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CENTRE FOR POLICY STUDIES

8 Wilfred Street, London SW1E 6PL

1986

THE AUTHOR

Lord Thomas has been Chairman of the Centre for Policy Studies since 1979. He has written a number of famous historical works, including The Spanish Civil War, 1961; Cuba, or the Pursuit of Freedom, 1971; and An Unfinished History of the World, 1979. In his speeches in the House of Lords he has often dwelt on matters of defence.

This pamphlet is based on a speech given by Lord Thomas to the Conference on Science and Technology in the Nuclear Age, in Lisbon, February 1986. While delighted to give its Chairman's speech a wider audience, the Centre for Policy Studies must emphasise that it never expresses a corporate view in any of its publications.

ISBN:0-905880-68-4

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Printed in England by Chameleon Press Ltd 5-25 Burr Road
London SW18 4SG

It is comprehensible why many rational, averagely informed people, in the United States as well as in Europe, should be, to begin with, sceptical of President Reagan's programme of research on strategic defence, the Strategic Defence Initiative (SDI), known as "star wars". First, Americans should face the fact that the very effectiveness of President Reagan as a public communicator of old home truths and of American traditional values has made him suspect in Western Europe which, for all its military dependence on the United States since 1945, still has different cultural values.

Secondly, the project seems to belong to the world of Jules Verne: a conflict 300 miles above the earth is not within the bounds of experience. Third, there is an understandable reluctance to contemplate the idea of conflict in space, because attachment to the idea of primitive innocence among the stars responds, after the collapse of the notion of the noble savage or of the uncontaminated sea, to some deep human expectation that virgin territory of some sort must remain. If not in the Brazilian forests, where history and anthropology suggests the existence of brutal, magical monarchs of a cruelty greater than that of the Portuguese bandeirantes or Spanish conquistadors, then in space. Fourth, a successful SDI programme might not only increase nuclear missiles (on the grounds that 'some would get through')

but also stimulate alternative offensive schemes, e.g. micro-nuclear weapons delivered in suitcases and, even more hideous, new chemical and biological weapons. Finally, there is the question of cost: the United States contribution of \$26 billion for the research stage of strategic defence is a sum large enough to confuse the public mind which, very understandably, can never take in figures so far above their own experience.

Well, each of these points has some kind of reply: Reagan for Americans is the President who has nudged his people towards better defence but less government spending. Then, whether one likes it or not, over the last generation science fiction (of which I know little) has proved a better source of prophecy than we could have expected. Third, though it is attractive to entertain the idea of a virgin universe it is no more realistic than that of the forests so loved by, if so unknown to, Jean Jacques Rousseau when he talked of the noble savage. I would myself prefer to have war in space than war in Westminster or the 8th arrondissement. Fourth, these micro and chemical weapons are already being developed - the latter by the Russians on a big scale. Finally, the figure quoted for the SDI programme for three years is not extravagant in terms of the defence budget of the United States - less than 20% of one year's usual expenditure. One must doubt whether the money saved would in fact be spent on hospitals and schools, if that

is presented as the alternative; and, as is usual with military innovations, the by-products of the scientific programme are inestimable.

One other aspect of this venture is that SDI is not an innovation. Rather, it is a return to the development of technological defence started in the 1960s and early 1970s. Indeed, Soviet interest in SDI may have begun as long ago as the late '50s - and it may have continued despite the restrictions made on deployment of the products of research in this field demanded by the antiballistic missile treaty of 1972 and its protocol of 1974. The US and the Soviet Union renounced these developments in the wake of arguments by the Nixon administration that such defensive installations would be "de-stabilising" and lead to another generation of offensive missiles, therefore causing great expense. Research was explicitly not banned.

The whole subject, however, did need reconsideration not only since a move towards a defensive strategy brings obvious benefits to an American president who might, in certain circumstances, now have less than half an hour to make decisions which could hardly fail to ruin much of Western civilisation as well as most of Russia; but also because of Soviet progress in this field. Presumably, President Reagan did not mention this latter reason because he did not want to create a sense of alarm such as occurred in the late 1950's, when achievement of the

Soviet Sputnik led to the notion of "missile gap". All the same, he probably should have mentioned this aspect of the affair, for it is crucial.

We should not be surprised if the Soviet Union gets ahead, or keeps abreast, of the West in technology. It is true that Russia since 1917 has not fulfilled the promise evident in the country before that date. All the same, Russians have been adept at procuring information and technology from the West and, by painstaking labour and sacrifices of men and money on a large scale, have been able to carry through great innovations with success. Thus, Soviet research on atomic energy began about the same time as that of the US in 1942, was given a great thrust (under BERIA) after 1945, and achieved an atomic test in 1949 and a hydrogen bomb test in 1953, four years and one year respectively after the US had done the same. More significantly still, the Soviet rocket programme was, till 1957, well in advance of anything then done in the US which, between 1945 and 1951, had no rocket research to speak of. It is useful to recall that the Soviet Union was the great innovator in this whole field: the US may have created the nuclear age, the Soviet Union brought in the rocket one. A modern equivalent may be Soviet research in particle beams and how to convert them into weapons: a field in which the Soviet Union is ahead of the West and in which it has - apparently - influenced the United States.

Concern with defence (in the proper meaning of the word) is another field in which the Soviet Union has always been ahead. Over the last few years we have rightly paid attention to the Soviet investment in new offensive weapons. But their defensive effort has been vast too - substantial investment in surface-to-air missiles, in radars for air defence, in interceptor aircraft, and in giving ICMB silos and command and control centres hardened protection.* Refuges with similar protection have been procured for nearly 200,000 party and government leaders in both country and town. There are elaborate plans (e.g. by re-siting in the style of 1941/42) for the preservation in peace of those parts of the Soviet economy which are considered essential in war, including the stock-piling of vital materials, and the preservation of the labour force. The Russians have emphasised mobility: the SS-20, the SS-25, and the SS-x-24 are all mobile or may be expected to be soon, and control communication and command posts are also perhaps capable of mobility. It is not without significance that all the above Soviet defensive arrangements, including research into strategic defence, are under the same command "National Air Defence". This was founded in 1959

* 12,000 SAM launchers at 1000 sites; 10,000 air defence radars; over 12,000 interceptor aircraft dedicated only to defence; another 2,800 such could be so used.

at the time of Khrushchev's general reorganisation of Soviet foreign policy which followed his realisation of the undesirability of nuclear war (proclaimed ex-cathedra). It seems that spending on defensive and offensive weapons is now on the same level.

This is the essential background to a consideration of Soviet interest in strategic defence. As important is the fact that in all these fields of defence the US has done practically nothing. The Nixon administration dismantled nearly all the US defences in their programme of "purposeful weakness" since, they argued, MAD rendered all such defence likely to be pointless - and thus wasteful. A US defence analyst recently remarked that the US defence command, seeing missiles overhead, could do little more than pass the message "They came from over there, they are going that way, do what you can!"

The Soviet Union has already one element of an anti-ballistic missile defence - that established round Moscow and permitted under the ABM Treaty of 1972. It will be recalled that this treaty allowed both the US and the Soviet Union either the protection of the national capital or of a complex of ICBMs. The Russians chose Moscow. The US chose North Dakota, but never deployed their defences because of the above-mentioned policy of "purposeful weakness". The Moscow ABM complex on the other hand when complete, probably next year, will

consist of the maximum permitted under the treaty, 100 static "Galosh" rockets, which are "nuclear tipped" and are designed to destroy targets - missiles and satellites - outside the earth's atmosphere. There will also be "high acceleration vehicles" there whose purpose is to destroy missiles after their re-entry into the atmosphere. These latter missiles are backed by a chain of early warning radars with centres for the tracking of targets and missile control radars all round Moscow. Those looking forward to a good co-existence walk organised by Serenissima through those Sparrow Hills which figure so much in XIXth century literature may be disappointed.

In addition, Russia has the world's only established anti-satellite system (ASAT), based on a satellite already in orbit which will be able to send off conventional warheads against enemy satellites where the two are in the same orbit.

The Russians made it clear that they would not allow the ABM treaty to restrict research which could lead to defence against missiles. Kosygin set the tone with a remark in 1969 reported in Kissinger's memoirs: "how do you expect me to tell the Russian people that they are not allowed to defend themselves?" Marshal Grechko, then the Soviet Minister of Defence, remarked in public after the ABM treaty that the document "placed no limitation whatsoever on the conduct of research and experimental work directed towards the solving of the problem of defending the country from nuclear missile strikes".

There is, apparently, now ample evidence in the hands of the US government that the Soviet Union is conducting major research programmes in: (i) lasers; (ii) kinetic energy weapons; (iii) surveillance and target detection; (iv) pointing and tracking; (v) space programmes capable of military anti-ABM use; and (vi) computers. Most of these programmes originate from the 1960s or even the 1950s. In most such endeavours, the line between research for peaceful purposes and for possible ABM use is difficult to draw. For example, the large segmented mirror, detected by US satellites, is said by the Soviet Union to be geared to astrophysics. It could be useful for a space-based laser weapon. The Soviet Union may thus have already broken the ABM treaty and perhaps the outer space treaty.

The most frequent accusation here has to do with the development of the important long range phased array radar station at Krasnoyarsk, far east on the Trans-Siberian railway. The Americans are convinced that it is to be used for a ballistic missile early warning system (the ABM treaty allowed radars on the periphery of the USSR and the USA - though not in the middle of the countries concerned since that would enable an overall ABM defence). Krasnoyarsk is a fairly remote spot (the British had a vice consul there in 1913, though) 500 miles from the nearest - Outer - Mongolian - border. Even in Russian geography that is a fair distance. The US Department of Defence also argue that circumvention of the treaty (as opposed to a breach of it) may involve the

SA-12, a system aimed at tactical nuclear weapons but which might be able to engage both Pershing missiles and submarine launched missiles. One analyst in Washington has indeed suggested that the Russians took a specific decision to "break out" from the treaty in 1979 at the time of Carter's "countervailing strategy" (PD-59 dealing with targeting missiles at Russian military centres).

I think I should say a word about Soviet progress in each of these fields. I don't find the language of science at all easy. But it is up to us men of arts to try to communicate the facts of science in a simple language. First, in respect of lasers the Russians are said to have 10,000 scientists and engineers at six places dealing with high energy lasers - principally at Sary Shagan in Kazakhstan. The research includes chemical lasers of three main types, and the electron laser too, as well as the excimer: indeed research includes most matters which preoccupy the US in SDI. Further development could facilitate close-range defence of ships at sea, of strategically significant targets in the Soviet Union, and of forces actually engaged in fighting. Airborne lasers usable for air defence have been tested, as also has a ground-based laser usable against satellites. Second, US specialists suggest that Soviet research into particle beam weapons could result in a prototype for a space-based system within ten years. Third, research into radio frequency will surely one day produce weapons able to jam and confuse the electronics

of US satellites. Fourth, the Russians have, since the 1960s at least, been experimenting with weapons based on kinetic energy - that is, the collision at high speed of a mass of objects with a target. Before 1970, the Soviet Union is known to have tested an experimental gun to shoot streams of tungsten or other heavy metals at about 15 miles an hour in air or 40 miles an hour in a vacuum. Research has also begun in respect of electro-magnetic railguns which perhaps one day could be space-based, though there is no sign of it yet.

Fifthly, there is research on a large scale into surveillance and target detection. I mentioned Krasnoyarsk. Whatever the truth of that, there are eleven large early warning radars concentrated at six places on the periphery of the Soviet Union. (Eric Stubbs of Harvard, an analyst for the Council on Economic Priorities has apparently argued that these radars are of a size which makes them vulnerable to attack, however.) In this department Russia already possesses a satellite in orbit with an infra-red sensor which can give a half-hour warning of any launch of ICMS by the US. As yet these methods are said to be unable to detect missiles launched by submarines but naturally they are working on that. Sixthly, Russia has eight stations for launching objects into space. They are at work on three more such - first, a medium lift launch; second, a heavy lift; and, third, some equivalent of the US shuttle. The "heavy lift" station could raise a 150-ton object into a

fairly low orbit round the earth which could be adequate for either a large manned space complex or for a system of space weapons. It is, however, true that the chief deficiency in the Soviet research programme is in the realm of the electronic mechanisms needed to manage operations in space; hence the great efforts made to get hold of US high technology: above all computers and sensors. (An existing Soviet computer, ES 1060, was produced in 1978. It is equivalent to IBM 360 introduced in the US in the 1960s).

All these activities suggest that, in the long run, the Russians could try to achieve a strategic defence system based on ABM deployment throughout their territory; that, whatever the ABM treaty says, if they get it they will deploy it; and that in almost all departments of SDI the Russians are working on the same track as the Americans - in some respects in advance of them (e.g. particle beams). Why then the Soviet attacks on President Reagan? First, because their aim must be to slow down US technical capability, if necessary by accusations of breaches of treaties which might be impossible to prove in Russia but would be easy to prove in the US. They know, after all, recalling the history of missiles between 1957 and 1961 that, once US technology has been given a green light, US scientists will probably overhaul anything done in Russia. One can also speculate that, given the apparent reluctance of Western public opinion to appreciate the facts outlined

here, the Russians are seeking a convenient cross-roads at which to denounce the US for breaking the ABM treaty and continue their own deployment with their international reputation largely unsullied.

In general commentary on the above, it is worth making several concluding points. First the ABM treaties are, of course, part of the elaborate network of arms control built up in the 1960s and 1970s (Outer Space Treaty, SALT I, Anti-Proliferation &c). But neither they nor the network are sacrosanct. They have indeed been most imperfect. If one could find a better system of guaranteeing world security, it would be a good thing. The Americans at the time of the signature of the ABM treaties stated plainly (in Unilateral Statement A) that, if "further limitation of offensive forces were not achieved within five years", they would "hold open the option of reconsidering their commitment". Soviet offensive weapons have been built up greatly since 1974 but this reconsideration by the US has in fact not occurred. There is incidentally no reason why SDI and arms control should not be seen as the reverse side of the same coin. If, for instance, there were successful reduction of launchers, verification against cheating would become even more important. Defence up till now has not been properly dealt with within the context of arms control. Perhaps it could and should be.

Second, it should be realised that Russia in the nuclear age is still, under Gorbachev, as under Brezhnev, Khrushchev and Stalin, being run by men whose ideology is Marxism-Leninism. This is what gives the Soviet leaders their notion of legitimacy. Now Marxism is not only an exceptionally interesting if flawed view of history which has affected all of us at one time or another, but it does also contain two consequences of importance. First, it enables the Soviet government to look on treaties as stepping stones to further ends, not ends in themselves. It may be convenient to keep them. But equally it may be convenient to scrap them if and when the "correlation of forces" suggests. Any belief that a commitment is for good and all is a vulgar bourgeois survival. Communists have admitted this so often that they must suppose that those who oppose or study them will take it into account. Second, Communists look on peace as on war as different methods of obtaining the same thing. Until the achievement of the Communist society there can be no letting up of the struggle. Any consideration such as "the spirit of the treaty" - any treaty - is not likely to cut much ice.

It may also be recalled that Marx assigned a specific task to technology in history - considered usually to the exclusion of the intellectual labour which makes technology possible. He also envisaged through the dialectic that every innovation invokes in the end its contrary - in military matters a successful defensive

system (e.g. the barbed wire of World War 1) produces a new offensive system (the tank). These ideological factors, combined with the inheritance from old Russia - a concern for defence in depth - make it not improbable that SDI, often attacked as a dream of the White House, may turn out to be a reality first achieved by those wide awake in the Kremlin. The consequences of that - which in a pure form could enable the Russians to contemplate offence with some impunity - is scarcely an inviting prospect.

The icy novelties of the nuclear age are such as to baffle most laymen. But laymen must grasp the language and facts of science as they have done those of economics.