SITTING DUCKS OR DECOYS:
The High Cost of SAC Dispersal to Large-City Airfields

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Assigned to _________________

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I have argued before, and will argue again, that the Russians may not go after American cities in a general war, particularly in one that they start. Early in the war they may have better use for their weapons; later in the war it may depend on what we do. If we avoid their cities, they may continue to avoid ours; if we are winning the war and are capable of receiving their surrender, they may avoid provoking us; and if we are losing the war they may wish to offer us our cities to deter our own punitive but otherwise futile attacks. The critical question for U. S. intra-war doctrine is going to be whether rapid and vigorous counterforce action has a good enough prospect of forestalling destruction here to make it a worthwhile alternative to the opposite policy, that of using a combination of live Russians and unspent American weapons to deter further Russian action and to bring the war to a favorable end.

Whether the Russians actually would have the good sense to avoid our cities, and whether our most promising course of action would be to spare theirs to preserve the threat of destroying them, I am not going to argue in this paper except to assert that the issues are important and the answers may be yes.

That being so, it could be of crucial importance that the Russians, if they should go after our strategic weapons, be able to avoid collateral damage if they wish to. Do they have to hit large American cities in an attempt to get American missiles, bombers, air defense, communications,
etc.? Are SAC and its ancillary facilities so located that the Russians have to hit American cities to get them, or not? Part of the answer is, "it depends." And one of the things it depends on is whether and how we disperse SAC.

Dispersal being an obvious and much discussed possibility for increasing the number of targets the Russians would have to destroy to get American bombers; and bases able to accommodate SAC bombers being expensive to build; an important possibility is the use of existing civilian airfields as auxiliary SAC bases, either for permanent or for transient stationing of alert aircraft.* In addition to the questions of feasibility, cost, and public relations, there is the fact that alert SAC bombers on civilian airfields would oblige the Russians to treat those airfields as high-priority targets.

If so, do we gain enough in extra deterrence to outweigh the additional loss in case deterrence fails? If we were gaining hundreds of additional airfields on the outskirts of small towns a favorable answer might be too obvious to require justification. But if we are particularly tempted by the runways, electronic facilities, and other advantages, of large airfields that take heavy traffic, particularly those that can accommodate commercial jet airliners, we are adding targets at a high price in inhabitants at risk. (The fact that some of the large cities are already strategic targets does not quite eliminate the issue; we can go further and ask whether some conspicuous relocation might not be indicated if the argument against such dispersal is generally valid.)

* See newspaper story excerpted in Appendix.
To reach a conclusion one has to consider how much our deterrence is improved and how much more we stand to lose if deterrence fails. On the difference that it makes to eliminate major cities from Soviet target lists, the estimate certainly depends on what kind of fallout protection might be available and where else SAC is located. There is a close interaction between this dispersal problem and the general problem of SAC design and location, as well as the general problem of non-military defense. On the question of how likely it is that removing SAC from a city will eliminate it from the Soviet target list, the Russian decision may not be entirely independent of our decision. There are two main reasons why the Russians might abstain from sending weapons to large American cities. One is that they have more important things to use their weapons on, especially early in the war. The second is that they may prefer to keep our cities alive, to keep us from going all out after Russian cities. This second reason depends on the retaliatory doctrine that the Russians impute to us, and how responsive they think we will be to their actions. It also depends on whether they think their initial attack may leave us strong or weak and whether our strength has a comparative advantage toward a punitive campaign or toward counterforce actions. Their estimate of our intentions may be affected by whether we have consciously avoided making our cities strategic targets. If we have, they may suppose that we have recognized their interest in conditionally sparing our cities, and that their abstention may not go altogether unrewarded. (I acknowledge that a Russian belief in the possibility that we may help to keep the war limited will reduce the risk involved in their attacking us; this is a genuine dilemma.)
Taking these and other things into account we have a crude quantitative problem -- or at least we do if a survey of airfields, logistics, and so forth suggests that such dispersal is useful, and if among the cities selected there are many that might not otherwise be urgent targets. Roughly speaking, we must consider the probability of Soviet attack (i.e., the probability that deterrence will fail) without SAC dispersal to civilian airfields (or at least to large-city airfields), and the probability that deterrence will fail if we do take advantage of such dispersal, the value lost if deterrence fails and the Russians do target those cities, the value lost if deterrence fails and the Russians don't target those cities, and, finally, the probability that the Russians will avoid those cities if we keep SAC away. (We can put at 1 the probability that, if we do disperse SAC to large-city airfields, and deterrence does fail, the Russians will include them on their urgent target list and will hit them.)

The following inequality is the condition to be met if dispersal is to raise our expected value:

\[ QD < [\pi C + (1 - \pi) D] P \]

P is the probability we attach to the Russians' initiating general war (i.e., to the failure of deterrence) without dispersal; Q is the probability of a Russian attack if we do disperse; 1 - \pi is the probability that, if we decline to disperse, the Russians will hit the cities anyway (or the expected fraction of the cities they would hit in the absence of dispersal); C (for "concentrated") is our valuation of cost, damage, or loss, if the Russians initiate war and leave cities alone, and D (for "dispersed") is
our valuation of the cost, damage, or loss, if the Russians initiate war and hit large-city airfields. (The difference between C and D is mainly the loss of cities, partly the general difference in outcome resulting from the Russian need to divert weapons to the extra targets.)

Some numerical illustrations may help. One calculation is the minimum improvement in deterrence required to make dispersal worthwhile, for a given likelihood that Russians will avoid cities if SAC stays out, and for a given ratio of our valuation of the outcome if the cities are left alone and of the outcome if the cities are hit. The numerical illustrations below show two alternative values of this loss ratio, one that assumes the war only half as bad if cities are not hit, one that assumes the war is 3/4 as bad if cities are not hit. Three values for \( T \) are shown, 1.0, .7, and .3. (For \( T \) equal to 0 any improvement in deterrence is of course justified as far as the present argument is concerned.) Finally, the required improvement in deterrence, to make dispersal worthwhile, is itself a function of the level of deterrence obtained without dispersal. Four alternative values of the "probability of deterrence" are shown, .1, .3, .6, .9; these are meant to represent probabilities of Soviet attack equal to .9, .7, .4, and .1. This assumed degree of deterrence is in the column with the heading \( (1 - P) \). The parallel column, headed \( (1 - Q) \), gives the required value for the probability of deterrence achieved through dispersal, \( Q \) being the probability of Soviet attack when advantage is taken of large-city airfields. The comparison between these two figures indicates the required improvement in deterrence to make dispersal worthwhile.
### C = 0.5 D

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<tbody>
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<td>0.915</td>
<td>0.935</td>
<td>0.95</td>
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<tr>
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<tbody>
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<td>0.91</td>
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<tr>
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<td>0.48</td>
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<tr>
<td>0.9</td>
<td>0.1</td>
<td>0.17</td>
<td>0.26</td>
<td>0.33</td>
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</table>
Most of the characteristics of the table are obvious without the table; the condition for dispersal is easier to meet the smaller is \( \tau \), and the less difference it makes to us whether they hit our cities or not. The point that, though almost obvious, may be not quite obvious, is that the required improvement in deterrence is the greater, the worse our deterrence is to begin with. According to the considerations treated here, dispersal of SAC to large-city airfields is a better way to improve a deterrence posture that is already good than to improve one that is poor. Looking at the \( \tau = 1 \) column to see this point most strikingly, a really sad deterrence capability of .1 -- i.e., 90% probability that the Russians will attack -- must be improved to better-than-even odds in our favor to make SAC dispersal worthwhile on a value scale that makes saving our cities cut our losses in half; and if the odds are 2:1 against us, dispersal has to shift them to 2:1 in our favor to be worthwhile. But if the odds are already 9:1 in our favor, they only have to be improved by a factor of 2, to 95%. The requirement is to cut the probability of attack in a certain proportion, for any given values of \( \tau \) and \( C/D \); this means a disproportionate change in \((1 - P)\).

Of course, whether it is easier to raise deterrence from .1 to .5 or from .9 to .95 depends on whether we think the improvement in deterrence achieved by dispersal tends to be proportionate to \( P \) or to \((1 - P)\). A point to be emphasized is that large-city airfields -- at least if they are considered to be "cheap" dispersal fields -- are probably going to be unhardened targets of well-known location, fairly cluttered with traffic, many of them close to the ocean; they are soft, easy targets. More accurately, they are easy targets if SAC bases are. If SAC airbases are
hard to hit in a manner that will cripple the airplanes, then probably some of the large-city airfields are too; but if SAC bases are fairly easy to hit in a way that cripples airplanes, so are the large-city airfields. Considering a limited number of large-city airfields, it looks as though their use for SAC dispersal is an impressive additional set of targets only if the targets already existing provide an impressive difficulty; they are not much of an additional set of targets if we are presently discouraged at the vulnerability of unhardened airbases. These are just more targets of the same kind, probably the easiest kind.

This point ignores the fact that the number of aircraft launched after warning can depend on the number of runways, so that even more easy targets can be good for getting more aircraft launched. I discount this point, because of the unlikelihood that SAC bombers on large-city airfields could get off all that quickly, given the traffic and the unlikelihood that SAC aircraft could be in ideal locations. (An exception may be periods of extreme crisis.) If they can't get off quickly, the large-city airfields are, in effect, being used just to divert Soviet weapons to large cities.

The above point leads me to believe that the improvement in \( (1 - P) \) through such dispersal would be less, the smaller is \( (1 - P) \) to begin with; this makes it doubly difficult to meet the necessary condition for the desirability of such dispersal if deterrence is already poor.

Another point is that the damage to large cities that we have to expect in a major war -- to the extent that it depends on whether SAC is using their airfields or not -- may be nearly as great if SAC only uses some of them rather than all of them. The urgency of hitting a particular
city would certainly depend on whether SAC aircraft were located there. Queens may be high on the target list, but not Newark, if SAC is at Idlewild but not at Newark. But the question whether the Russians may deliberately abstain from large cities, eschewing low-priority targets in the hope that they may thereby get off easier whether they win the war, lose it, or break even, may tend to be answered on an all or none basis. If they feel obliged to hit Boston, Queens, Baltimore, Washington, Los Angeles, Oakland, Cincinnati, and Detroit, they may figure that if they spare Hartford, Jersey City, Philadelphia, San Francisco, Chicago, and Cleveland we won't notice the difference or won't notice it in time, or we won't appreciate that they have been missed deliberately or will consider things too far gone to make an effort to limit the war worthwhile, so why spare them when it takes only a few extra weapons to knock them out. In other words, the possibility of limiting general war, insofar as large cities are concerned, may be lost if a number of large cities have to be hit anyway; so we may pay the full price even if we utilize less than all the airfields that we are paying for. To put this differently, the increment in deterrence we get from such dispersal depends on how many airfields we use; the ratio of D to C in the formula may be as though we used them all.

A lot of things have been left out of account; I am only trying to focus on one consideration that I think is probably critical. I acknowledge that I have not, in this paper, made a strong case for the Russians' wanting to leave our cities conditionally alive as a conscious strategy. I have also not touched on the question whether, for reasons other than SAC aircraft, most of the large cities ought to be high priority targets.
for the Russians. For a very short war the target significance of our big cities might be the confusion, loss of control, loss of coordination, and loss of communication that their destruction would entail. This may make them terribly important targets for the Russians; but it also may not. If they have any hope that the war can be terminated before both sides have exhausted all their weapons -- and this hope may attach, in their minds, both to the contingency that their attack does very well and to the contingency that it does poorly, and may reflect their motives in case the war is somewhat "accidental" and they are not quite sure that they want to pursue it to the bitter end in search of victory -- in this case they may well consider that confusion, loss of control, and loss of communication, are what they want us not to suffer. Command, coordination, and control are very important to the efficiency with which we hit them, including their cities, if we choose to conduct the war as a purely military effort to destroy them. But if they think there is any chance that we would rather receive their surrender than finish them off, to terminate the thing by truce and disarmament, or even (in their minds) surrender conditionally to them, keeping retaliatory forces to protect our independence rather than spending them in a futile counterforce effort, they may want us to have the organization and capability to stop the war, to discriminate among targets, to know just what they have and have not done to us, and to communicate with them. In other words, they may not go after large American cities in a "strategic-bombing" sense; their strategy may attach more value to our cities alive than destroyed. That is if we let them, by not having alert weapons on the outskirts.

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This is, incidentally, a fine example of a problem that cannot be intelligently handled without explicit reference to absolute probabilities and explicit attention to valuations of alternative outcomes.
APPENDIX

WASHINGTON POST
February 15, 1960

B-47 SHIFT TO CIVILIAN PORTS LIKELY

Program Proposed by White to Meet Threat of Missiles
by John G. Norris, Staff Reporter

The Air Force is considering plans for periodic or emergency dispersal of its B-47 bombers from military bases to civilian airports to help meet the growing Soviet missile threat.

Gen. Thomas D. White, Air Force chief of staff, disclosed the tentative plans during closed door questioning by the Senate Space Committee and Preparedness Subcommittee last week. He said some construction of ramps, taxiways, communications, fuel and bomb storage facilities would be necessary at the airports to make the plans effective.

White's testimony, released yesterday after being censored at the Pentagon, revealed that the Strategic Air Command recently has surveyed almost every major airport in the country to determine how it could fit into the dispersal plans.

He conceded such programs would have "disadvantages" but said they offered means of assuring survival of part of SAC in a massive surprise attack, in addition to the controversial full airborne alert proposed by SAC Chief Gen. Thomas S. Power.

White took issue with Power's contention that in a surprise attack 300 Russian ICBMs and IRBMs could knock out all of the United States' 100 retaliatory launching spots in 30 minutes. He termed it "hypothetical"
and said Power ignored some factors to "dramatize" his plea for an air alert.

White said that Power did not consider the likelihood "of the survival of some of his force after an attack due to strategic or tactical warning nor the prospects of greater dispersal."

"There are scores of civil airports in the United States which have the capability of handling B-47s," said White. "Now, this is not something you can do overnight, but with some construction, particularly some communications developments, some stockages of fuel and weapons, and other things, you can spread B-47s pretty well all over the country."

Questioned about this, White said the Air Force has rejected a plan to disperse B-47s permanently due to cost, but has two alternative plans to shift them from their military bases to civil airports.

One plan, he said, is dispersal on a "permanent reflex basis" in which small numbers of B-47s would move to many bases periodically. They would be supported there largely by fixed air base service contractors, with mobile teams from their home bases supplying special needs, and with "minor disruption to civilian activities other than the denial of a certain portion of the parking area."

The other plan would provide for smaller dispersal, but only during periods of international tension. The SAC survey shows that many airports could handle B-47s under either dispersal system with present resources, White said. Others have adequate runways but would need some construction.