

ECO 199 - GAMES OF STRATEGY  
Spring Term 2004  
GUIDE TO STRATEGIES IN *DR. STRANGELOVE*

What follows is a statement and discussion of the many strategic issues and incidents from the movie. It is based on the points brought up in class as well as some others. For more general information about the movie itself, consult its special web site

<http://www.filmsite.org/drst.html>

or its page from the Internet Movie Database web site

<http://us.imdb.com/Title?0057012>

## PLAN R

The reason for creating Plan R was that the US nuclear deterrent was not “credible” in the sense that killing the President would prevent a US nuclear retaliation. This sense is different from the one used in game theory, namely that the US president, if left free to choose after a Soviet attack, would not want to unleash retaliation. The difference is between the *ability* and the *will* to act. In ordinary language the two senses are often confused, and here General Turgidson explains the position to President Muffley using the word in the “ability” sense. You should be aware of the distinction, and in the context of this course, and of game theory more generally, should use it only in the “will” sense.

In strategic terms, the plan improved our “second strike capability” - the ability to retaliate after being subjected to a first strike. If both sides have better second strike capability, the nuclear balance is safer because neither has the temptation to launch a preemptive first strike, and neither feels the need to do so because of a perception or fear that the other side might launch a preemptive first strike. But the plan seems to have been a secret; even the President was unaware of it. Its existence should have been better publicized. Certainly the Soviets should have been informed, to make it clear to them that a sneak attack that destroyed Washington and killed the President would avail them nothing.

The plan failed because it did not have effective safeguards to prevent a lower-echelon commander from launching an uncalled-for attack; the plan was too risky. Any plan of this kind has a trade-off between effectiveness and safety. Some middle ways: [1] The authority vests with a group of military commanders, perhaps at different bases, and say three out of five Go commands are needed. (Allowing any one of the five to give the go-code is too unsafe; requiring unanimity is too ineffective.) Or the code could be in two or more parts. Similar controls exist in some systems for the actual launching of missiles, where two people must turn keys simultaneously. [2] The ability to issue the go-code could be conditioned on some objective event, for example a sufficiently high level of radiation in the US. [3] The planes could be required to obtain confirmation of the go-code from a different base than the one that issued the initial order. [4] Use automatic instead of human pilots. But these would have been less effective in real war - they would not have saved the plane with heroics after the missile attack.

To allow the President to retrieve the situation after an unprovoked launch of Plan R, there could be an overriding recall code, or a second radio receiver controlled directly from the pentagon. The risk of destruction of the plane's receiver circuits could be handled by requiring that the mission be aborted if the CRM-114 is not functional. But this may err on the side of too little effectiveness - that mission may be essential to the US. (Compare the situation and conflict in the movie *Crimson Tide*.)

The Soviet Union actually had something very like Plan R, but with various human and mechanical safeguards. It was (wrongly) called "Russia's Doomsday Machine" (Bruce G. Blair,

Op.Ed., New York Times, 10/8/93).

## GENERAL RIPPER'S ATTACK

To commit the US to his attack, Ripper “hijacked” several elements of Plan R itself: [1] He sealed off the base, cut off communications and impounded radios. [2] He sent a phone message and was then unavailable for further discussions or questions. [3] He sent the go-code when the planes were already at fail-safe so they would not need a further authorization. [4] He kept the recall code secret, and finally killed himself (the ultimate irreversible commitment) rather than risk revealing it under torture.

He put the President and the general staffs under great time pressure, and reckoned that it would compel them to back him up with an all-out attack. In the war-room meeting, General Turgidson supported this course of action, as it would yield a less bad post-war environment: "only" 10 to 20 million dead.

Flaws in Ripper's strategy: [1] He did not reckon that the President would refuse to launch an all-out attack, and would instead contact the Soviet Premier and even help the Soviets shoot down the planes. [2] The base was not perfectly sealed: Mandrake discovered a working radio playing music, and later a pay phone (and a Coke machine to supply coins!). [3] The base defenses were overcome very quickly. [4] Ripper's obsessive doodling enabled Mandrake to guess the recall code.

## THE DOOMSDAY MACHINE

Its important features: [1] It threatened a very dire consequence, namely destruction of all human and animal life on earth, to serve as a deterrent. [2] It was automatic, making it credible as a commitment to actions that “no sane man would take”. Its crucial flaw: It was kept a secret. The Soviets should not only have announced it as soon as it was operational, but also invited US officials to inspect it.

Would this have deterred Ripper? If he was truly concerned about the purity of the American people's precious bodily fluids, he would not have wanted them to be destroyed by radioactivity. But if this was just a symptom of some underlying psychosis, who knows what he might do.

But given the risk of “errors”, the doomsday machine is too large a threat. Besides the “error” that occurred in the movie, such a machine might be triggered by mistake (or a runaway computer as in the movie *War Games*), or by a “very small” attack. It might also prove too unpopular with the US public. As Dr. Strangelove explains to President Muffley, for just such reasons the US had decided not to build such a device.

A doomsday machine could be made safer by programming it to react only to a “large enough” attack, but that would make it vulnerable to “salami tactics”: repeated attacks each of which is too small to trigger it. The machine could be made probabilistic like Russian Roulette, but this concept might be too difficult to explain to the public or even the opposing military chiefs. And if a human override is introduced, the crucial automatic nature is lost.

A country might announce that it has a doomsday machine without actually building one. It could even construct Wizard-of-Oz-like appearances - computers etc - but leave out the actual bombs. This might be a very effective deterrent. But in the US there might be adverse public reaction to the announcement of the installation. Moreover, if say an investigative reporter found out the truth, that might jeopardize the credibility of our real deterrents.

## THE PHONE CONVERSATION

President Merkin Muffley used various devices to convince Premier Kisseff that he was sincere and was not launching a massive attack: [1] He brought the Soviet Ambassador into the highly confidential War Room, showed him the full situation, and had him talk to the Premier first. [2] He pointed out that if he had meant to launch a sneak attack he would have done so without calling first, so the very act of making the phone call was a credible signal of his good intentions: "If it wasn't a friendly call, you would never even have got it." Of course the Soviets might still retain a suspicion that he intended to misdirect their attention on defending the stated targets while the real U.S. attack came elsewhere, but ... [3] The Soviets' trust was reinforced when the locations of the planes were correctly revealed, some were shot down, and others recalled.

But all this was defeated by the cowboy pilot's "initiative", namely his decision to bomb an unauthorized target. Possible ways of avoiding this risk: [1] Have a general rule that the bomb cannot be dropped other than on the specified primary or secondary targets. [2] Not give the pilot the coordinates of any other targets. In the movie he could have got those from the profile envelopes for all the other attack plans, but these days one could transmit the plans electronically very fast with the initial go order itself. [3] The Soviets should not have focused *all* their forces on that one location, to guard against just such a mishap, or even more important, against deliberate US cheating. [4] A second order from the President (or the officials in charge of a suitably safe version of Plan R) might be required to release the bomb safeties, but this may be erring on the side of too much caution. [5] There could be a device located in each plane to destroy it in just such an emergency on an electronic command from the US. But if the Soviets found out the destruction signal they would have a surefire defense. Also, the knowledge that such a device existed would seriously lower the morale of US aircrews. Again, there is a tradeoff between risk and effectiveness, and there is no truly ideal solution.