What I Learned Since I Stopped Worrying and Studied the Movie: A Teaching Guide to Stanley Kubrick's *Dr. Strangelove*

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Introduction

John Pike, former director of space policy at the Federation of American Scientists, once said to me: "Everything there is to know about nuclear strategy can be learned from *Dr. Strangelove*." "Everything" is only a mild overstatement. I show *Dr. Strangelove* annually to Notre Dame audiences to teach about nuclear war, and I will continue to do so until nuclear weapons and war itself are no longer problems. The film offers lessons about war, politics, and history and can serve as a teaching aid for classes in introductory international relations, foreign policy, defense policy, causes of war, organizational politics, and Cold War history.[1]

In this teaching guide I cover three tasks, all of which highlight concepts and themes in *Dr. Strangelove*. First, I use the film as a springboard to discuss deterrence, mutually assured destruction, preemption, the security dilemma, arms races, relative versus absolute gains concerns, Cold War misperceptions and paranoia, and civil–military relations (in this order). Second, I put these concepts into their historical contexts to teach about Cold War history. Third, I show how closely *Dr. Strangelove* parallels actual events and policies. I conclude with the story of how an article by Thomas Schelling led to the making of the film.

Dr. Strangelove, Nuclear Strategy, and the Cold War

Dr. Strangelove is a black comedy about a renegade U.S. Air Force General, Jack D. Ripper, who orders his B-52 bombers to drop their nuclear weapons on the Soviet Union. This attack may set off a doomsday device that will kill all life on the surface of earth.[2]

The doomsday weapon is unrealistic. However, if one views it as analogous to mutually assured destruction (the near total destruction of the U.S. and Soviet Union inevitable in a real nuclear war), then almost everything that happens in the movie could have actually happened. The most important theme of the film is that it makes fun of the sad, perverse, and absurd reality that the U.S. and the Soviet Union could destroy each other within 30 minutes. Unlikely and improbable, yes. Possible, yes.

Dr. Strangelove also highlights the range of procedures and strategies involved in maintaining the nuclear standoff. Why did the U.S. have bombers constantly in the air, already well on their way to their targets? Why might individual base commanders have had the authority to use nuclear weapons at their own discretion? Why were our forces on hair-trigger alert? Why might a doomsday device seem to be a logical step? The single, simple answer to these questions is the U.S.'s (and Soviet Union's) quest to make nuclear deterrence credible. Think about deterrence and the need for credibility as you read this and watch the film.

Finally, remember that the U.S. and Russians can still easily destroy each other and that several other countries have nuclear weapons. The Cold War is over, but nuclear danger is not. When Stanley Kubrick made *Dr. Strangelove* in 1963, there were 34,000 nuclear weapons on earth. Today, there are 31,500.[3] The doomsday device is alive and well.

The Definition of Deterrence

The eccentric nuclear strategist Dr. Strangelove[4] defines deterrence when he says: "Deterrence is the art of producing in the mind of the enemy . . . the *fear* to attack" (55:09).[5]

Because deterrence requires the creation of fear, deterrence is arguably more an art than a science. The enemy must fear that the costs of attack will outweigh the benefits. Whether one can produce enough fear to prevent an attack depends not just on one's own capabilities and resolve, but also on the adversary's values and emotional state (hence, mind). Deterrence rests not only on having missiles, bombers, and the willingness to use them, but also on knowing where to target them so that the enemy will fear the retaliatory attack. Deterrence is impossible if the enemy fears nothing and does not mind being dead and destroyed.

The Necessity of Communication for Effective Deterrence

Deterrence only works if the threats intended to cause fear are communicated to the adversary. No threats made, no fear created. This point is made by Dr. Strangelove when he says: "Yes, but the . . . whole point of the doomsday machine . . . is lost . . . if you keep it a secret! Why didn't you tell the world, eh?" (56:29).

The Logic and Illogic of Nuclear Deterrence

When mutually assured destruction (MAD) is achieved, it becomes illogical to use nuclear weapons, no matter the scenario. If anyone attacks, all will get clobbered. If one receives a first strike, there is little or nothing to gain from retaliation. Deterrence will have failed and retaliation risks further strikes and more fallout. Ironically, MAD makes nuclear weapons so illogical that deterrence may actually suffer unless the credibility of suicide (or further damage) can be restored. Two ways of making retaliation credible involve automating retaliation and introducing illogic and uncertainty.

Automation ensures retaliation by taking humans out of the loop. A doomsday machine fits the bill. Ruling out "human meddling" is crucial because one must make credible the incredible threat of suicide. Dr. Strangelove explains this logic:

> President Merkin Muffley: "But, how is it possible for this thing to be triggered automatically, and at the same time impossible to untrigger?" (54:42)
>
> Strangelove: Mr. President, it is not only possible, it is essential. That is the

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whole idea of this machine, you know. Deterrence is the art of producing in the mind of the enemy . . . the *fear* to attack. And so, because of the automated and irrevocable decision making process which rules out human meddling, the doomsday machine is terrifying. It's simple to understand. And completely credible, and convincing.

Although it may not be fair to condemn the automated-response doomsday device on the basis of a single slip-up, the film invalidates the wisdom of that machine by highlighting its dangers. Would any state cede control of its weapons to computers and sensors?[6] So the problem remains: how to make the incredible credible. A fallback strategy is to introduce illogic and uncertainty into nuclear strategy and nuclear command and control. Akin to throwing the steering wheel out the car window when engaged in a game of chicken, delegating to base commanders the authority to issue strikes decentralizes military control and makes retaliation more likely.

Deterrence is enhanced if nuclear bombs might explode whenever a situation becomes precarious. If the enemy does not know who controls the bombs and under what circumstances authorization for their use "devolves" to lower levels of command, perhaps they would not initiate combat in the first place. This principle was particularly relevant in Cold War-era central Europe, where there were thousands of tactical nuclear weapons (tactical for the U.S., strategic for the Europeans; most of these weapons were larger than the Hiroshima and Nagasaki bombs). How would the Soviets know who controlled these weapons? Would not the Soviets suspect that lower-level commanders might gain control of nuclear weapons and be highly motivated to use them if they risked being overrun? How could a full-scale nuclear war be stopped if nuclear weapons in Europe started going off? (Remember that many of our nuclear delivery systems—including tactical bombers, cruise missiles, and Pershing missiles—could reach well into Russia, even all the way to Moscow.) These uncertainties may have been designed to create enough fear to prevent an attack in the first place.

This exchange (29:00) explains devolution of authority:

> General "Buck" Turgidson: "Plan R is an emergency war plan in which a lower echelon commander may order nuclear retaliation after a sneak attack if the normal chain of command is disrupted. You approved it, sir. You must remember. Surely you must recall, sir, when Senator Buford made that big hassle about our deterrent lacking credibility. The idea was for plan R to be a sort of retaliatory safeguard."
>
> President Muffley: "A safeguard?"
>
> Turgidson: "I admit the human element seems to have failed us here. But the idea was to discourage the Russkies from any hope that they could knock out Washington, and yourself, sir, as part of a general sneak attack, and escape retaliation because of lack of proper command and control."

Ripper's attack order to his bomber wing exemplifies the main tradeoff with devolution of authority: one cannot devolve authority and retain central control at the same time. Loss of control is exacerbated by the CRM-114 coded communications device which makes it nearly impossible to communicate with and recall the planes while in the air. Only Ripper knows the code. Individually, devolution and prevention of false communication seem like good ideas. But when combined as part of one plan, they render Ripper's orders almost irreversible.[7]

Note too the influence of domestic politics (Senator Buford). In the U.S., it is politically difficult to be seen as "soft on defense." This makes it easier (though not always easy) for military hawks to corner opponents, win debates, and influence policy.

The Precariousness of MAD During the Late 1950s and Early 1960s

Consider the speech in which General Turgidson says: "We would therefore prevail, and suffer only modest and acceptable civilian casualties from their remaining force which would be badly damaged and uncoordinated" (36:02). He continues, defining "modest and acceptable": "Mr. President, I'm not saying we wouldn't get our hair mussed. But I do say . . . no more than 10 to 20 million killed, tops. Uh . . . depending on the breaks" (36:56).

If it is possible to imagine fighting a nuclear war with acceptable casualties, then it is possible to imagine victory in a nuclear war. And if victory is possible, then MAD does not exist and deterrence is much weaker. Dr. Strangelove would say, there is not enough fear to attack. While the definition of acceptable may be subjective, the danger is highest when MAD exists, but advisors and politicians still think victory is possible. As Geoffrey Blainey notes, "Most wars were likely to end in the defeat of at least one nation which had expected victory" (1988, 144–45).

In *Dr. Strangelove*, Turgidson advised striking first in the movie. In an ominous parallel, several military and civilian advisors to President Kennedy wanted to strike Cuba during the Missile Crisis, an action which could have easily escalated. Had the U.S. engaged the Soviet Union in nuclear combat, we would have gotten more than our hair mussed. This is one reason why it is dangerous to build first-strike weapons (or defenses whose effectiveness is uncertain). They lend credence to semiplausible theories of victory that may persuade the president to attack during a crisis.[8]

Advocacy for Preemption

Although many believe that the U.S. would never consider preemption, or make it an official strategy, the U.S. has never been willing to make a "no-first-use" pledge. Scott Sagan notes that one of the U.S. government's most important early Cold War strategy documents, NSC-68, embraces preemption. He excerpts: the U.S. should strike with its "full weight . . . if possible before the Soviet blow is actually delivered" (1989, 20).

Compare the language of Turgidson with that of General Curtis LeMay, a key Air Force strategist during the early Cold War:

> Turgidson (34:52): "One, our hopes for recalling the 843rd bomb wing are quickly being reduced to a very low order of probability. Two, in less than fifteen minutes from now the Russkies will be making radar contact with the planes. Three, when the do, they are going to go absolutely ape, and they're gonna strike back with everything they've got. Four, if prior to this time, we have done nothing further to suppress their retaliatory capabilities, we will suffer virtual annihilation. Now, five, if on the other hand, we were to immediately launch an all out and coordinated attack on all their airfields and missile bases we'd stand a damn good chance of catching them with their pants down. Hell, we got a five to one missile superiority as it is. We could easily assign three missiles to every target, and still have a very effective reserve force for any other contingency. Now, six, an unofficial study which we undertook of this eventuality, indicated that we would destroy ninety percent of their nuclear capabilities. We would therefore prevail, and suffer only modest and acceptable civilian casualties from their remaining force which would be badly damaged and uncoordinated."
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> * * *
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> President Muffley: "General, it is the avowed policy of our country never to strike first with nuclear weapons."
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> LeMay: "If I see that the Russians are amassing their planes for an

attack . . . I'm going to knock the shit out of them before they take off the ground."

Robert Sprague, cochair of the Gaither Committee: "But General LeMay, that's not national policy."

LeMay: "I don't care, it's my policy. That's what I'm going to do" (Kaplan 1983, 134).

Not quite the same scenario, and there are times when preemption might be wise—but the commander in chief is supposed to participate in launching a full-scale nuclear war.

Both scenarios illustrate the dangers of crises more generally. It is scary to think of LeMay's contemplated actions and how likely it would be for the Soviets to respond by alerting and preparing their airborne/strategic forces in a crisis.[9] The ratcheting up of military preparations is even scarier in light of the widespread disrespect for civilian authority by top Air Force generals during the Cuban Missile Crisis (see the proceeding section on civil–military relations). The situation would be even graver if there were any LeMay counterparts on the Soviet side. Each side might increase its alert levels to protect its forces, but the other side would see it as preparation for war and be increasingly tempted to launch a preemptive strike. Incentives for such first strikes can increase drastically in a crisis, and such situations worsen when the leadership is not fully in control of its own state's crisis-management strategies, tactics, and assets.

The Security Dilemma (and how it drives arms races)

The security dilemma exists because what Country A does to improve its security usually diminishes the security of Country B. As Country A buys weapons, the *relative* strength of Country B decreases. This security dilemma underlies the *spiral* model of arms races in which each country builds up its arms strength responding to the adversary's buildup. A security dilemma is a zero-sum situation in which any nation's gain is another's loss (Jervis 2000).

When nations are deeply suspicious of each other, the zero-sum nature of their competition is even more pernicious. If each nation cannot trust the other to abide by agreements, then no agreements may despiral their arms races or tensions. Suspicions and the security dilemma lead states to become preoccupied with their relative positions versus others. When concerns over relative position are high, chances for cooperation again decrease because cooperation by definition yields positive-sum results. Thus, a suspicious state facing severe security dilemmas and preoccupied by relative gains concerns is just like the U.S. or the Soviet Union as depicted in *Dr. Strangelove*—especially in these specific instances:

1. Ambassador De Sadeski explains why the Soviets built the doomsday device: "There are those of us who fought against it, but in the end we could not keep up with the expense involved in the arms race, the space race, and the peace race. And at the same time our people grumbled for more nylons and washing machines. Our doomsday scheme cost us just a small fraction of what we'd been spending on defense in a single year. But the deciding factor was when we learned that your country was working along similar lines, and we were afraid of a doomsday gap" (53:14).
2. General Buck Turgidson says: "Gee, I wish we had one of them doomsday machines" (55:25).
3. General Buck Turgidson says: "I mean, we must be . . . increasingly on the alert to prevent them from taking over other mineshaft space, in order to breed more prodigiously than we do, thus, knocking us out in superior numbers when we emerge! Mr. President, we must not allow . . . a mineshaft gap!" (95:10).

Doomsday envy is an extreme but illustrative case. Turgidson wants one, even though having two is redundant and even having one is illogical. But arms races are, in the language of game theory, mutual defection. They are not a realization of common interest.

Relative Gains and Zero-Sum Games

Relative gains concerns and the zero-sum nature of the Cold War hindered arms control and other forms of cooperation between the U.S. and the Soviets. Turgidson epitomizes relative gains concerns. For example, he sees no value in the transparency provided by Ambassador De Sadeski's presence in the war room and always calculates things in a zero-sum or relative gains perspective. Any advantage for the Soviets is bad for us, and vice versa. Even after 90 years in a mineshaft, after billions of people die, it is still us against them.

Misperception

Dr. Strangelove demonstrates Jervis's "Hypotheses on Misperception" (1999) and shows how they exacerbate relative gains concerns. Examples of Jervisian misperception include: thinking the enemy is more evil than it really is; not realizing one's own faults; and not understanding how one is perceived by the other side. Ripper's fluoridation commie conspiracy (58:45) is the film's prime example of exaggeration of evil;[10] other examples include Turgidson's analysis of inferior Soviet technological capabilities and his view of Soviet perceptions of the U.S. He is not aware that his own government shares some of the blame for the Cold War and its security spirals.

Cold War Paranoia

Many students (and others) who watch *Dr. Strangelove* today did not live through the Cold War and thus may not understand how closely the film reflects Cold War-era attitudes and policies. In its portrayals of Turgidson's paranoia and the military's strategies and tactics, Dr. Strangelove barely exaggerates. The American populace was paranoid and the U.S. military maintained a hair-trigger nuclear defense posture for a number of years. Senator Joseph McCarthy conducted witch-trialesque hearings to denounce supposedly un-American communist infiltrators in American government, in Hollywood, and elsewhere. The House Un-American Activities Committee (HUAC) pursued, denounced, and ruined the lives of suspected but often-unproved traitors. On the other hand, the Soviet Union was more malevolent than even its opponents dreamed (killing its own citizens, degrading its environment, conducting a huge biological warfare program, etc).

Most Americans remember the 1950s in terms of Pax Americana and white picket fences, and they forget that it was also a time when schoolchildren hid under their desks as they practiced responding to a nuclear attack.

Civil–Military Relations

Civil–military relations are important because they determine who controls the armed forces and the extent to which the armed forces control the country. In general, Americans are lucky in that they have little to fear from military coups or other rogue military actions. However, *Dr. Strangelove*'s depiction of poor civil–military relations is analogous to the Cuban Missile Crisis. *Dr. Strangelove* asks the question: Is the President in control of the U.S.'s nuclear weapons? Generals Turgidson and Ripper do not respect the President, the President

is not in control of Ripper, and Turgidson borders on insubordinate. Compare Ripper's words to those of an Air Force General describing politicians during the Cuban Missile Crisis (25:55):

> Ripper: "Mandrake, do you recall what Clemenceau once said about war?"
>
> Group Captain (British) Lionel Mandrake: "No. I don't think I do sir, no."
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> Ripper: "He said war was too important to be left to the Generals. When he said that, 50 years ago, he might have been right. But today, war is too important to be left to politicians. They have neither the time, the training, nor the inclination for strategic thought."

Air Force Lieutenant General David Burchinal (U.S.A.F. Chief of Staff LeMay's deputy for operations), speaks about the Cuban Missile Crisis and the value of strategic superiority:

> "It [value of superiority] was totally missed by the Kennedy administration . . . They did not understand what had been created and handed to them . . . Fortunately, there was enough panic in Washington when they saw those missiles going in . . . they gave only the broadest indication of what they wanted in terms of support for the President. So we were able at the military level, from the JCS on down (*without involving the politicians*) to put SAC on a one-third airborne alert, to disperse part of the force to civilian airfields [and take other alert measures] . . . These were things that would be visible to the Soviets . . . We could have written our own book at the time, but *our politicians did not understand what happens when you have such a degree of superiority as we had, or they simply didn't know how to use it*. They were busily engaged in saving face for the Soviets and making concessions, giving up the IRBMs, the Thors and Jupiters deployed overseas — when all we had to do was write our own ticket." (Emphasis added.)
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> A few moments later in this interview, U.S.A.F. General Leon Johnson (Chairman, Net Evaluation Subcommittee, National Security Council) said about the political leadership: "They were very good at putting out brave words, but they didn't do a bloody thing to back them up except what, inadvertently, we did.
>
> To which LeMay confirmed: "That was the mood prevalent with the top civilian leadership; you are quite correct" (Kohn and Harahan 1988, 113–14, 119).[11]

Obviously, Burchinal, LeMay, and Johnson had no respect for the Kennedy administration's "inclination for strategic thought." These generals imply that they gladly ordered alert actions perhaps earlier and probably over and above those specified by the political leadership.

In fact, President Kennedy and Secretary of Defense Robert McNamara ordered nuclear forces alerts, which were sweeping and choreographed (DEFCON 3 timed with President Kennedy's televised address to the nation about the crisis on October 22, and DEFCON 2 on October 24). After the crisis, the President credited these alerts with giving the U.S. "relative freedom of action" (Sagan 1993, 62–67).[12] This is quite an odd discrepancy with the generals' account of the President's inaction and lack of strategic thought. Whatever the case, poor civil–military relations are obvious.

The Genesis of the Film

Dr. Strangelove is based on the novel *Red Alert*, by Peter George, a former RAF major in military intelligence. George conceived the idea to write the book in the 1950s when a B-47 roared over a U.S. airbase in the UK, sending a precariously perched coffee cup crashing to the floor. Someone quipped, "That's the way World War III will start," and George was off to write *Red Alert*.

In 1958 someone handed *Red Alert* to Thomas Schelling during an airplane flight.[13] The novel provided the first public detailed scenario of how nuclear war might start, and Schelling was so impressed that he purchased and gave away around four dozen copies. Over lunch with a magazine editor, Schelling discussed writing an article on accidental nuclear war. The editor suggested commencing the article with a review of the literature on WWIII. Schelling wrote the article and reviewed *Red Alert*, *On the Beach*, and *Alas Babylon*.[14] Although the magazine rejected the article, the *Bulletin of the Atomic Scientists* soon published it,[15] and London's *Observer* newspaper reprinted it. Stanley Kubrick happened to read both the newspaper story and the *Bulletin* article, which prompted him to contact the publishers of *Red Alert* in order to get in touch with George. Kubrick, Schelling, and George then met to discuss how to make the movie.

When George wrote *Red Alert*, intercontinental nuclear missiles did not affect the world's strategic balance of nuclear power. However, by the time Kubrick convened the meeting to discuss the movie, both ground- and submarine-launched missiles were gaining prominence over bombs dropped from airplanes. Kubrick, Schelling, and George tried to figure out how to start the war and play out the crisis with missiles. They could not. Only bombers provided enough time to make all the War Room scenes possible. The President needed to face the strategic choice of whether to exploit the bomber launch by sending in follow-on forces (see Turgidson quote about preemption). With missiles, the war would start much too quickly, while one theme of *Red Alert* is how hard it is to start a nuclear war. Schelling noted that this theme got a bit lost in the film.

According to Schelling, Kubrick wanted to avoid insulting or attacking the U.S. Air Force. This was problematic, as he could not start the war without a psychopathic officer. Kubrick's solution was to exaggerate his characters, sometimes to the point of unbelievability. *Dr. Strangelove* is comedically effective because it alternates between realism (such as in its military standard operating procedures and terminology) and zaniness. According to *Strangelove* screenwriter Terry Southern, George's *Red Alert* helped set the stage for deadpan realism in the film:

> Perhaps the best thing about the book was the fact that the national security regulations in England, concerning what could and could not be published, were extremely lax by American standards. George had been able to reveal details concerning the "fail-safe" aspect of nuclear deterrence (for example, the so-called black box and the CRIM [sic] Discriminator)—revelations that, in the spy-crazy U.S.A. of the Cold War era, would have been downright treasonous. Thus the entire complicated technology of nuclear deterrence in Dr. Strangelove was based on a bedrock of authenticity that gave the film what must have been its greatest strength: credibility.[16]

George was concerned that the film would damage his reputation in America, particularly among his friends.[17] Schelling wrote to reassure him, saying that he liked the film and would welcome George as a friend were he to visit the U.S. Schelling wrote again to say his family would visiting London, but George's wife wrote back that George had committed suicide.

Peter George killed himself in June of 1966, perhaps in part because he suffered "fear and pain about the threat of nuclear war."[18] His fears about delegation of authority, advocacy for preemption, and other issues were justified. Though *Dr. Strangelove* makes us laugh at these issues, the threat of nuclear war persists to this day. After much scholarship and history, the dangers of nuclear war and crises are more easily seen in the year 2001. In the late 1950s and early 1960s, Peter George and Stanley Kubrick were pioneers in helping make us aware of these dangers. We should be grateful.

Notes

1. *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb*, screenplay by Stanley Kubrick, Peter George, and Terry Southern. Produced and directed by Stanley Kubrick. Based on the book by Peter Bryant (a pseudonym for Peter George), Red Alert (New York: Ace Books, 1958). The British title for *Red Alert* was *Two Hours to Doom*. The book based on the screenplay is: Peter George, *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* (New York: Bantam Books, 1963. Published January, 1964). The film was scheduled for release on December 12, 1963, but was not shown until January 1964 due to President Kennedy's assassination in November 1963. Ed. note: when talking about *Dr. Strangelove*, the film, the title is italicized. The character Dr. Strangelove is not italicized. A longer version of this guide is available via: <www.nd.edu/~dlindley/>.

2. An extensive discussion of doomsday machines (excerpted almost verbatim in *Dr. Strangelove*) is found in Herman Kahn, *On Thermonuclear War*, 2 ed., (Princeton, NJ: Princeton University Press, 1961): 144–53.

3. Of the 31,535 nuclear weapons existent in the year 2000, 10,500 belonged to the U.S., 20,000 to Russia, 185 to the United Kingdom, 450 to France, and 400 to China. Several hundred additional weapons were in the arsenals of Israel, Pakistan, and India. U.S. weapons are in the active, inactive, reserve, and hedge categories. Russian weapons are assumed to be 50% active and 50% retired/reserve. See "Global Nuclear Stockpiles," *Bulletin of the Atomic Scientists* 56 (March/April 2000). A table in this article shows the yearly nuclear stockpiles of the first five nuclear states from 1945–2000. It depicts the incredible "vigor" of the early atomic arms race. The active portion of the U.S. arsenal in the year 2000 included 2,000 Intercontinental Ballistic Missiles (ICBMs), 3,456 Submarine Launched Ballistic Missiles (SLBMs), 1,750 bomber-delivered/launched missiles and bombs, and 1,670 nonstrategic missiles and bombs. "U.S. Nuclear Forces 2000," *Bulletin of the Atomic Scientists* 56 (May/June 2000).

4. There is considerable debate about who was the role model for Dr. Strangelove. At some points, Dr. Strangelove seems closely modeled after Herman Kahn, an early prominent nuclear strategist. Dr. Strangelove parrots Kahn's work and worked for the Bland Corporation, while Kahn worked for the Rand Corporation. Thomas Schelling argues that Henry Kissinger may have been the real model for Dr. Strangelove. He notes that no one who knew Kahn would think of him as the Doctor. Kahn was "a great, big, ebullient, roly-poly guy with a great big sense of humor . . . who loved New York delis" and who wanted people to think about how to stop a nuclear war in midcourse. Even more convincingly, Schelling said that Peter George wrote to a London newspaper saying that Kahn was never the model. Interview, September 8, 2000. One of Kissinger's main arguments in *Nuclear Weapons and Foreign Policy* is that limited nuclear war can be waged and is something for which we should prepare (New York: Harper Brothers for Council on Foreign Relations, 1957). Owen Cote, former research assistant and driver for Herman Kahn, said that the real role model for Strangelove was a combination of Kahn, Kissinger, and Werner Von Braun, the rocket scientist. Interview, September 15, 2000. This composite Strangelove seems most plausible.

5. All times given are DVD time, i.e., the time indicated on a DVD player as the movie plays, using the *Stanley Kubrick Collection* from Columbia Pictures, 1997. At 2:45 DVD time, the U.S.A.F. disclaimer starts scrolling up on the screen (the new *Special Edition*, issued in 2001, scrolls the disclaimer at 0:00 DVD time). All quotes from the movie were taken from or verified using the continuity scripts at <http://mach.me.queensu.ca/~bakhtiar/kubrick/>, and at <http://flo.mech.eng.usyd.edu.au/~norris/docs/strangelove.html>. An early version of the script is available at: <www.lontano.org/FMA/arkiv/strangelove_production.html>.

6. A theme of Kubrick's, machines murder again in his 2001: A Space Odyssey when the HAL 9000 computer kills most of the crew of the Jupiter mission. See Jerome Agel, ed., *The Making of Kubrick's 2001* (New York: Signet Books, 1970).

7. The dangers of unplanned interactions of subunits or subroutines in complex systems are explored at length in Sagan, 1993.

8. Classics on the Cuban Missile Crisis include: Graham Allison and Philip Zelikow, *Essence of Decision : Explaining the Cuban Missile Crisis*, 2 ed. (New York: Addison-Wesley, 1999); Laurence Chang and Peter Kornbluh, *The Cuban Missile Crisis, 1962, A National Security Archive Reader* (New York: The Free Press, 1998); Robert F. Kennedy, *Thirteen Days: A Memoir of the Cuban Missile Crisis* (New York: W.W. Norton, 1969); Ernest R. May and Philip D. Zelikow, eds., *The Kennedy Tapes: Inside the White House During the Cuban Missile Crisis* (Cambridge, MA: Harvard University Press, 1997); and Sagan, *Limits of Safety.*

9. Sagan argues against the traditional view that the Soviets did not alert their nuclear forces during the Cuban Missile Crisis. He acknowledges that the evidence either way remains scanty, but says that interviews and declassified U.S. documents suggest that Soviet forces were on partial, if not higher, levels of alert. Sagan, *Limits of Safety*: 142–45. The Soviets alerted Warsaw Pact Forces. NATO forces, in contrast, were purposely not put on very high alert (DEFCON 3) due to allied pressure, presidential directive, and fears of the SACEUR, Lauris Norstad, about escalation. See the National Security Archive chronology of the Cuban Missile Crisis, for October 22, 1962–2:14P.M. at: <www.gwu.edu/~nsarchiv/nsa/cuba_mis_cri/cmcchron3.html> .

10. Many in the U.S. did in fact fear that fluoridation was a communist conspiracy. The only part of Ripper's speech that probably could not be cobbled together from the *New York Times* is the bodily fluids reference.

11. JCS is Joint Chiefs of Staff of the U.S. military. SAC is Strategic Air Command. IRBMs are Intermediate Range Ballistic Missiles, including Thors and Jupiters.

12. DEFCON is short for Defense Condition, and describes the alert levels for U.S. forces. Sagan describes the DEFCONs in detail on p. 64 and offers additional scary tales on civil–military relations (and a host of other accidents and "unintentional" policies) during the Cuban Missile Crisis, as do Allison and Zelikow in *Essence of Decision*.

13. Except where noted, this section is based on a telephone interview with Thomas Schelling, September 10, 2000. The *Special Edition* DVD says that it was Alastair Buchan, British strategist, who gave *Red Alert* to Kubrick (and that Kubrick had become obsessed with nuclear war, reading some 50 books on the subject). See liner notes and extra: "Inside the Making of Dr. Strangelove." See also Brian Siano, "A Commentary on Dr. Strangelove," <www.visual-memory.co.uk/amk/doc/0017.html>.

14. The latter two books are by Nevil Shute (New York: William Morrow, 1957) and Pat Frank (Philadelphia and New York: J.B. Lippincott, 1959), respectively.

15. The *Bulletin* article was "Meteors, Mischief, and War," 16: 7 (September 1960).

16. <www.terrysouthern.com/texts/t_strange.htm>.

17. Indeed, *Dr. Strangelove* was widely criticized when it was released as giving moral support to the Soviets. According to Kubrick: "When Dr. Strangelove came out, a New York paper ran a review under the head MOSCOW COULD NOT BUY MORE HARM TO AMERICA." Interview by Tim Cahill in Rolling Stone magazine, 1987, <http://reynolds.me.queensu.ca/~bakhtiar/kubrick/stone.html>. According to Terry Southern: "Columbia was embarrassed by the picture and tried to get people to see Carl Foreman's *The Victors* instead. They would steer ticket buyers away from *Strangelove* and try to get them to see *The Victors*. At the time we thought we were going to be totally wiped out. People would call up the box office and be told there were no seats for *Strangelove* and asked if they would like to see *The Victors* instead. Gradually, the buzz along the rialto built word of mouth in our favor." <www.altx.com/interviews/terry.southern.html>.

18. Brian Aldiss, "Kubrick—The Writer," *Guardian Unlimited*, 14 March 1999.

References

Blainey, Geoffrey. 1988. *The Causes of War*. Third ed. New York: Free Press.

Jervis, Robert. 1999. "Hypotheses on Misperception." In *American Foreign Policy: Theoretical Essays*, Third ed., ed. G. John Ikenberry. New York: Addison-Wesley.

——. 2000. "Offense, Defense, and the Security Dilemma." In *International Politics*, Fifth ed., ed. Robert J. Art and Robert Jervis. New York: Addison-Wesley.

Kaplan, Fred. 1983. *The Wizards of Armageddon*. New York: Touchstone Books.

Kohn, Richard H., and Joseph P. Harahan, eds. 1988. *Strategic Air Warfare: An Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton*. Washington, DC: Office of Air Force History.

Sagan, Scott D. 1989. *Moving Targets: Nuclear Strategy and Nuclear Security*. Princeton, NJ: Princeton University Press.

——. 1993. *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. Princeton: Princeton University Press.