

launch vehicle. In 1945, the first bomb dropped weighed 700 pounds to produce a one-kiloton explosion. By 1972, the West had already produced a weapon which used only 11 pounds of nuclear explosive to produce a one-kiloton explosion. At the same time, both sides have found ways of making the delivery of nuclear warheads infinitely more accurate, and an increase in accuracy of 10 per cent against a hard target is equivalent to an increase in military effectiveness of well over 100 per cent.

So both sides have begun to worry because they see the technical possibility of their enemy carrying out a successful first strike against fixed bases on land. Therefore, each side has a very strong incentive to increase the number of its nuclear weapons fired from fixed bases so as to retain the ability to retaliate even against a first strike. Of course, a force which is large enough to survive an enemy first strike could also be used for a first strike against the enemy. So, as this macabre competition develops, there is increasing risk of one side or the other actually using nuclear weapons in order to pre-empt a first strike by its opponent.

My personal opinion — and this is very much a personal opinion which is rejected by most strategic thinkers, at least in government — is that the idea of a relevant and successful first strike is, in fact, a fantasy for many reasons, even with the new military technologies available.

First of all, the institutional interests on the western side — the military industrial complex against which President Eisenhower warned us (on the Soviet side, no doubt, there is a similar complex) — have a tendency greatly to exaggerate the first-strike capability of their opponent.

In 1960, I remember, when the “window of vulnerability” was first discussed, the United States Air Force told President Eisenhower that the Soviet Union had 300 Intercontinental Ballistic Missiles. The American Navy, whose interest was rather different from that of the Air Force, said that the Soviet Union had only 10 ICBMs. However, reconnaissance by satellite showed that the Russians had, in fact, 60 ICBMs at that time. Institutional competition between services to exaggerate the nature of the threat has, of course, continued ever since then.

The second thing is that both sides possess strategic nuclear forces which are not on fixed land bases. More than half the American warheads, at the moment, are on submarines which, according to