jet bomber refueling sequence "effectively halved the net gain of a full load of fuel pumped through the tanker's boom."[11] Clearly, something new was needed.

The Birth of the KC-135 Stratotanker

To match the speed of the jet bombers, Strategic Air Command opted to award Boeing Aircraft the contract for a jet-powered tanker.

This became the KC-135 Stratotanker, which to most observers appears to be a Boeing 707, although this is not technically true.[12] The prototype of these two planes, the Dash 80, gave birth to over 1600 copies, most of which were built under the parallel C-135/707 programs. Remarkably, this aircraft continues to serve U.S. forces. Boeing had gained valuable knowledge about high-speed jets from its B-47 program and employed what it knew in developing a new jet tanker. The prototype first flew on July 15, 1954, and the first operational tanker arrived in 1957. Thus, there was a four-year gap between the deployment of the B-47 and the KC-135, a story told in part in the first two films of the SAC Trilogy, *Strategic Air Command* and the 1957 *Bombers B-52*.

A total of 749 Stratotankers were built for SAC between 1957 and 1966. As of 1998, 75 have been lost in crashes and accidents, about 100 have been retired, and 7 are on museum display.[13] Such heavy losses are not surprising when considering that aerial refueling with jets is no mean feat; the danger must always be stressed. Over its operational life, the KC-135 tanker (and much more rarely, its receiver craft) has been involved in any number of crashes, many of which were fatal. Serial number 57-7424 was a typical example of a loss of this model tanker. On May 17, 1966, this Amarillo-based KC-135A was lost in the following manner: "During landing the aircraft contacted the left wing, then the boom, then the right wing. The aircraft rolled left and right, departed the right side of the runway, exploded and burned." Five people died.[14]

Similarly, a takeoff failure from U-Tapao Air Base in Thailand on October 2, 1968, took the lives of four crewmembers:

This KC-135A was TDYU to the 4258th SW. The No.4 engine failed after the airplane was committed to take-off. Asymmetric thrust and the plane's heavy weight caused one nose gear tire to fail followed by the other. The airplane finally became airborne just prior to the end of the runway, but struck reinforced concrete and steel light stanchions 1,800ft beyond the end of the runway and crashed, killing the crew of four. The airplane was written off on 16th November 1968.[15]

Though much safer than takeoffs (especially while fully loaded) and landings, in-flight refueling also had its risks, including two collisions between KC-135s and B-52s in flight, causing the release of nuclear warheads. First, a B-52 carrying unarmed nuclear weapons collided with a KC-135 over Kentucky on October 15, 1959, and crashed, though no radiation was released. By far the most well-known in-flight collision between a KC-135 and nuclear bomber took place just over six years later, on January 17, 1966, when a B-52 collided with the extended boom of a KC-135 tanker and both exploded and crashed, as described here:

> On January 17, 1966, a B-52G bomber, returning to its North Carolina base following a routine airborne alert mission, collided with the fueling boom of a KC-135 tanker 30,000 feet above the coast of Spain while attempting to refuel. Both aircraft broke up and the 40,000 gallons of jet fuel in the KC-135 exploded, killing its four man crew. Four members of the B-52s seven man crew were able to parachute to safety. Of the four unarmed B28 hydrogen bombs carried by the B-52 (a weapon with yields between 70 kilotons to 1.45 megatons), three crashed on the ground in the vicinity of Palomares, a poor farming community 1 mile off the coastal highway. The fourth sank off the coast and was missing for nearly three months, before being located by the submersible Alvin 5 miles offshore in 2,850 feet of water. The high explosives in two of the bombs which fell on Palomares detonated, digging craters 6 to 10 feet deep and scattering plutonium and other debris from 100 to 500 yards away from the impact area (the third bomb was recovered relatively intact from a dry riverbed).[16]

The best account of this second, more serious crash is Tad Szulc's *Bombs of Palomares*, where, in addition to the crash itself, he discusses the Air Force's attempts to silence reporting on this incident, the breaking of the story, and the lengthy search for the lost hydrogen bomb.[17]

The point of discussing these crashes of airborne KC-135 tankers is to stress for viewers the inherent risks of aerial refueling, though for dramatic purposes the relatively rare instances of accidents while engaged in in-flight refueling are those that are featured in film. Meanwhile, the much more numerous "mundane" (from Hollywood's point of view) instances of takeoff, approach, or landing crashes are left

for the Air Force and the family and friends of those involved, to mourn.

KC-10 Extender

Though the jet-powered KC-135 tanker proved to be a rugged and reliable tool for the U.S. military (including its extensive deployment in Southeast Asia 1964-4975, where it deployed 1.4 billion gallons of fuel to 813,878 receivers[18]), certain deficiencies became apparent as aviation technology progressed. The 1973 Yom Kippur War in particular revealed the need for greater refueling capacity, so the U.S. Air Force commissioned the McDonnell Douglas Company to build a variant of its civilian DC-10 for use as a freighter and aerial refueler. Nearly sixty of these tankers, given the designation KC-10 Extender, remain on active duty, and scenes with this tanker aircraft are among the most dramatic refueling scenes created by Hollywood.

McDonnell Douglas beat Boeing in the competition to augment the aerial refueling fleet after it became apparent that the workhorse of military airlifting, the C-141A Starlifter, would have to be upgraded by adding refueling capabilities. Though a variation of Boeing's 747 was an early favorite, the Air Force chose the KC-10A because it was capable of taking off with a full load from airfields with shorter runways than the 747 could manage. In all, 60 tankers were built and accepted by the Air Force, though one tanker (fuselage number 382) was lost to fire at Barksdale AFB on September 17, 1987. The performance of the KC-10 has been impressive, including during the 1991 Gulf War, where together with the KC-135, the aerial refuelers conducted roughly 51,700 separate refueling operations without missing a single rendezvous. Fuel load delivered was 125 million gallons.[19]

Together, the KC-135 and KC-10 have provided movie lovers with any number of dramatic flying scenes, many of which will be discussed below. As older tankers age and are retired, however, we can expect a new generation of Air Force tankers to enter the scene.[20] These too should eventually make their way to the screen. It is time now for a discussion of these aerial refueling scenes themselves, beginning with their possible subliminal impressions.

Film, Psychoanalysis, and the Aerial Refueling Scene

As with other areas of life in America, psychoanalysis found its way into film analysis. As one film studies expert notes: "In the 1970s psychoanalysis became the key discipline called upon to explain a series of diverse concepts, from the way the cinema functioned as an apparatus to the nature of the screen-spectator relationship." Though a backlash followed, its influence on film theory and criticism has remained.[21] Admittedly, the complexity behind the history of film and psychoanalysis is staggering (and contentious). Therefore, this short section in no way attempts to survey or summarize the field. Rather, it is meant as an adjunct to understanding what is being portrayed in one of the most psychoanalytically suggestive scenes in flying film, that of aerial refueling.

These scenes, I argue, evoke one of two universal concepts, concepts familiar to every human being because every human being has been part of the process at one stage or another. The conscious and unconscious thoughts and feelings related to them, therefore, must be deep, so it would be surprising if filmmakers neglected to address their portrayal. The starkly visual symbolic imagery that aerial refueling produces can elicit anything from crude, adolescent interpretations to

the most tortured abstractions available to psychoanalysis. The first interpretation of a refueling scene is, of course, that of sexual intercourse; the second is the maternal nurturing of her offspring, either through the umbilical cord or through breast-feeding. The visual simplicity of these two concepts no doubt explains part of their enduring power in flying films.

Intercourse

In film studies drawing on psychoanalysis, the theories of Sigmund Freud remain among those most often employed, and Freud's theories of the unconscious, the return of the repressed, the Oedipal complex, narcissism, castration and hysteria all relate in one way or another to sexuality. In addition to psychoanalytical interpretations of aerial refueling, there are the feminist and gender-related perspectives to consider.

Following accepted theory, particularly that of film studies' "apparatus theory" of the 1970s, the proper gender roles are activity for males and passivity for females.[22] Applying this rule to refueling tanker and receiver craft, there are arguments to be made for both sides as to which is male and which is female, the tanker or the receiver. I will start with the generally accepted proposition that the refueling tanker is male, "mounting" the receiver craft, and transferring its vital fluid from itself to its passive (read female) partner. Henriksen, for one, accepts this proposition with no reflection whatsoever, stating "the one act of 'sex' that does take place" in *Dr. Strangelove* "involves airplanes, not humans. The opening credits roll over footage of an in-air refueling of a bomber, the injection accompanied by soft and lyrical music that provides the romantic highpoint of the

film."[23]

Perhaps this obvious — almost reflexive — interpretation is warranted. After all, with respect to the issue of physical similarities between aerial refueling equipment and human genitalia, it should be a foregone conclusion as to which is male, which female. In essence, the tanker extends some form of probe or hose to be inserted into the fuel nozzle of the receiving craft, an obvious intimation of sexual intercourse; the tanker is an active male. Fluid is then passed from tanker to receiving craft, just as semen is passed from male — through the erect penis — to the female.

But is this gendering so obvious after all? I believe it is not. As we have seen, there are two kinds of refueling techniques generally employed: the boom and receptacle version, and the probe and drogue configuration. To review, in the boom and receptacle version, the boom of the tanker consists of a rigid structure containing a pipe or hose which conveys the fuel to the receiving craft through a receptacle found usually at the front of the airplane. As mentioned above, this would seem to constitute male on female copulation. The second configuration is that of the probe and drogue, but unfortunately for the tanker-as-male argument, the active male here is clearly the receiving craft, not the tanker. A probe, either one that is fixed or one that rigidly protrudes forward *from* the receiving craft, is engaged with a hose and basket system that trails behind a waiting tanker. The pilot of the receiving ship moves forward relative to the tanker and actively thrusts its probe into the open, waiting basket from which the fuel will be received, thus reversing the active/passive roles.

Two larger problems exist with the tanker as male schema. First, in a timeframe larger than just the period of tanker-receiver copulation and transfer of fuel, the tanker is the passive participant (this is

particularly true of filmic portrayals). It is just "there" in the sky for the active receiving craft to find. As the focus is on the "active" mission of the bomber or fighter, the tanker exists only insofar as it serves the receiving plane. In film scenes in particular, the receiving craft seeks out the tanker and makes an active approach — initiates a courtship, if you will — from behind the waiting tanker. In film, which so often shows the male protagonist "making things happen," the aircraft making things happen in every refueling scene I can think of is the receiving plane. Sticking with conventional wisdom then, the receiving craft would be the male protagonist . . . receptacle and all.

Second comes the issue of the substance being transferred between planes. In accepting a male role for the tanker and its rigid boom, the analogy would have to posit, as mentioned, the transfer of semen or sperm. But what are the qualities of seminal fluid that would parallel the qualities of jet fuel? More problematically, what are the *quantities* of seminal fluid that would parallel the quantities of jet fuel? It is perhaps here that the argument for a "male" tanker breaks down most irrevocably. For example, the newest Air Force tanker, the KC-10 Extender (featured in *Air Force One*) can transfer 1,200 gallons per minute, a quantity far out of proportion to a man's ability to ejaculate.[24] Regarding quality, sperm's mission is to seek out and penetrate the egg in order to engender new life. In no way does fuel fulfill a similar role vis-a-vis the bomber or fighter. In fact, the opposite is true; mission-enhancing fuel allows greater destruction of life, either in the air or on the ground. The (re)generative power of fuel simply does not suggest itself.

The time element is also different: ejaculation is relatively quick, whereas fuel transfer takes longer as greater quantities are off-loaded. This is why visual imagery of male tanker injecting semen/sperm into

a female receiver is not compelling. What the coupling of tanker and plane, along with its fuel transfer, does suggest, is advanced below.

Reading the Tanker as Passive and Female

I posit in this chapter that the receiver aircraft is male and the tanker is female because the tanker's role is to provide sustenance, fuel, "food" for flight. This is a universally recognized maternal role. The active fighter or bomber, the "hunter," needs fuel to realize its mission. The tanker, then, nurtures the hunter. At its most basic level, this suggests the original connection between mother and dependent offspring through the umbilical cord. Beyond that, it certainly suggests breast-feeding as well.

The Umbilical Cord

I have just made the argument that fuel does not satisfactorily approximate the qualities of semen and sperm for it to support a tanker as male analogy. In fact, there is another bodily fluid that comes closer to fulfilling the functions of fuel, and that bodily fluid is blood. Taking it one step further, the image of two planes in flight, cruising in relative non-motion, connected by a hose or boom, one transferring sustenance to a needy other, is most closely suggestive of mother and child connected by an umbilical cord. I believe it is this image that most often occurs in the minds of viewers when they see a scene of aerial refueling in a movie. To my mind, this is the ruling paradigm for aerial refueling scenes, not the one of sexual intercourse.

The parallels fall in place one by one. First is the question of need: the tanker needs nothing from the other plane. In fact, the tanker

gives of itself the very substance it too needs to remain in flight; the act is selfless, much as the acts of a mother are idealized to be. Second, both the quality and relative quantity of fuel and blood are comparable. While blood itself may not be the precise fluid that fuels the body, it is so often popularly conceived to be that the analogy flows easily. Think of the common terms "the blood of life" or "one's lifeblood."

The relative quantities of blood in the body and fuel aboard both tanker and in the tanks of the receiving craft are also close. While it is true that blood is not pooled or stored in the body in a way that fuel is in an airplane, both systems are buried beneath a cover, leaving it to our imaginations to picture the functions they play. It does not seem too farfetched to me to imagine that fuel courses through the plane's body and wings, delivering power to engines in the way that blood courses through arteries and capillaries to deliver power to the body's muscles. When this general image is narrowed down to the particular case of a mother feeding her baby through the umbilical cord, the analogy seems all the more appropriate. The baby is entirely dependent on the mother's supply of nourishing blood to sustain life. Similarly, the receiving aircraft is dependent on the tanker to stay in the air long enough to fulfill its mission and return safely to base, or, in extreme cases, to stay in the air at all.[25]

A further analogy could be made. Just after birth, when the mother and infant are still connected by the umbilical chord, while the baby is still dependent upon the supply of mother's blood for life, a great tension wells up: will the baby take its first breaths? Will the baby breathe on its own? Will the baby survive and go on to attempt and experience and accomplish all the things that human beings do? I believe it is this tension that adds so much drama to scenes of aerial filming on the silver screen, for these scenes are not just humdrum

accounts of flying as usual. On the contrary, they are meant to have us ask ourselves, "Will this aircraft and its crew survive? Will they, after having received their last injections of life-sustaining fuel, sever the bond to the mother/provider ship and continue a life of their own?" Whether the receiving ship is on its way to a target or returning to base is irrelevant. The point is that the aircraft is in need of fuel to stay aloft, and the bonding with the tanker is all that will allow it.

The breast-feeding imagery works in a similar fashion. Once positioned at the breast, the infant waits patiently to take on its "fuel." Replacing blood with milk still conveys a sense of providing sustenance, and the elemental connection between mother and child is nearly as strong. Finally, though the imagery fits four-legged animals more closely, the positioning of the ambulatory offspring and mother with extended teats approximates that of a receiver aircraft and its tanker. Is it not true that the receiver "suckles" from the tanker?

With respect to this mother-child imagery, I would add one further suggestion: Since the umbilical cord/breast feeding thesis implies a mother-infant relationship, to what extent does this "infantilize" the bomber (or fighter) aircraft and, by extension, the largely male cast who create, maintain, and fly these aircraft? Certainly Kubrick's *Dr. Strangelove*, for example, which opens with a farcical scene of aerial refueling, has infantilizes the entire cast of men in the movie, from B-52 pilot to generals in the war room to Russian diplomat/spies to leaders of the Soviet Union and United States. In most other flying films, however, whatever passive and "infantile" temporary states the receiving aircraft might have, it instantly reverts to the active and aggressive ship it is generally perceived to be as soon as it has obtained needed fuel.

Queering Aerial Refueling

Finally, one more possible sexual connotation of aerial refueling must be mentioned in passing, though it would seem to depend more on the image desired by the viewer than on that created by any of the aerial refueling scenes I have studied. The "queering" of the coupling of tanker and receiver is at least as plausible as that of more traditional heterosexual intercourse, insofar as some models of the same plane are able to refuel fellow ships (the KB-29B and similar B-50D fit this bill[26]), while other aircraft could both download fuel and take it on. As of 1998, nine KC-135s have had the "androgynous" ability to either fuel or be fueled in flight.[27] The newer KC-10s also have this ability,[28] as will the KC-767 when it becomes available.[29] I have never, however, seen this coupling portrayed in film, so I will not introduce the theme into the text.

Films with Booms

Strategic Air Command (1955)

In the first film of the SAC trilogy, the Air Force worked directly with Hollywood to educate the public about the demands made on the men who comprise the nuclear bomber force and to expose the audience to the latest equipment available for protecting the United States. As we saw in the last chapter, all three of these films reinforce the sense that America is well protected but only at the personal expense of servicemen like Dutch Holland and their families.

In keeping with the heroic stance evident in the trilogy, the aerial refueling scene in *Strategic Air Command* is impressive. As a peacetime exercise, Dutch's entire wing will be physically transferred to

Yokota, Japan, necessitating in-flight refueling for the forty-five B-47s involved. A large wall map at headquarters shows the scope of the mission, starting in the mid-United States, flying over the Aleutian Islands of Alaska, then on to Japan. The refueling will take place over Alaska, which is clear from the many aircraft markers placed on the map in that position.

To the accompaniment of soothing music, Dutch and his men fly high above the snow-capped mountains of the Aleutian Island chain, in stark contrast to the earlier night scene over Iceland where his men had to bail out in minus forty-two degree weather to escape an engine fire on the B-36, while Dutch crash-landed among the rocks and snow. The transition to the six-engine, jet-powered B-47 keeps them high above such dangers, and the rendezvous with a KC-97 tanker will merely cement that security. The scene itself is the antithesis of danger, as the music continues and the two planes begin their waltz together. Banter is exchanged ("Do you want ethyl or regular?") and the coupling is done professionally and safely. The bright blue sky and the white mountains in the background provide an uninterrupted sense of triumph over nature, extending the American drive for "a passage to India" and the "gardens of Asia."

Bombers B-52

As *Bombers B-52* was released in 1957, the KC-135 Stratotanker was not yet available for filming, which is why the in-flight refueling scene uses the older prop-driven Boeing KC-97. The first attempt at in-flight refueling in *Bombers B-52* fails because of a malfunction in the B-52. Later, however, on the way to Africa, the bomber needs to refuel over Bermuda. The shots of the KC-97 tanker and bomber

engaged in the delicate dance of aerial coupling are excellent, again reinforcing the Air Force's technical prowess. As always, the tanker flies ahead and above the receiver, and both craft close until the fuel pipe is safely inserted, after which refueling begins. Just as in *Strategic Air Command*, the pilot banters with the boom operator, asking him to wipe the windshield and give him "some of those green stamps." The refueling goes off without a hitch. The viewer should recall, however, that the actual refueling of a jet-powered B-52 by the prop-powered KC-97 was fraught with danger, as explained above, but the Air Force's intentions are not to share all the risks of flying. Rather, they seek to communicate a sense of professionalism that will engender confidence among the troops and the public at home viewing this "educational" film.

A Gathering of Eagles (1963)

Despite being a drama about maintaining readiness for nuclear war using B-52s and ballistic missiles, *A Gathering of Eagles* has relatively few flying scenes. Fortunately, the ones they do have show a fair amount of aerial refueling activity, beginning with the opening credits. Here, a B-52 takes off on a mission, followed by a KC-135 tanker. Behind the credits, we see the two planes mate above the clouds in a standard depiction of this procedure.

A quarter of the way into the film, we see the main flying and refueling sequence of the movie as Col. Caldwell (Rock Hudson) pilots his B-52 on a low-level bomb run. Once the simulated run is completed, he gains altitude to meet his refueling tanker, whence begin some of the most colorful and clear refueling shots on film. First, the viewer watches from the vantage point of the refueling pod on the bottom rear

portion of the tanker as the silver B-52 rises to meet it. The KC-135 is sporting a high-visibility orange stripe around the rear of the fuselage, while the bomber has a bright white section above the cockpit in the area of the refueling receptacle. The director alternates shots from behind the head of the refueling operator on the tanker and the heads of the two pilots in the B-52, giving a you-are-there sensation to the sequence. After the connection is made, the operator informs the pilots, "You have fuel flow," and the camera then zooms out to a side shot of the two multi-engine jets flying in tandem.

Aboard the bomber, the flight engineer investigates a gas leak, when suddenly the fuel line bursts and sprays hundreds of gallons of aviation fuel on the deck of the B-52, whereupon Col. Caldwell cries out, "Breakaway! Breakaway," and the two aircraft make an emergency disengagement. With volatile fuel sloshing on the floor of his bomber, Caldwell nervously prepares to land, gingerly lowering his gear but refraining from lowering the landing flaps, lest a spark ignite the fuel. Without flaps, a high-speed landing is necessary, and as they touch down the braking shute is deployed. Still, only heavy wheel braking can stop the ship, though this causes dangerous overheating. Once stopped, the men evacuate, while the well-trained ground crew prevents a fire.

Near the end of the film, during the second Operational Readiness Inspection, there is a short scene of a B-52 that is having difficulty connecting with its tanker because of heavy turbulence. After two airborne break-offs, the pilot finally gets his load of fuel, allowing Caldwell's team to pass this punishing test.

Dr. Strangelove (1964)

In this satire, the movie opens with an aerial refueling scene straight from the SAC trilogy, which is but a beginning example of director Kubrick's intention to skewer everything about the military, for there is nothing heroic or charming intended in this portrayal of a nuclear bomber. The shot is of the B-52 itself, gently floating high above earth and clouds, seemingly motionless. Then, looking down the extended boom of an aerial refueling tanker, we see the top and front of the eight-engine bomber, wings spread wide like a hawk's. The soft music makes us think of a choreographed dance between two infatuated lovers, the exact opposite of what these warbirds really are. Kubrick succeeds in making them look decidedly benign as his shots cut from side views to top views of the two embraced planes. With their gentle movements caused by air currents, the tanker and B-52 are hard to imagine as potent weapons. Finally, as the last credits roll by, the B-52 disengages from the fuel boom and gently fades back from the vantage point of the tanker's pod, never once imparting a sense of threat. This imagery of utopia above the clouds never leaves us throughout the film, not even in the apocalyptic ending, which, of course, makes the satire all the more potent.

Interceptor (1992)

After *Dr. Strangelove*, there was a long drought of images of the aerial tanker, extending, as far as I can discern, until the early 1990s, when *Interceptor* was released. This gap of over two decades saw the augmentation of the tanker force with the first jumbo tanker, the McDonnell Douglas DC-10-derived KC-10 Extender.

In *Interceptor*, a U.S. military fighter pilot is being disciplined for ejecting from his experimental F-117 fighter. From Turkey he is sent back to the U.S. aboard the Air Force's largest cargo plane, the C-5 Starlifter. In this movie, the use of an aerial refueling boom is crucial to the plot development. Evil men plan to board this cargo plane and steal the two F-117 fighters aboard by flying them out of the rear-loading door of the C-5 while in flight. To gain aerial access to the cargo plane, they have an unorthodox plan to come down the mock refueling boom of a KC-10 Extender and enter through the top of the cargo jet. To do this takes some creative planning and audacious flying.

The C-5 is scheduled to rendezvous with an Air Force KC-10, and the villains take this opportunity to substitute their own special DC-10 for the KC-10, moving into position in front of and above the C-5. On cue, they extend their boom toward the cargo plane flown by the unsuspecting crew. The technician in the group then deftly slides down the boom until he reaches the outer skin of the C-5, into which he cuts a circle big enough for men to go through. Having secured the boom to the C-5 with metal screws, he then helps the other villains slide into the passenger area of the cargo plane, which is just behind the cockpit but above the spacious cargo hold. Typical good guy-bad guy action follows. The point here is that the refueling boom has been employed in a dramatically novel way, a device repeated at least four more times soon after. All four movies rely upon fanciful deployments of the tanker and boom scheme to advance their plots, beginning with *Executive Decision* (1996), followed by its cheap imitator *Strategic Command* (1997), then the clever *Final Descent* (1997), and finally *Airspeed* (1999).

Executive Decision (1996)

Of the four boom scenes during the period 1996-67, by far the most important was from the big-budget *Executive Decision* (1996). Here, Kurt Russell stars as Dr. David Grant, top government foreign policy analyst, while Steven Seagal appears as a macho military man. Hijackers from the Middle East have commandeered an Oceanic Airlines 747 bound for Washington, D.C. and have positioned deadly nerve gas canisters in the cargo hold.[30] In order to board the plane in flight, a group of commandos led by Seagal fly aboard a stealth F-117 Aurora fighter, sitting behind the lone pilot in an area in which one might expect to find jet engines. Once they catch up to the jetliner, a flexible telescoping boom is extended from the top of the fighter to the bottom of the jumbo jet, allowing an engineer from the fighter to climb the ladder inside the boom, open the fictional outer hatch on the bottom of the 747's hull, then turn the latch on the inner hull, completing the passage from fighter to avionics bay of the passenger jumbo without breaking the pressure seal.

The men then begin to sneak aboard the 747, but sudden wind sheer causes both planes to dive wildly, making the airlock increasingly tenuous. The 747 pilot compensates by pulling up on the yoke, putting further stress on the boom. Lacking sufficient time, only part of the crew can get aboard, and the commander, played by Seagal, is swept away in the slipstream where he is caught mid-way between the F-117 and 747, though he was generous enough to lock the external hatch on the jumbo before dying. After its boom has disintegrated, the F-117 tumbles wildly out of control, and the pilot safely ejects at the last minute. It would be an understatement to call this use of a boom inventive.

Strategic Command (1997)

This made-for-TV movie is a direct rip-off of *Executive Decision,* coming only a year after the original (a fact attested to by the Japanese title of the movie: *Executive Command*[31]). The use of a telescoping boom is identical to the concept from *Executive Decision,* though the plane to which it is attached is different, though no less glamorous. In *Executive Decision,* a Stealth F-117 fighter had been gutted to carry a bevy of armed commandos and the machinery comprising the telescoping boom. In *Strategic Command,* the plane used is the supersonic spy plane, the futuristic SR-71, which has no trouble catching up to the lumbering 747. Many other elements, such as the chemical attack threat against the United States, are shared with *Executive Decision,* but they are discussed elsewhere in this dissertation.

Final Descent (1997)

In the same year as *Strategic Command,* television viewers also had the opportunity to watch a fantasy role for the KC-135 tanker. In *Final Descent,* as we saw in the previous chapter, Captain "Lucky" Singer (Robert Urich) does not give up on the idea of weighting down the nose to level. Down in the front hold, he realizes that the bay for the nose gear is sealed, so if they can fill it with water, it will not only bring the attitude of the plane into descent, it will add the benefit of allowing a normal nose-up flair upon landing because the water will simply spill out when the wheel well opens. The task, then, is to get a refueling hose from the tanker into the front wheel well. Here the movie repeats *Airport '75*'s solution: make a hole near the cockpit so that needed people or equipment can be taken aboard.

In the case of *Final Descent*, the captain jettisons the cockpit crew's overhead escape hatch while in flight to open the cockpit up to help. Captain Singer's close military buddy then maneuvers the KC-135 aerial tanker into position, first delivering needed arctic suits for the crew (the temperature at their altitude of 31,000 feet is minus 33 degrees). Next, the tanker crew maneuvers a water hose through the opening in the top of the fuselage, and three Canadian oil well riggers who happen to be aboard pull it inside, where Captain George Bouchard pulls it down into the lower hold, positioning it in the wheel well. More water than anticipated is needed, but in the end the added weight indeed brings the plane's nose down and an approach to the airport is executed. Just prior to touchdown, Singer opens the doors to the wheel well, the water rushes out, allowing the plane to "flare" as it comes in, and a tense but successful landing is made.

Airspeed (1999)

In this rather original plot, Nicole, a 13-year-old spoiled rich girl, flies aboard her father's private 727 along with two employees charged with caring for her. Starved for attention but too obnoxious to properly convey her needs, she ends up annoying any adult she meets. In the cockpit, the tension comes from a storm through which the two pilots try to fly, when a bolt of lightning knocks them both out and blows a hole in the left side of the fuselage, resulting in catastrophic decompression.[32] The two employees back in the cabin are unable to reach their oxygen masks and soon pass out, but fortunately for Nicole, she had been killing time by doing an imitation of *Star Wars* antagonist, Darth Vadar. She uses her father's precious Roberto Clemente baseball bat as Vadar's laser sword and takes the emergency oxygen mask from the

first aid kit to reproduce his strangely mechanical voice. Thus, when the lightning strikes, all she has to do is turn on the valve supplying the oxygen.

Though one employee briefly recovers, she soon passes out again, forcing Nicole to take charge. For now, all she can do is communicate with the control tower, but that at least allows them to communicate their rescue plans. Since a 13-year-old girl would never be able to land a 727 by herself, experts on the ground conceive of a plan to use a KC-135 tanker to put a pilot aboard the crippled 727 and remove Nicole and the injured parties on board. Unfortunately, the cinematic execution of this scheme is flawed and destroys an otherwise just barely plausible story.

First, the KC-135 tracks down the 727 and pulls up behind and above the tri-jet. In the cockpit, we see a lone pilot sitting in what appears to be a plywood mock-up of a cockpit. The only sign of equipment onboard is a heavy fire extinguisher attached to the wall behind. For his part, the pilot spends all his time telling controllers that he cannot hold the pattern, all the while extending his arms to their maximum to reach the wheel, which he liberally pumps forward and back for the duration of his appearance.

The setting in the back of the tanker is not much better, nor is the plot: the boomer pilot will extend the boom laterally to the 727 and insert it into the hole in the fuselage caused by the lightning, allowing some sort of cable to be rigged for the transfers. Whether it is intentional or not is hard to say, but the boomer scene does provide an obvious Freudian interpretation based on these circumstances: Presumably, the 13-year-old girl is a virgin, though she may well have inklings —— and perhaps fears —— about sex. The long boom being inserted into the hole "torn" in the fuselage could reasonably be seen as the

deflowering of a virgin.. In fact, Nicole's encounter with the boom seems just that.

Seated in the pilot's seat, Nicole is told about the plan to use the boom for a transfer. To be successful, however, she must approach the tip of the boom and hit it hard so that a grappling device will deploy and keep it latched firmly inside the hole. She takes the baseball bat to do the job, but when she enters the cabin, she is threatened by the violent, snake-like action of the boom, which lurches and retreats as turbulence outside rocks the two planes. Nicole is horrified by the encounter, screaming and moving away from the aggressive boom. In addition, the vivid colors of the interior, plus the pulses of lightning outside serve to create a dreamlike state, which could be Nicole's subconscious fear of the penis.

In any case, the boomer plan fails, and the planes separate, leaving one last desperate try. Impossibly, the rear of the KC-135 tanker, which is normally tapered as the fuselage meets the tail, now has a loading ramp big enough to hold a group of soldiers. No doubt this contrived design was meant to mimic the in-flight rescue action of a movie like *Airport '75*, in which men were winched down from the open cargo ramp of a large helicopter. To get the rescuers from the ramp to the 727, the pilot pulls to within feet of the 727's extended nosegear, and a man *jumps* from the ramp onto a tire of the nosegear, from which he climbs aboard the plane.

Some of the unconscious adults are rescued via the cable system, but Nicole does not have the strength to move her beloved —— but obese —— friend, Frank. Growing turbulence threatens the whole procedure, which then ends as the rescuer falls out of the plane. Exasperated, Nicole, instructed that she will never be able to overpower the plane's autopilot, takes the bat into the cockpit and says, "Yeah, well the

autopilot's not as pissed off as I am." She then proceeds to smash the autopilot with the bat and assumes control of the plane, which she safely lands with instructions from the ground.

Air Force One (1997)

In what may be the most spectacular computer-generated image of an airplane crash, the creators of *Air Force One* script that the hijacked presidential jet be refueled mid-flight because the President (Harrison Ford) has used a butter knife to cut wires in the avionics compartment, initiating a spontaneous full dump. The hijackers who have control of the plane threaten to kill one passenger per minute until the Vice President agrees to send an aerial refueling tanker. To accomplish this, an Air Force KC-10 Extender is ordered into place, arriving in time to off-load much-needed fuel.

The choreography throughout this sequence is superb, as time has been slowed in this computer-generated scene to emphasize the mass of both aircraft and the boldness of their maneuver. As the KC-10 assumes the familiar in-front-and-above aerial refueling position, the viewer can see the guiding lights under the forward fuselage. The next scene shows the flying boom, followed by the light-blue nose of Air Force One as it inches toward the boom. Once the probe from the boom is secured in the nozzle on the nose of Air Force One, refueling commences. The transfer is not routine, however, as the President leads dozens of passengers to safety in the lower rear cargo hold of the presidential 747, where they affix parachutes and proceed to jump.

A hijacker's attempt to thwart this escape attempt results in the depressurization of the jet, which in the movie forces the nose of Air Force One down, putting stress on the link to the fuel hose and creating

a massive leak where the boom meets the rear fuselage of the tanker. "I can't hold her," the hijacker flying the plane cries. "Air Force One, break away, break away," comes the response from the tanker. Seconds later, the fuel probe pulls out of the nose of Air Force One, sending a cascade of jet fuel across her windows. Friction between boom and 747 creates a spark, which ignites the still streaming fuel, resulting in a serious conflagration. To escape the flames, the pilot of Air Force One dives steeply to the right.

The tanker is not so lucky. Flames follow the boom back to the source of the fuel, the KC-10 itself, and immediately enter the fuel tanks. The results are predictable and are executed spectacularly in the slow-motion effects of computer generation. First, a fireball erupts in the rear half of the tanker, bending its tail section upward. The next shot is taken from below the 747, again to emphasize its mass, and as the plane dives hard to the right, the stricken KC-10 floats by above it, wings and forward fuselage intact, rear fuselage a ball of fire. Comparisons to the burning Hindenberg are inescapable.

Finally comes the last sight of the doomed tanker. The camera has moved back to the rear of Air Force One, where the President dangles precariously from the extended ramp of the cargo bay. As he flails about, the massive fireball that is the tanker falls behind him, orange flame filling the screen. Visible in the middle of the flames is the nose of the dark-gray KC-10 as it plunges to earth in slow motion. This failed refueling effort points up the dangers of mating two mammoth pieces of flying machinery and transferring volatile fuel between them.

The Sum of All Fears (2002)

In this Tom Clancy-derived, big-budget film, we again meet Clancy's alter ego, Jack Ryan, agent and analyst *extraordinaire* (played here by Ben Affleck). As with a few other movies mentioned in this dissertation, Air Force One plays a role, in this case an escape scene requiring aerial refueling. After neo-Nazi renegades from Europe have planted and detonated a low-yield nuclear device under the football stadium in Baltimore, the President, who was attending the game, is caught in the blast, though not killed. Marines arrive in helicopters and ferry him directly to the waiting Air Force One, which lifts off immediately. The refueling scene here is short and straightforward. First, we see a twilight shot of an Air Force KC-10 Extender waiting with its boom extended as Air Force One flies toward it. Later, we see them connected, and this ends the refueling scene.

Note that in this film the familiar Presidential VC-25A was clearly not depicted. Though other films such as *Air Force One, Independence Day,* and *In the Line of Fire* had portrayed this modified 747-700, in *The Sum of all Fears* one of the Air Force's E-4Bs was obviously used, as is evident by the large radome above the hump of the normal 747. As Air Force spokesman Bruce Gillman notes, "The characters are using the National Airborne Operations Center due to the fact that a bomb detonated in the Capital Region."[33]

The Perfect Storm: Salvation Denied

The refueling scene in *The Perfect Storm* (2000) is a small exception in this dissertation for two reasons. First, the receiver is a helicopter, not an airplane, and second, the tanker is not one of the more commonly

portrayed tankers. Instead, it is a four-engine, propeller-driven tanker known as the KC-130, the tanker version of the versatile military cargo plane, the C-130. This straight-wing refueler is used primarily by Marine Air Ground Task Forces, and the scene in which it appears in *The Perfect Storm* is the only example of its kind I have seen.[34]

Wolfgang Peterson (*Das Boot, Air Force One*) is the director of *The Perfect Storm*, the saga of an epic battle with the sea. Caught in the convergence of two massive North Atlantic storms, a number of small boats are in peril. The Coast Guard is called upon to rescue first the crew of a yacht that is disabled by the storm. A rescue helicopter with a crack crew responds and picks up the crew of the yacht from the sea, despite the ferocity of the storm. Returning to shore with the survivors, another distress signal comes in, this one from the crew of the *Andrea Gail*, the focus of this film.

The helicopter crew elects to deposit its passengers on a freighter at sea in order to continue on to rescue the crew of the *Andrea Gail*. To do so, however, they will have to execute aerial refueling under adverse conditions. This scene mirrors the main scene taking place below on the surface of the sea: the ancient contest of man vs. the power of the sea. In both surface and aerial cases, man loses, as nature once again proves her remorseless domination over man.

As always, the aerial refueling represents the ability to provide the lifeblood of flight: fuel. In this case, however, it is a story of salvation denied, as the weather prevents the pilot of the helicopter from successfully coupling with the tanker. This four-engine propeller workhorse of many militaries throughout the world does duty here as a slow-moving aerial refueling tanker for the rotary wing Sikorsky S-70 (U.S. Coast Guard HH-60 Jay Hawk) helicopter.

Fitted with two hose and drogue units, the refueling tanker flies

into position above the fuel-starved helicopter above high seas. The co-pilot of the Jay Hawk uses his night-vision goggles to attempt an insertion of the helicopter's probe into the refueling basket in front of him, but gale-force winds blow the refueling drogue about wildly, making a coupling impossible. After repeated attempts, the helicopter crew is faced with a stark choice: continue to attempt refueling at the risk of running out of fuel and crashing uncontrollably into night seas, or break off now and execute a controlled descent into the sea. Because the latter choice offers the opportunity for the crew to jump from the hovering helicopter, timing their jumps to hit the crest of the waves, the crew in *The Perfect Storm* elect to do the latter. Most crewmembers survive.[35]

As discussed above in the section on sexual imagery, the rarely shown system of probe and drogue refueling could be seen as a metaphor for sexual intercourse, with the receiving ship playing the role of active male. With its stiff probe protruding from the front of the helicopter, one could argue that it is a penis symbol. A psychoanalytical reading of the scene might go like this: As the male element, the helicopter, approaching from behind, attempts to insert its "penis" into the "basket" of the female tanker ahead of it. Successful consummation of this intercourse would result in both release of tension and possibly the creation of further life. Unfortunately, consummation of the act is not achieved, leaving both parties frustrated. Symbolically, the helicopter has been rendered impotent — if not castrated — and its issued wasted. This is portrayed in the film when the crewmembers of the helicopter eject themselves from the helicopter into the roiling waves below. Because of the symbolic castration, two men are left trapped into the helicopter, unable to "eject." Though one eventually frees himself, the other drowns. In its totality, this scene might act out

a Freudian drama of catharsis denied, but on the whole I would consider this a weak interpretation insofar as the scene was based on a real incident.

On the whole, most aerial refueling scenes are faithful to their American military counterparts, showing more realism than fantasy. In every case, the tankers are incidental to the real drama, which is regrettable given the opportunities for action and suspense of a tanker-based film. Still, the scenes we have reviewed of aerial refueling range from the majestic and beautiful to the horrific, and many flying films have benefited from their inclusion.

CHAPTER 6
ATOMIC AND CHEMICAL THREATS IN THE SKY

I bring you a warning. Everyone of you listening to my voice. Tell the world. Tell this to everybody, wherever they are. Watch the skies. Everywhere. Keep looking. Keep watching the skies.

Reporter Scotty in *The Day the Earth Stood Still*[1]

Holocaust from Above

As is well known, the United States was the first nation on earth to build and employ a nuclear weapon. Two atomic bombs were carried aboard U.S. Army Air Force planes and dropped separately on Japanese cities. Subsequently, America built a wide-ranging system of strategic air bases to allow for projection of American nuclear power. Once the Soviet Union had developed its own nuclear capability, however, the stakes during the Cold War became much higher to civilians on both sides. The fear that a nuclear war would erupt between the

Soviet Union and the United States, raining destruction from above, was palpable during the 1950s and into the 1960s and beyond.[2] An additional fear was that advanced technology itself might trigger an unwanted nuclear exchange.

This theme was developed in film in a variety of ways. For example, 1964 saw two very different takes on the same theme. *Fail-Safe*, starring Henry Fonda, was a sober, understated treatment of the prospect of accidental nuclear war, while Stanley Kubrick's *Dr. Strangelove* was pure satire. One of the most developed explorations of the intersection of such films and the fear of aerial nuclear war is to be found in Margot A. Henriksen's discussion of nuclear war films in her 1997 book, *Dr. Strangelove's America*, where she claims that such films "delivered an overriding message of atomic insecurity: from 'here at the top of the world,' as reporter Scotty noted, Americans now needed to 'watch the skies' incessantly."[3] In these cases, the image of the airplane and theme of death from above were prominent and will be discussed at length below.

While the common menace portrayed in such aviation films is linked to nuclear war, we can also find the competing fear of chemical or biological attack from the sky, attacks that can threaten those innocents below on the ground, or those that threaten the crew and passengers aboard the plane itself. An interesting observation is that fear of atomic attack was undeniably strong among the American public during the Cold War, but that threat, which was once a monopoly held by the long-range bomber, gradually became divided among three weapons systems: the bomber, the land-based ICBM, and the ballistic missile-equipped submarine. This three-way division served to lessen the focus on the bomber, a focus that was further diminished as the Cold War began to wind down and the threat of bomber attack from

the Soviet Union faded. By the time of the fall of the Berlin Wall in 1989, fears of mass destruction associated with the atomic bomber had switched to other scenarios involving aircraft: the threat of chemical or biological destruction. How rational this fear was remains debatable, but in film the theme was worked in many creative and revealing ways.

For example, a disturbing similarity between the filmic theme of chemical contamination aboard a flight and real life comes with the sudden emergence of severe acute respiratory syndrome, or SARS. Witness this actual account of the airborne spread of the ailment:

> On 23 February 2003, a Continental Airlines flight from Hong Kong landed in Toronto carrying a 78-year-old grandmother and her husband. . . . The aircraft that touched down on the runway brought with it a lethal organism that, two months later, would in effect shut down Canada's commercial capital. . . . In Hong Kong she and her husband had stayed on the ninth floor of the Metropole Hotel at the same time as Liu Jian Lun, a Chinese professor of respiratory medicine who is now known to be the case that triggered the global epidemic. . . . A single sneeze in the Metropole's lift lobby may have been enough to infect seven other people who subsequently spread the illness round the world.[4]

Few who have lived through 1990s America will have difficulty associating such contagion with the AIDS epidemic that has plagued much of the world, or with other threatening diseases such as the Ebola virus, West Nile virus or Mad Cow Disease (BSE).[5] It is perhaps not coincidental, then, that the theme of chemical attack or contamination aboard a plane can be found in a number of recent movies, including

Executive Decision (1995), which features an impending chemical attack on Washington, D.C., by a group of Arab terrorists who have secreted nerve gas aboard their flight. Then there are the made-for-TV movies *Pandora's Clock* (1996) and *Power Elite* (2002), both of which feature chemical weapons scenarios.

One of the more intriguing flying films that deal with chemical threats is *Killing Moon* (2000), a movie in which a stolen virus has spread among passengers and crew aboard a Boeing 737 on an inter-island flight in Hawaii. Once infected, victims can die within minutes, and of course no one can escape. Fearing a further spread of the contagion, the plane is ordered to fly to California, where a malevolent U.S. government official intends to force it to crash into the mountains to preserve his secret biological warfare research. These and other movie examples serve perhaps to visually embody the particular fears Americans displayed and continue to display in the post-Cold War world, a world in which the threats have changed dramatically as the threat of nuclear war between the Soviets and Americans has faded, while globalization has hastened not only the spread of commerce and travel, but also the spread of chemical or biological threats. First, however, attention to the two major nuclear Cold War films and their successors is in order.

Dr. Strangelove (1964)

Stanley Kubrick's *Dr. Strangelove* sets the bar for ironic looks at the Cold War. In this well-known film, an American nuclear bomber mistakenly drops a nuclear bomb on Russian territory, sparking a nuclear holocaust. As the vehicle carrying the weapon, the B-52 is integral to the film, so a careful consideration of how it is used is

needed. This film falls squarely in the category of Red Scare movies that were common in the 1950s, wedding the fear of nuclear attack from the sky with the fear of alien invasions. Such films as *Invaders from Mars* (1953) and *Invasion of the Body Snatchers* (1956) are two classic examples of this. Coming just as it did after the Cuban Missile Crisis of October 1962, *Dr. Strangelove* was part of a "diverse rebellion" that "grew in response to the menace of American power and to the menace of an American system that had absorbed the debased values associated with the bomb and the cold war."[6]

Though the threat of nuclear war pushed the United States and the Soviets to sign the Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space, and Under Water (Britain also signed), fear of atomic war was hardly gone from the minds of the public. Thus, Kubrick's masterpiece was exquisitely timed to both reflect prevailing moods and to channel those moods in a particular direction. This direction, according to Henriksen, "offered the ultimate denigration and devaluation of the system." Ultimately, this destruction "left only one option in a culture poised at judgment day: a revolutionary commitment to a new system and a new set of human and moral values."[7]

Both the beginning and end of the movie establish and reinforce the black humor that plays front and center throughout the film. Beautiful, soothing, romantic music is paired first with a variety of in-flight shots of a B-52 refueling from a KC-135 tanker and then with multiple clips of nuclear bombs exploding. To introduce the drama, Kubrick first shows a soothing top-down expanse of clouds broken only by black mountaintops (the film is black and white), recalling perhaps a Zen rock garden. A voice-over explains that the Russians are rumored to be working on a "doomsday device" capable of destroying the world. As

the opening credits roll by, with soft music in the background, the B-52 is shown gently dancing with a refueling tanker, introducing the pivotal aircraft in the film.

The first scene after the credits shows us the Strategic Air Command base from which the bombers are launched. We see a parked B-52 illuminated under the glare of lights, followed by the take-off of one of the other bombers. Though starker than the previous images, these realistic views of the bombers still do not imply menace. Even when an insane Gen. Jack D. Ripper seals his base and sends the attack code to his bombers, we still cannot escape the feeling that the entire enterprise is a farce, which is reinforced by such things as a prominently posted sign on base, "Peace is Our Profession."

Words do not match impressions in this movie. For example, as we watch a procession of in-flight shots of the B-52 flying over a range of locations —— mountains, seas, beaches —— we are more in mind of a travel pitch than a message of war. Even when the narrator intones that these planes are on duty "twenty-four hours a day," each with fifty megatons of explosive power, which is more than sixteen times the combined explosive power of all armies and their bombs in shells in World War II, the impression is more of a pitchman extolling the virtues of the latest General Motors car or a new electric drill, not of a world destroyer. In this satire, this lethal bomber is a warm friend.

Kubrick's use of the confines of the plane's interior shows again why the big bomber, cargo plane, or commercial airliner is preferable to the fighter cockpit with its cramped quarters. On the B-52, the two pilots have freedom of motion and can talk and gesture directly to each other, plus they can walk about the plane, as can the others. Thus, for instance, Kubrick adroitly uses the layout of the plane to develop the character of the bomber commander, one Major T.J. "King" Kong. At

first dozing in front of his instruments, he goes down to the electronics bay to double check the "Go" code that his flight has just received, which instructs his squadron to attack their designated bases within Russia.

Confirming the authenticity of the message, Major Kong assumes his real persona: that of an unreconstructed cowboy. Back on the flight deck, he kneels before a beefy safe and extracts a necessary tool for nuclear war: his well-worn cowboy hat. This is accompanied by the patriotic Civil War tune "When Johnny Comes Marching Home Again" and a wry comment by Major Kong: "Well boys, I reckon this is it. Nuclear combat toe-to-toe with the Rooskies." His immature thinking contrasts starkly with the highly advanced technology under his control, a point that Kubrick makes with respect to all the American men throughout the film. Later, for example, when Major Kong opens his survival kit and explains its contents to his men, he says, ". . . one hundred dollars in rubles, one hundred dollars in gold, nine packs of chewing gum, one issue of prophylactics, three lipsticks, three pair of nylon stockings. Shoot, a feller could have a pretty good weekend in Vegas with all that stuff."

The final third of the movie is devoted almost entirely to the drama aboard the B-52 as it faces Russian defenses and races toward a target. While Kubrick had earlier used stock Air Force footage to portray the bomber, giving it at least a realistic image, in this sequence he uses an obvious overlay of a B-52 on backgrounds portraying the wilds of Russian Siberia, making the plane look silly as it jerks about the sky. Despite the gravity of their mission and the seriousness of their own predicament, Major Kong never rises above his adolescent self. With his plane damaged by a missile, he is forced to fly at near ground level between mountains to stay below radar, which prompts him to remark,

"If we was flying any lower, why, we'd need sleigh bells on this thing."

It is Major Kong's final scene, however, that sums up Kubrick's vision of the American strategic bomber. With radios and other crucial equipment disabled by the missile, Major Kong instructs his men to arm the atomic bombs they are carrying. They are successful but find that the bomb bay doors will not open, so Major Kong himself goes into the bomb bay for a look. As viewers, we watch the scene from the rear of the bomb bay, looking up and ahead to see two long, cylindrical thermonuclear bombs. On the cap of the left-side bomb someone has handwritten "HI THERE" and on the other "DEAR JOHN." Kong mounts the former, extending his cowboy persona from thought process and hat to riding a semblance of a maverick horse. When the bomb bay doors open, he becomes a cowboy riding a bucking bronco out of the chute. Appropriately, he grips the bomb securely with one hand as it kicks out from under him, falling toward its intended target. The cowboy astride it dutifully waves his hat above him, giving the extended whoops of a man at a rodeo.[8] As mentioned, this black comedy ends with nuclear destruction, as neither the Americans nor the Russian can stop the doomsday device triggered by the explosion of the B-52's bomb.

Fail-Safe (1964)

This black and white film stars Peter Fonda as the President of the United States, a man now faced with the crushing task of limiting a nuclear exchange that has been caused by a computer malfunction. In this film, rather than the bomber heading toward Russia being the usual B-52, here it is the supersonic B-58 Hustler and it does get through to obliterate Moscow. Only passing shots of this bomber are shown, so it

is more of a peripheral flying film.

By Dawn's Early Light (1990)

When a rogue missile of unknown origin delivers a nuclear warhead to the Soviet Union and the Soviet Union assumes it is an American attack and retaliates, the President of the United States is put in a desperate situation, just as in *Fail-Safe*. Worse, elements of his military see this as an opportunity to ambush a wounded enemy. The flying scenes here are extensive, as two of the main characters are pilots of a B-52 instructed to carry out nuclear attacks on their targets inside Russia. In addition to the B-52, there is an EC-135 Airborne Command Post (ABNCP) and an E-4 (747-700) Airborne Command Post (see chapter three for a description).

Sitting in the White House, the President is vulnerable to a nuclear missile that has been launched toward Andrews Air Force Base. Rather than run, he hunkers down in the situation room in a sub-basement and survives the off-target blast. Soon after, however, he is involved in a helicopter crash and assumed killed, so the E-4 is sent to Baton Rouge to take aboard the new President, the Secretary of the Interior. Meanwhile, B-52s have been scrambled and assigned their targets. Leaving its base in Spokane, Washington, the B-52 feels the effects of the Soviet missile that vaporizes their base. Soon after, three Soviet fighters attack the bomber, launching missiles that are deflected by counter-measures. One fighter is destroyed by fire from the rear-mounted canons on the B-52, but it takes a nuclear detonation of one of the bombs aboard the B-52 to eliminate the other two fighters.

Reactions from crewmembers aboard the B-52 to news of a nuclear warrange from professional and stoic to disbelief and denial. The pilot does not question his orders and sees this as a job to be done, but the

co-pilot is reluctant to be part of any nuclear escalation. Below deck, one of the radar men barely holds on to his senses, drifting in and out of sanity as he thinks about his family back on base. When the pilot aborts the bombing mission, this radar man cracks and tries to kill the pilot. This failing, he straps himself into an ejection seat and pulls the handle, jettisoning himself up through the roof. The decompression sucks two remaining crewmembers out the hole, leaving only the two pilots.

Most of the action continues in the air as the warmongering new President aboard the E-4 747 seeks to launch an all-out assault on the Soviets, while the commander of the EC-135 refuses to carry out such orders. When it is discovered that the real President is still alive and has given orders to stop the nuclear attack, the only option is to down the E-4. With no offensive weapons on board, the sole option is for the EC-135 to ram the larger 747. Given their similar speeds, this is a longshot, but the pilots aboard the 747 realize the fate of the world is in their hands, so they allow the pursuing jet to catch them. Banking lazily across a sun reddened by nuclear fallout, the 747 is an easy target for the EC-135, which hits broadside, right on the "C" of THE UNITED STATES OF AMERICA. The nuclear exchange comes to an end. To signal this new hope for normal life, the final scene shows the B-52 flowing low over the ocean into a beautiful sunrise, whence the pilot states, "Welcome to tomorrow."

Fail Safe (2000)

This gripping remake of the 1964 *Fail-Safe* marks the return to a live feature-length show by CBS television, something it has not done in thirty-nine years. Shot in black and white, it begins with a routine

visit by congressmen to a military command center six stories below the plains of Omaha, Nebraska. This setting is familiar to viewers from the myriad portrayals of NORAD, the Air Force center buried within the Cheyenne Mountains. Set in a cavernous underground arena, the room is dominated by a screen that fills the front wall. This screen monitors real-time deployments of American and Soviet equipment.

On the day of this visit, all is routine, including the appearance of an unidentified flying object over Canada. Such events are common and are handled according to protocol. As the United States has bombers on patrol around the clock, there is no fear of being caught off guard. In Washington, a scene parallel to the Omaha action is developing, one that provides background to the strategies of waging nuclear war versus maintaining peace based on the concept of "mutually assured destruction." Official American policy is that neither the Soviet Union nor the United States can contemplate launching a nuclear war since it would mean the destruction of their own civilization along with the enemy's. At the East Coast meeting, however, opposing viewpoints are heard.

The nuclear fate mankind faces is foreshadowed in an early scene in *Fail Safe.* George Clooney, as bomber commander Grady, takes a call from his son in New York. Having just lost his mother to cancer, the son is vulnerable but coping. When he informs his father that the chameleon he has been keeping as a pet has died, the father asks how. Because the son had forgotten to close the shade in his bedroom, the captive chameleon was cooked to death by the sun. The analogy to the position of captive citizens of America and the Soviet Union is obvious. With no way to flee a surprise nuclear attack, civilians would just as surely cook from the rays emitted by thermonuclear weapons as the

chameleon had cooked from the rays from the sun. This theme is reinforced in a later scene when General Black (Harvey Kietel), an opponent of nuclear war, cries out in frustration, "This world is no longer man's theater. Man's been made into a spectator." Taking this analogy one step further, this family of father, son, and late mother could be a metaphor for the state of post-World War II Western civilization. Having suffered during the war (the mother represents the sacrifice), father and son struggle to resume life, with the son returning to "normal" activities, which is represented by baseball.

Actual footage of aircraft in this movie, like its predecessor, amounts to only seconds, although some of the drama does take place in the cockpit of the bomber. When Grady's flight is cleared for take-off, there is a dark, grainy shot of a B-58 Hustler taking off. Later, when American fighters attempt to shoot down errant bombers, a fighter that has run out of fuel is briefly shown diving into the Arctic Sea. Finally, there is one shot of a fighter releasing a load of air-to-air missiles. Cockpit-based scenes, however, are ample, as Grady and his crew face the task ahead of them.

Given the role of nuclear weapons during the long Cold War, it hardly comes as a surprise that they have played a central role in so many flying films. They were, however, not the only weapons of mass destruction during the last fifty years. While clothed in much more secrecy, chemical and biological weapons were also part of the arsenals maintained by parties to the Cold War. Add to that the growing threat of deliberate or inadvertent use of such weapons and a new menace confronts humanity. Thus, the discussion moves to airborne threats that are chemical or biological.

Chemical and Biological Threats

In the long history of Hollywood's infatuation with the flying film, we can trace the rise and fall of threats facing fliers and those below, beginning with war films that were inspired by the various wars America was involved in at the time. In addition to these were non-war related films. Not surprisingly, when aviation — and later civil aviation — was in its infancy, the threats posed by the elements acting on primitive machines and men with little knowledge of their surroundings beyond what they could see with their own eyes were the focus of many films. As technology improved, these themes gave way to more urgent fears, including the threat of aerial atomic war just discussed.

Gradually, however, we see the emergence of flying films that posit a sound flying machine equipped with all the instruments needed to cope with unpredictable weather but now threatened by something wholly different: a poisonous substance aboard that may infect and kill all confined to the airborne craft or even tens of thousands of people down below. Whether this threat is chemical or biological in nature makes little difference; the point is that as long as the aircraft is in flight, those aboard are prisoners of the agents seeking their destruction.

Two incipient examples of this threat can be found in *Zero Hour* (1957), a film developed from an Arthur Hailey novel. When the crew becomes incapacitated by food poisoning, the call goes out to the passengers, "Is there anyone aboard who can fly this plane?" A pilot traumatized in the Battle of Britain must take over, saving the airplane and defeating his own demons in the process.[9] Later, in *Terror in the Sky* (1971), the plot is re-enacted, although this time the traumatized

hero is a former Vietnam helicopter pilot suffering post-traumatic stress syndrome. In any case, both films introduce the device of physical incapacitation brought on by a poisonous substance. The closed setting of an airliner makes this an ideal stage for such a drama.[10]

Outbreak (1995)

The spate of "mayday" films seen in the 1970s did not rely upon the threat of chemical or biological threats aboard an aircraft. For whatever reason, this theme came into its own two decades later, in the middle of the 1990s, beginning, perhaps, with *Outbreak*, the fast-paced action drama starring Dustin Hoffman as a military scientist who must save the western portion of the United States from biological infection, and followed closely by a surprisingly accomplished made-for-TV movie, *Pandora's Clock*. *Outbreak* does not fit perfectly in the category of flying film because the viral threat at the center of the movie spreads on the surface of the earth, but aircraft do play prominent roles, and the concept of a globally spreading outbreak acts to prepare a wide audience for aircraft-based thrillers to follow.

Rather than posit a direct connection between viral infection and the airplane, *Outbreak* yokes the two together in a different way. Infection spreads on the ground, from person to person, or monkey to person, as it originally did in Africa. The aerial fear factor in this film, however, comes from the effort to stop the virus dead in its tracks: the United States military covertly obliterates infected areas and the people living there by dropping a conventional but powerful bomb from a cargo plane. The virus on the ground just as surely, then, brings death from above in this flick, as we see in the opening scene. Some-

where in the African jungle, soldiers are in various stages of illness and no remedy seems to be in sight. Then, however, the African doctor's eyes light up when he sees the approach of a Western military plane, a sight he mistakes for salvation. He soon realizes his mistake when the plane releases an enormous cask, greatly slowed in its descent by a parachute. Seconds before his own demise, it dawns on him that this plane has brought total destruction, which we in fact see as the bomb incinerates ground zero.

In *Outbreak*, Dustin Hoffman plays Colonel Sam Daniels, an eccentric but elite scientist who agrees to save society from Army General McClintock (Donald Sutherland), a ruthless military man bent on controlling America through biological warfare. McClintock has concocted a secret biological warfare scheme and is behind a plan to blow up a small American town to prevent this outbreak from spreading, and it is Daniels' mission to prevent the imminent destruction of the town at the hands of the corrupt general. How he accomplishes this is tied directly to flight, by flying a helicopter straight at the airplane preparing to drop the bomb. At the last moment, the bomber veers off course, and the bomb is dropped harmlessly into the sea.

"We're In This Together, Folks": Pandora's Clock (1996)

This TV movie was adapted from John Nance's novel of the same name and features a viral threat similar to that seen in real life with respect to SARS. In *Pandora's Clock*, the German government has been experimenting with deadly biological agents, one of which has escaped the bounds of the laboratory when a researcher working there goes mad and flees the institute at which he was working. Authorities then have reason to believe that an American visitor to Germany has

been infected and has taken the contagious virus with him onboard a fully loaded 747. When this passenger collapses after showing symptoms of having contracted the virus, governments around the world are alerted, and first Britain, then Germany, deny permission for Quantum Flight 66 to land, for reasons such as the top German minister explains to his boss: "Sir, jetliners re-circulate their cabin air, and despite sophisticated filters, can spread any virus throughout the aircraft in a matter of minutes. We have to assume that everyone onboard has been exposed."

As with real-life viral infections such as AIDS or SARS, there is a mixture of rational and irrational reaction to the threat of it spreading. Onboard, Captain Holland always represents the rational side of the argument, never losing his ability to think calmly and clearly. Among his passengers, however, it is a different story, and their lack of information makes some of them suspect the worst. An even more dire development is that American authorities on the ground seem to share the more pessimistic view of the situation. As one top agent informs CIA Director Roth, "John, this thing might make Ebola Zaire seem like the common cold." As a result, the plane and passengers are quarantined upon landing at a desolate base in Kevlavik, Iceland, where they are met by American troops in full chemical weapons protection gear and given orders to absolutely not deplane, upon pain of death.

As the hours go by and the plane remains sealed on the tarmac, an ongoing battle between factions in Washington ensues, leaving the captain with very few of the facts. Back in the cabin, a tall man who had been complaining bitterly for some time decides to take action. When the petite flight attendant tries to stop him, he brusquely assaults her and then turns his anger on the captain, whereupon the captain knocks him to the floor and gives him a warning. In the post-9/11

world, such behavior would no doubt elicit more than a warning. In any case, immediately after this, one distraught woman cannot bear the wait and the unknown any longer, so she bolts off the plane and heads for the perimeter guarded by armed soldiers. No longer fully in control of her senses, she runs through the barrier, whereupon she is cut down in a hail of bullets, a stern warning to the crew and other passengers that the powers that be are taking this viral threat very seriously.

Just how serious this is becomes apparent when CIA Director Roth counsels the President about the risks involved. "I fully expect everyone on that airplane to be dead within 48 hours. And if that happens, we must burn the plane with all the bodies. If we mishandle this and the virus enters the general population, it could kill half the humans on Earth. . . . This is the biological equivalent of thermonuclear war." His next recommendation is even more shocking. To completely incinerate the plane, the United States should use "a low yield nuclear warhead to ensure that no biological component could survive." Chillingly, the President assents.

In a plot twist that bears an eerie resemblance to the war President Bush launched on Afghanistan in response to their harboring of Al Quida, the group thought responsible for the September 11 attacks, John Roth, Director of the CIA in *Pandora's Clock*, puts in motion a plan to have what appears to be an Arab jet deliberately and ruthlessly shoot down an unarmed American airliner over the sea, thereby earning the wrath of the American people and allowing war to be unleashed against the terrorists. This jet approaches the lumbering 747 and unleashes an air-to-air missile, which rips the number four engine from the right wing. "Mayday, mayday, mayday," Captain Holland calmly but urgently reports. "Quantum 66 has been hit by a missile, right

wing badly damaged. Aircraft uncontrollable. We ARE going down."

Drawing on his military experience in Iraq, he takes evasive action, hoping to make his attacker think they have crashed. Diving toward the sea at a frightening speed, he only pulls out of the dive to fly level over the ocean at 100 feet.[11] The ruse works and he safely lands at Tenerife, Canary Islands, in the middle of the Atlantic. Refueled, they again take off again, this time headed for the relative safety of Barbados or the Virgin Islands, which, because of their proximity to Miami and instant mass media, will save them. Meanwhile, the "Arab" attacker moves in for another shot, this time taking the number three engine, leaving only two engines on the left wing. Heroically, Captain Holland manages to land on Ascension Island, having recalled the presence there of a long emergency runway for the Space Shuttle.[12]

In a final showdown, he must fend off the last efforts of the "Arab" to kill them. When his third and final missile just misses the plane, the CIA assassin must land to finish off his prey. Captain Holland, however, will not allow this and boldly positions his jumbo jet in the middle of the runway, refusing to give way to the oncoming corporate jet. Realizing Holland is not bluffing, the assassin pulls up at the last minute, but it is too late and he crashes and burns off the side of the runway. Captain Holland orders an evacuation, and all passengers and crew safely exit the plane by going down the yellow emergency chutes.

The drama, however, is not quite finished. Back in Washington, the President is understandably angry when he realizes how he has been manipulated by his CIA director into almost killing over 250 innocent Americans. Roth, though, is a fighter, and he bluntly blackmails the President by telling him that he is prepared to reveal the President's intention to use a nuclear weapon against his own citizens. In a final

twist, we see Captain Holland and Rachel, a passenger from the flight, together on a beautiful island near Seattle. They are engaged, and CIA employee Dr. Sanders has come to congratulate them. As the two women speak, Holland takes a phone call; one of the flight attendants has just died 48 hours after displaying symptoms of the virus. The movie ends.

Executive Decision (1996)

Executive Decision, which features an in-flight transfer of rescuers to a hijacked 747, has as part of its plot an impending chemical attack on Washington, D.C., and the entire Eastern Seaboard. A group of Arab terrorists has secreted DZ-5, a nerve agent, aboard their flight, and the leader of the group plans to release this deadly cargo whether his demands are met or not. *Executive Decision* takes the same license with different 747 models as many films do. To wit, they have possibly employed a 200 series model, identifiable by its normal upper deck and lack of winglets, yet the cockpit crew consists of only two pilots, which is found only on the 747-700.

The DZ-5 is attached to a bomb in the cargo hold of the plane, and the lead hijacker holds a trigger that can detonate the bomb upon his command. It is up to the commandos to defuse the bomb and disarm the hijackers. They do so in suitably dramatic ways, and the Eastern Seaboard is saved. With both pilots dead, a scientist from the rescue team lands the 747 "safely" after crashing into rows of small airplanes at an airport hardly equipped to accommodate a jumbo jet.

Strategic Command (1997)

A direct imitation of *Executive Decision* is the TV-movie *Strategic Command,* which also features the specter of deadly nerve agents dispersed from a 747, killing hundreds of thousands, if not millions, of Americans below. The threat is underscored in the opening scene of the movie as a band of Euro-terrorists invades a high-security government research facility. In short order, they have gained access to a chamber containing highly toxic "Bromex 365," a nerve agent that can kill in seconds. This deadly ability is demonstrated when two of the terrorists mishandle a packet containing the Bromex. As soon as it breaks open on the floor, the men near it go into spasm and vomit up white mucus seconds before they succumb. Despite this setback, the gang manages to steal a large quantity of the chemical and gets away.

Soon, they are aboard a 747 ferrying the Vice President of the United States from Los Angeles to Washington, D.C. From the first glance, it is obvious that the 747 used in this movie is the first jumbo flown by Boeing back on February 9, 1969, meaning the filmmakers simply used stock Boeing footage for shots of the 747-700 model (identifiable by its three windows per side on the upper deck).[13] In fact, the claimed LAX landing scene is actually Boeing's 747 production site in Everett, Washington, built in the late 1960s adjacent to Paine Field. Planes waiting for customer delivery can be seen lined up near the paint facility.

As with *Executive Decision, Strategic Command* follows a scenario in which the terrorists have rigged a device capable of disbursing the lethal chemical agent over a heavily populated area, and the only counter to this is to smuggle commandos aboard to neutralize the threat. As with *Executive Decision,* only a portion of the commandos

make it aboard, making their mission all the harder. Ultimately, the bomb disposal expert is able to defuse the chemical device, and the other two men kill the terrorists and safely land the plane.

Nowhere to Land (2000)

This thriller is set aboard the Oceanic Air 747 used to film the blockbuster *Executive Decision* in 1996, though here the circumstances are quite different. No doubt for the same reasons as with *Executive Decision*, the plane viewed from the exterior is clearly a 200 series model, with its normal upper deck, yet the interior is configured as a newer 400 series, including an inaccurate 2-man flight deck. The storyline here involves a bitter ex-husband stalking his former wife, who is now happily remarried. The ex-husband is a chemical engineer and "he can build anything," in this case a potent chemical bomb containing the agent SX-19, which he has smuggled aboard his wife's flight from Sydney to Los Angeles. A bomb expert in L.A. says of the chemical, "A tiny, tiny amount, a drop smaller than a pinhead, will kill you. If you breathe it, it'll kill you. If you get it on your skin, it'll kill you." Such is the risk they are facing.

The authorities manage to connect the ex-husband by phone with his airborne wife, giving the police time to trace the call. Though they track him down to a bar in Sydney, he escapes and leads them on a chase on the rooftops of buildings. Unfortunately, he falls from one of the roofs without revealing the location of the chemical bomb. Back onboard Flight 762, the crew finds the package containing the bomb, and the captain goes back to see if he can disarm it. He appears to succeed, but the presence of a second trigger automatically arms the bomb, and it is only the selfless action of another pilot aboard that

saves the crew and passengers. *Nowhere to Land*'s use of the confined spaces of an airliner in flight high above the ocean again shows how the airplane can serve as a dramatic setting for action and suspense. The following movie is no different.

Killing Moon (2000)

Fear of chemicals, germs, and viruses is familiar to all societies, since humans are noticeably susceptible to them. Thus, it is no mystery why these threats to human well-being have been incorporated into modern film. A major threat that began to emerge in the late 1980s was the HIV virus that caused AIDS, so it is not surprising that the AIDS virus was symbolically featured in at least one movie.

Killing Moon begins at the airport in Molokai, Hawaii, where two men are preparing to board an inter-island flight. One of them feels weak, begins to bleed from his nose and eyes, and collapses. Within minutes he has lost consciousness and dies. His partner conceals the body and boards the plane. Once aloft, however, this passenger begins to show the same symptoms that had so recently killed his accomplice. Fortunately, there is a doctor aboard, Dr. Yamada, a coroner. Unfortunately, the doctor cannot save the dying passenger, whose unusual death naturally arouses the concerns of crew and fellow passengers. Among the assortment of typical passengers is one Lieutenant Dave Thatcher, a naval intelligence officer. Lt. Thatcher, along with Dr. Yamada, assumes control of the crisis, which is just as well, since the captain has become sick in the same way as the expired passenger. The threat here, of course, is biological. Both Dr. Yamada and Lt. Thatcher agree that some virus is attacking the internal organs of the body, and the closed setting of the plane makes all passengers and crew

potentially susceptible.

Lt. Thatcher, for as yet unexplained reasons, knows a lot about viruses and death. In addition, he is evasive about his background, leading Dr. Yamada and viewers to suspect him of playing a part in the contagion. Given the common theme in Hollywood film of rogue military men,[14] it is not hard to draw the conclusion that Lt. Thatcher has either deliberately or inadvertently introduced the virus.

Because the consensus is that the death of the passenger was caused by a contagious virus, the plane is diverted from its Honolulu destination and vectored toward Glen Ord Air Force Base north of Los Angeles (that an inter-island 737 would carry such extra fuel is a long stretch). The Center for Disease Control (CDC) and the (fictional) National Security Commission (NSC) are alerted and set up a quarantine center at a secret base in California. Frank Conroy (Daniel Baldwin), who is running the operation for the NSC, is from the start portrayed as sinister, overbearing, and rude. For example, when he finds out that the virus aboard the plane may be a rare chemical weapon, he relishes the opportunity to acquire it for his project and this is his only interest in landing the plane safely. Back on the plane, the situation deteriorates. The captain has taken ill and soon dies. The co-pilot also shows signs of weakening, so Dr. Yamada asks the passengers if any of them has ever flown an airplane. A young woman offers that she has, but only a single-engine Cessna. Still, that is more than other passengers can say, so she is given a crash course in flying a Boeing 737 by the dying co-pilot and assumes her position in the captain's seat.

Back in the cabin, tensions rise as a hemophiliac has died from the mysterious disease. Dr. Yamada and Lt. Thatcher surmise that the medicine intended for a hemophiliac, Taxinol, would protect a healthy

person from the virus, so they retrieve extra vials of it from the dead man's bag in the cargo hold. Because there are not enough vials for all the passengers, only the sick will automatically receive treatment; the rest must draw straws.

The subtext to this segment of the drama may be a commentary on American society's homophobia, particularly in relation to AIDS viewed as a gay man's disease. The text shows how a male boss distances himself from a female employee who now shows signs of having caught the virus, but the underlying message may be otherwise. The boss is an obnoxious businessman whose tirades against other passengers and a flight attendant are ongoing. He represents a conventional American whose fear of AIDS — and of gays — is revealed when the vials of antidote become available. He has a chance to draw a long straw and get a vial for himself, but unfortunately he draws a short straw. Not willing to leave his life in the hands of fate, he crassly badgers a passenger who has a vial to sell it. The bidding price soon rises to $100,000, then $250,000. In the end, however, the passenger donates the medicine to someone else, making the point that showing compassion in the face of the AIDS virus is the proper course to take.

Lt. Thatcher — Dave — remains a mystery character. His military bearing and knowledge of germ warfare suggest some degree of complicity in this biological crisis, leading Dr. Yamada to directly challenge him to reveal why he knows so much. The naval intelligence officer is elusive and escapes to one of the galleys, where a conversation ensues that clears up the matter of his background. That discussion, however, will have to wait until chapter nine.

Mad Max: Aviation and Dystopia

One final pairing of nuclear holocaust and film can be found in the second and third films of the *Mad Max* series of the 1980s, but that story is more allegorical than straightforward, so I will discuss it here in the final section of this chapter. In some ways, it speaks best for our age's fear of airborne nuclear war, thereby offering a fitting conclusion to this chapter. By way of introduction, another pair of films from a series a decade earlier will inform the discussion.

The nightmare of a post-nuclear-holocaust America is depicted in *Planet of the Apes* (1968), where human stupidity has resulted in the nuclear destruction of humanity as we know it and replaced it with a world ruled by apes. Thus the apes' dictum against man: "Beware the beast-man. Alone among God's primates, he will murder for sport. . . . He will make a desert of your lands." This movie's sequel, *Beneath the Planet of the Apes* (1970), paints an even bleaker picture of humanity's prospects in the nuclear age. Here, a human remnant maintains a "doomsday bomb," giving them the option of destroying the apes' world —— which they do.[15]

In comparison, *Mad Max* offers a narrative of guarded hope, almost desperate hope, for Max himself, ostensibly a warrior, is in fact a savior, and his travails hold out the possibility of redemption for a race that has destroyed itself with nuclear weapons.

Mad Max (1979)

In 1979 an Australian film caught the attention of world viewers, particularly in the United States. A story about a post-nuclear-holocaust world and the breakdown of civilization, this movie

introduced a young Mel Gibson to moviegoers. The title of this movie, *Mad Max*, played on the two meanings of "mad": crazy (as his world had become) and angry (as he looked for revenge for the savage murder of his wife and young son). Though this first film of the *Mad Max* trilogy was a thoroughly Australian affair, the second, *Mad Max: The Road Warrior* (1981) had many more generically Euro-American elements. For example, the characters inhabiting the isolated fort wear vaguely Roman tunics and resemble Scandinavians.

By the third film in the trilogy, Gibson was already becoming a cross-over Hollywood actor, having starred with Anthony Hopkins in the American production *The Bounty* (1984). Another factor tying Gibson to America is the fact that he was born in America and lived there until he was about twelve, at which time his father took their large family to Australia. Since Gibson's arrival in Hollywood, he has again become American, a fact that may help audiences conceive of him and his movies as American sagas.[16] In addition, by the time of the last *Mad Max* movie in 1985, Gibson co-starred with American pop diva, Tina Turner.

Mad Max 2: The Road Warrior (1981)

The story and scenes in this film are worth exploring, for they inform and give birth to the more epic *Beyond Thunderdome*. Set in a post-apocalyptic world, a dystopia in the wild, it is fitting that the aircraft here is ridiculous and almost powerless, the image of the "anti-plane." Actually, it is a gyrocopter rather than an airplane, but what else is to be expected in a world where all normal things have either vanished or been grotesquely transformed? Though his role is subordinate to the Road Warrior's, the Gyro Captain's stature grows,

from that of a roadside bandit to that of an ally in the fight against the mutants outside the gates of the compound protecting the remnants of civilization.

Twice the Gyro Captain saves Max, first when Max opts to continue his lone sojourn and his car is ambushed and crashes, and again at the end, when Max is used as a decoy and his truck crashes on the side of the highway, allowing the members of the fort to escape in the other direction carrying their precious fuel. With his knowledge of technology, the Gyro Captain is in the best position to lead the remnant back to industrial civilization, as the closing narrative of the film notes. The youngest member of the tribe, speaking from decades in the future, intones their saga:

> And so began the journey north to safety, to our place in the sun. Among us we found a new leader, the man who came from the sky, the Gyro Captain. And just as Pappagallo had planned, we traveled far beyond the reach of men or machines. The juice, the precious juice, was hidden in the vehicles.
>
> As for me, I grew to manhood. In the fullness of time I became the leader, the chief of the great Northern Tribe. And the Road Warrior? That was the last we ever saw of him. He lives now only in my memories.

Mad Max Beyond Thunderdome (1985)

In the third episode of the *Mad Max* series, the gyrocopter is replaced by an airplane (Bruce Spence, the Gyro Captain, is now known as Jedediah the Pilot), and salvation from the sky is even more pro-

nounced. The film opens with Max riding his camel-drawn wagon across the desert, when suddenly the airplane swoops down on the unsuspecting Max to knock him off his perch and steal his goods. The view from the attacking plane looks as it would to a higher power from space zooming in on the Earth, with features of the land growing each moment until we see a trail of dust kicked up by the camels and wagon. In search of what is his, Max marches into the unsavory gathering place known as Bartertown. The film takes this opportunity to introduce us to this third vision of Max's post-apocalyptic world, when, for example, he is accosted by a water peddler whose liquid ware consists of highly radioactive H_2O. Surrounded by a motley crew of nuclear holocaust survivors, Max stands out as the sole example of normalcy from the now-vanished world.

Later, banished to the "gulag," in this case the barren desert, Max succumbs to the incessant winds and lack of water, only to be found by the mother-figure of a tribe of feral children (recalling the likable feral child from MM2) who have managed to survive in a hidden oasis tucked into a great crevice in the desert. The lives of these children are intimately linked to the airplane, which the film beautifully develops at its own pace.

The young mother-figure drags Max across the dunes to her oasis, where Max makes his slow recovery. Once awake, he is confronted by a swarm of children clad in animal furs, Caucasian faces obscured with mud and other forms of primitive make-up. Very soon we learn the reason for their existence in such an improbable place: fleeing their crumbling world, their plane has crash-landed, stranding them in the desert. To tell this tale, distant memories of a Christian liturgy are replaced by a tale more fitting and immediate for this new tribe. Melded with the lost world of the silver screen, television, and video,

this new litany describes the plight of this band of survivors.

These people believe Max is Captain Walker, the pilot of the plane in their religion. When he challenges them, Max is given a simple hand-held slide viewer that features a Boeing 747 flying over Sydney Harbor. The next slide is of a pilot that does bear a marked resemblance to Max, which explains the belief of the children. Then, prompted by a fortuitous gust of wind, the entire band decamps from the oasis and leads Max to what they believe will be their return ship to "Never Never Land." The music here is a co-conspirator to our belief that Max and the airplane will be their deliverance, and indeed the camera shots support this heroic crescendo, which climaxes in the children standing along the horizontal stabilizer of the jumbo jet to which they have returned. The modern viewer, however, knows more of the mechanics of modern flight than these benighted children, so when we finally see the full scene, it is with a great sigh of disappointment that we see, yes, the jumbo jet, but only a carcass of what had once been a mighty bird of the air, reduced now to a sandy grave in the desert. There is no hope at all that this plane will deliver the children or anyone else to hoped-for sanctuary. Taken as a whole, this long segment serves to amplify both the sense of loss after the nuclear holocaust and the impossible distance back to revisiting, let alone rebuilding, that lost industrial world.

This segment serves the film's narrative in another way; though this behemoth in the desert will never fly again, the children maintain their dreams of flight. Toward that end, they accompany Max back to Bartertown and eventually gain access to a working airplane, though hardly the airliner of their distant memories. Instead, they discover Jedediah the Pilot's quirky little single-engine plane, a contraption as laughable as the Captain's original gyrocopter. What is shown here

again, of course, is the airplane as anti-plane, which is fitting for a world in which values and settings have been turned upside down.

Echoing the earlier hope that a plane would deliver them from exile, director Miller crafts a heroic scene where good will triumph over evil. Here, Tina Turner leads her wild band of barbarians after Max and the children, roaring across the desert floor in the *Mad Max* trade-mark post-civilizational roadsters, some powered by petrol, others by steam. To escape them, Max has loaded all the children into the small plane and commands Jedediah the Pilot to take off. He tries, but the plane is overloaded, so Max dumps from nets on the wings all the relics of "civilization" —— pots, pans, suitcases, etc. Still heavy, the plane makes headway, leading us to believe that they will escape the coming onslaught. Suddenly, however, the Pilot brings the plane to an abrupt halt and wheels it about, for they had been about to go over a cliff. With too little room to take off toward the attackers, all appears lost.

For Max this is unacceptable, and he makes a sacrifice to save the children. As a professional police driver in his past life, he again assumes the role, this time taking control of a machine captured from Turner's forces. As the plane now accelerates toward the attackers, Max comes out in front to clear a path, jumping clear of his vehicle at the last moment as it plows into an oncoming car. Thus clear, the plane and its band of children ascend above the chaos, though hardly toward a better fate. In keeping with the relentlessly downbeat message of what a post-apocalyptic world is like, the film takes the small craft back to the great harbor that once graced a teeming Sydney metropolis. Now it is reduced to shards of steel and broken buildings, nearly blocked from sight by the relentless sandstorms that threaten to erase any memory that a civilization had once existed on the edge of

the desert continent of Australia.

Buried in this movie, though overshadowed by the text of a world destroyed by nuclear war, is a narrative of rebirth of the human race. Despite the desolation of the city, they land and take up residence there, and new children are born and acculturated into the odd tribe Max has saved. Buried in this ruined city is hope, hope that can only spring from the human spirit, as the mother-figure narrates at the film's close:

> This you knows, the years travel fast. And time after time I done the tell. But this ain't one body's tell, it's the tell of us all. And you've gotta listen and member because what you hears today, you gotta tell the newborn tomorrow. I'se looking behind us now, into history back. I sees those of us that's got the luck and started the road for home. And I members how it led us here and how we was half pooked as we seen what there once was. One look and we knewed we'd got it straight. Those what had gone before had the knowin' and the doin' of things beyond our reckoning, even beyond our dreaming. Time counts and keeps counting, and we knows now finding the trick of what's been and lost ain't no easy ride. But that's our track and we've gotta travel it. And there ain't nobody knows where it's gonna lead. Still and all, every night we does the tell so that we members who we was and where we came from. But most of all we members the man who finded us, him that came to salvage. And we lights the city, not just for him but for all of them that are still out there. Cause we knows there'll come a night when they sees the distance light and they'll be comin' home.

Notes

1. I have relied most extensively on Hopkins's excellent illustrated *Boeing KC-135 Stratotanker*. For extensive references on aerial refueling, see his notes on sources, 207-708.
2. Specifically, 92 B-29s were converted into DB-29M tankers, while an assortment of other B-29s were converted into a total of 175 receivers. Hopkins, *Boeing KC-135 Stratotanker*, 18. Initially, the B-29, known for its role toward the end of the war in the Pacific, including the dropping of two nuclear bombs on Japan, was adapted for this role. (www.geocities.com/CapeCanaveral has pertinent data: 92 B-29s converted to KB-29M with hoses; 116 B-29s converted to KB-29P which had flying boom.) This propeller-driven plane was succeeded by the Boeing KC-97, another straight-wing plane driven by propeller power (at 814 copies, it was the most prolifically produced American tanker).
3. The first combat use of aerial refueling occurred over Korea when a KB-29M refueled four American fighter jets. The date was July 6, 1951. The Air Force's decision to keep both systems for years after created havoc with America's and its European allies' plans for capability (Hopkins, *Boeing KC-135 Stratotanker*, 20).
4. At the end of hostilities in the Pacific, 49 "Silverplate" B-29s were capable of carrying the 10,000 lb. atomic bomb; one year later that figure had dropped to 23. In addition, the limited range of this bomber meant forward stationing on foreign soil was required, and this resulted in predictable political problems. A more reliable way of projecting nuclear deterrent force drove SAC during these years (Hopkins, *Boeing KC-135 Stratotanker,* 12).
5. Hopkins, *Boeing KC-135 Stratotanker*, 18-89.
6. For the entire story of the B-36, see Dennis R. Jenkins's magisterial account of the B-36, *Magnesium Overcast: The Story of the Convair B-36* (North Branch, MN: Specialty Press, 2001-1002). The discussion referenced here can be found in detail in chapters 1 and 3.
7. Jenkins, *Magnesium Overcast*, 161.
8. The website http://www.aviation-central.com/1946-6970/afb20.htm

notes that "The B-47 was the first true modern bomber to fill the ranks of General Curtiss LeMay's new Strategic Air Command. With long range, high altitude capabilities, the "Stratojet" became the backbone of SAC in the early 1950s. As fast as many early jet fighters, with sophisticated defenses and an operational altitude of up to 40,000 feet, the B-47 was a strong deterrent in the early days of the nuclear standoff. The Air Force accepted a grand total of 2,041 B-47s, which included bombers, reconnaissance aircraft, combat crew trainers, drones, and others."

9. See http://www.aviation-central.com/1946-6970/afc30.htm.

10. The authors at http://www.aviation-central.com/1946-6970/afc30.htm write of the KC-97: "When acting as a transport, the C-97 could carry 68,500 pounds of cargo or up to 96 fully-equipped troops. In the tanker role, the KC-97 was capable of off-loading 15,000 gallons of fuel. . . ."

11. Jan Tegler, *B-47 Stratojet: Boeing's Brilliant Bomber* (New York: McGraw-Hill, 2000), 98. One fascinating tidbit about this refueling pair noted by the author is the fact that the B-47 could operate on regular 115/145 avgas as well as the normal JP-4 jet fuel. Should the need arise, the KC-97 could pump its own internal load of avgas straight on top of the bomber's jet fuel. Though mildly less efficient, the avgas burned safely in the bombers jet engines (97).

12. The military version that resulted from the Dash 80 program was known as the C-135 series, encompassing both cargo and tanker versions, neither of which is really a 707. One obvious visual difference is that the C-135 series has no passenger windows. In addition, the crew entry point is a small hatch forward of the left side of the nose gear. See Don Logan, *The Boeing C-135 Series: Stratotanker, Stratolifter, and Other Variants,* 10-02). It was originally designated the 717, a designation that was never adopted until Boeing acquired McDonnell Douglas in 1995 and used that number for the DC-9/MD-80 series of planes (Hopkins, *Boeing KC-135 Stratotanker,* 26.

13. Logan, *The Boeing C-135 Series,* 11. Logan's calculations about aircraft losses are a bit puzzling. On page 11 he states that "75 have been lost due to accidents," which includes *all* variants of the C-135, including twelve built for the French Air Force. Yet in his appendix on aircraft

losses, he lists only 73 hull losses (251-152).

14. Logan, *The Boeing C-135 Series,* 251. Tragically, a sister ship thousands of miles away in Okinawa, Japan, crashed on takeoff two days later, killing the crew there also.
15. Hopkins, *Boeing KC-135 Stratotanker,* 187.
16. See www.brook.edu/dybdocroot/fp/projects/nucwcost/box7-7.htm. Note that this site incorrectly gives the date as January 16, which I have amended.
17. Tad Szulc, *Bombs of Palomares* (New York: Viking Press, 1967). In addition to these two inflight-collisions, two other KC-135s were lost; one with a B-47 and another with an F-105. There have also been cases where KC-135s have been involved in mid-air collisions while refueling and have not crashed, though the receiver has. A Lockheed SR-71, for example, was lost in this way (Hopkins, *Boeing KC-135 Stratotanker,* 50).
18. See Logan, *The Boeing C-135 Series*, 51-15.
19. Arthur A. C. Steffen, *McDonnell Douglas DC-10 and KC-10 Extender: Wide-Body Workhorses* (Leicester, England: Midland Publishing Ltd., 1998), 104.
20. Detailed information about the next likely tanker can be found at: www.airforce-technology.com/projects/kc767/, which notes:

    > The Boeing 767 tanker transport aircraft, designated KC-767 for the US Air Force, is a high performance version of the 767-700ER twin aisle jetliner equipped for fully integrated tanker operations. It is fitted with either boom and receptacle refueling, hose and drogue refueling or both. The commercial 767 first entered service in 1982 and more than 880 aircraft have been delivered. The cabin of the tanker can be configured for passenger transport, as a freighter, convertible (passenger or freighter) or Combi (passenger and freighter).
    >
    > In the 1980s and in 1990/91 Boeing conducted studies directed towards the identification of an appropriate successor to the KC-135 Stratotanker, a derivative of the Boeing 707 jetliner. In 1991 the 707 production line was finally closed and studies confirmed that the long range twin engine 767 was a strong candidate to replace the KC-135.

In May 2003, the US Air Force announced that it would lease 100 tankers to replace the oldest of its KC-135 tankers, subject to congressional approval.

Further information on the KC-767 can be found at Boeing's official website for the project, www.boeing.com/news/releases/2003/q3/nr_030717b.html.

21. Barbara Creed, "Film and Psychoanalysis," in *Film Studies*, 75.
22. Of course this assumption was challenged and largely overturned by subsequent theories, particularly those arising out of feminism and film studies. That issue will be addressed in Chapter nine, "Race and Gender."
23. Henriksen, *Dr. Strangelove's America*, 320.
24. For example, Steffen, *McDonnell Douglas DC-10 and KC-10 Extender, 104,* notes that the KC-10 "can transfer 1,200 US gallons per minute to the receiving craft." This fuel is drawn from tanks wing and center wing area tanks, as well as two large tanks under the cargo floor, plus one each in the fore and aft lower cargo compartments.
25. Hopkins, *Boeing KC-135 Stratotanker*, 3.
26. Hopkins, *Boeing KC-135 Stratotanker*, 20.
27. Logan, *The Boeing C-135 Series*, 21-12.
28. Steffen, *McDonnell Douglas DC-10 and KC-10 Extender*, 104.
29. See www.boeing.com/news/releases/2003/q3/nr_030717b.html.
30. Obviously, it would be wrong to project the events of September 11, 2001, back in time onto the movie, but once both film and terror attack had passed into history, they could then be viewed in context. I do this in the conclusion of the dissertation.
31. I have the video in my personal collection.
32. Like other Boeing commercial products of its generation, the 727 had a three-man flight deck: captain, first officer, and second officer. *Airspeed*, like many other flying films, takes liberties with the cockpit composition.
33. Personal e-mail communication from Bruce L. Gillman, (bruce.gillman @afnews.af.mil), August 11, 2003.
34. See www.bubbasoft.com.

35. See the discussion of *The Perfect Storm: So that others may live*, by Michael Canders: http://www.usna.com/News_Pubs/Publications/Shipmate/2000/2000_07/perf.htm.

Chapter 6

1. Quoted in Henriksen's discussion of nuclear war films, 56.
2. See May, Homeward Bound; and Paul Boyer's two contributions, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985), and *Fallout: A Historian Reflects on America's Half-Century Encounter With Nuclear Weapons* (Ohio State University Press, 1998).
3. Henriksen, *Dr. Strangelove's America*, 56-67.
4. Jeremy Laurance, "One family went on a holiday — and made Toronto a global pariah," *The Independent* [London], in cooperation with *The Daily Yomiuri* [Japan], April 27, 2003, 15.
5. As of August 9, 2003, West Nile virus cases are nearing their record in the United States, including areas of the West that had previously been unscathed. See "West Nile virus cases in U.S. triple to 164, nearing record," *The Daily Yomiuri*, August 9, 2003.
6. Henriksen, *Dr. Strangelove's America*, 241
7. Henriksen, *Dr. Strangelove's America*, 305-509.
8. Henriksen takes it for granted that this plays out of a sexual fantasy, asserting without support the view that "the bomb becomes an extension of his [Kong's] sexuality and the connections between sex, death, and the bomb are sealed" (320). She argues that Kubrick's portrayal of American leaders and their "strange" form of love — "Only 'strange' forms of love and sex are practiced by these American leaders, and the very propagation of life becomes associated with death: it is the bomb, and all forms of technology that they love" (319) — is accurate, given that the era embraced "stultifying expectations" with regard to sex. See her discussion of the youthful rebellion against this presumed sexually inhibited era, 380-083.
9. See Pendo, *Aviation in the Cinema* (281-182), for further discussion.

10. These films obviously inspired a send-up of the genre, Jim Abrahams and David Zucker's 1980 farce, *Airplane!* I have not included this film because it seems not to fit with the more serious atmosphere of the flying as menace films I have studied.
11. The dialogue of 100 feet could be a mistake on the part of the actor playing the co-pilot, as it is unlikely a jumbo jet would end a dive at such a perilously low altitude. That the Japanese subtitles read "300 meters," a figure which translates into almost 1,000 foot, makes me suspect the script in fact said 1,000 feet.
12. Holland's heroism is emphasized in an exchange he has in the cockpit with Rachel, the Ambassador's aide. "So, how are you holding up?" she asks, to which the captain replies, "Well, that would be my job — to hold up." "This goes far beyond anyone's job description," she answers. "It's not about flying a 747 anymore. . . . Yeah, maybe 'cause this situation may be as cosmic as it gets. This is about how everyone on this plane confronts life's big questions, how they face up to mortality, including you." "I have been there, I have done that, day after day in Iraq," he says. "Death is a self-fulfilling prophecy. . . . I'm not going to die, you are not going to die, no one's going to die. I just won't let it happen, okay?"
13. Prior to its "retirement" in 1983, the upper deck was reconfigured to the 200-series standards, meaning there were added windows along the upper deck (Jenkins, *Boeing 747-700/200/300/SP*, 68). After three years, it was brought back into service as a mock-up for the new presidential plane (Air Force One when the serving President is aboard), then donated to Seattle's Museum of flight in 1990, though it has since served as a test bed for the Boeing 777 program (Norris and Wagner, *Boeing 747*, 108).
14. See Powers et al., *Hollywood's America*, ch. 4.
15. Henriksen, *Dr. Strangelove's America*, 374-477. The parallel to Stanley Kubrick's 1964 satire *Dr. Strangelove* is patent, but this comes as no surprise to readers of Henriksen's book, given its title. Incidentally, though the *Planet of the Apes* series is not a flying film, it is based on space travel. Henriksen contrasts the dystopia of *The Planet of the Apes* with the worlds in another space drama from the same era, the TV

series *Star Trek*, where humans had learned to avoid violence and overcome the threat of nuclear distruction.

16. In the current flap over his new move *The Passion of the Christ*, for example, Gibson has said, "This is not communist Russia. Does anybody realise that my rights as an American, as an artist, as a human being ... are being violated here?" See:
http://www.abc.net.au/news/newsitems/s1031113.htm.