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9 October 1987

Dear Charles OM.

Enclosed are two papers which I thought might be of interest to you. The first is a short abstract from a 200 page study we have just done for the Swiss MOD on 'Gorbachev, Economics and Defence'. Contributors included Michael Kaser, Philip Hanson, Peter Frank. The paper as a whole tackles much broader issues than simply arms control. I will forward a copy if it is of interest.

The second is by an American with whom we work frequently and in whom we have absolute confidence. It is the text of his commentary on a presentation by a senior US scientist (and "high priest" of spending money on high tech weapons) given last week at a conference in London.

Please let me know if they are of interest.

Yours

Chris

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From the Private Secretary

22 October 1987

Thank you so much for your letter of 9 October, which I received on return from Vancouver, and for sending me the two papers, which I found very interesting.

I have also seen your further letter about discussions on military doctrine with the Warsaw Pact. I will reply to this as soon as possible.

CHARLES POWELL

C. N. Donnelly, Esq.

IS THE SOVIET UNION, IN THE LIGHT OF ITS ECONOMIC PROBLEMS, FORCED TO ENGAGE IN ARMS CONTROL NEGOTIATIONS?

1. The Political Framework.

Marx identified economics as the most important motivating factor in human affairs. Lenin's amendments to Marxism subordinated economics to policy and put policy exclusively in the hands of the Communist Party. Gorbachev, as leader of the Party, has identified the parlous plight of the Soviet economy and committed himself to its reform. But the economic and social decline in the USSR that set in under Brezhnev was not a cause of the USSR's many problems, but a symptom. The causes are to be found in the political system itself.

Consequently, in order to achieve the essential economic reform, Gorbachev must first instigate a reform of the Soviet body politic. In attempting this, he is severely constrained in that: (a) by attacking the structure of privilege and influence of which he is part he jeopardizes his own position as leader; (b) there are definite limits to his personal power, and; (c) Communist Party doctrine provides a framework for social control and stability which injudicious reform might disrupt. When it comes to reform, success will breed success. The more Gorbachev can strengthen his personal following in the leadership, enthuse the population and the Party with his message, and improve the quality of life, the stronger will be his position and the more reforms he will be able to undertake. These elements are inextricably interlinked and mutually supporting. A contribution in one area will pay off in all areas.

Gorbachev is building up a powerful team to implement his political and

economic reforms, including a very competent group of advisors who know and understand the US and European scenes and who are proving very capable of manipulating Western public opinion in support of their policies.

In true Leninist form, Gorbachev considers that almost any action is justifiable if it constribues to the survival and development of Party power. It is in no way inconceivable that Gorbachev, like Lenin, will be prepared to make serious concessions in any area of arms control if he considers that it will achieve a valuable and necessary result. Loss of face, however, will be more important to Gorbachev than it was to Lenin because today this translates into loss of authority.

2. Economic Problems.

It is difficult to identify the true extent of Soviet economic problems, and to pin-point the most important areas because of the extreme unreliability of statistics. It is becoming clear, however, that the problems are more widespread and deep seated than was previously thought.

Gorbachev's predecessors had sought to develop the Soviet economy by extending its scope to increase the resource base (larger population, more land cultivated, more raw materials). This has now been carried to the limit. The only way left to Gorbachev to strengthen the economy is to intensify it, increasing its efficiency (productivity, yield, lack of waste, etc.). This increases the requirement for political reform to allow for more incentives and to reduce the restrictions imposed by the ideology on economic development.

In addition, the education system is geared to specialist training and

does not confer the broad general education that would make it easier to adapt to changes in the economic and social structure. This is particularly true in technology training, which excels in narrow specialization but does not create the flexibility necessary to cope with the rapid changes envisaged over the next decade.

Economic reviewal would be greatly facilitated by easier acquisition of technology, technical expertise and finance from the West. But this is restricted at the moment by CoCom embargoes, and industrial espionage can only partly fill the gap. In all but a few areas, Soviet technology lags behind the West and in the civilian sphere the gap is not being closed. Indeed it may widen if current Western plans for technological development go ahead under the impetus of the SDI programme. The gap in many areas of military technology has only closed because of: (a) lower Western investment in this area and; (b) clever Soviet design to compensate for technical deficiencies.

3. The Defence Burden.

The real impact of the defence burden is not so much in terms of financial expenditure (as is the case in the West), but in terms of resource allocation which for decades has given absolute priority to military requirements. This has led to a total distortion of the economic - and particularly the industrial - system, resulting in an extremely inefficient and wasteful civilian economy. Furthermore, the military absorbs more than half of the national R&D budget, devoting it to direct weapons production, with no spin-off into the civilian sector or national economic infrastructure as happens in the West. Consequently, the military machine ties up that element of the economy which is most crucial to the nation's technical modernization, itself

the sine qua non of economic reform. Shifting of effort from defence to the civilian sector, therefore, demands not just a cut in expenditure (as it would in the West) but a radical restructuring of the entire economy. This is a move which will require significant political changes and will have to be accompanied by considerable social as well as economic reorientation.

The Soviet concept of a military doctrine results in a high level of standardization of procedures and equipment within the Warsaw Pact. It enforces a discipline on military procurement and organization which reduces the net cost of maintaining the military system. Compared to the USA, the Soviet Union gets its fielded Armed Forces very cheaply. Maintenance of the Armed Forces at their current strength and technological level will not place an intolerable strain on the system, neither will a reduction in the number of nuclear weapons fielded of itself ease the Soviet defence burden.

But what Gorbachev needs to avoid is committing future resources for further development of the Armed Forces. Yet as he is committed to not allowing the West to achieve military superiority, he will be forced to do this to match Western developments if the West: (a) continues to develop new weaponry using Emerging Technology and; (b) prosecutes SDI research as is currently proposed. If he fails to match this, Gorbachev faces the prospect not only of leaving the USSR in a state of strategic nuclear inferiority, but also of having Soviet conventional forces rendered obsolete by a Western technological breakthrough in conventional weaponry.

If, however, the West can be persuaded to slow down significantly the rate of technological development in military systems, military doctrine will stand the USSR in very good stead because it will enable the Soviet Army to

maximize its performance with existing technology, something that it has done extremely well during past decades.

4. Problems Within the Soviet Military.

The pre-eminence of the military in Soviet society has so long been unquestioned that it has become institutionalized and has led to complacency within the military itself. Although doctrinal studies within the General Staff have been prosecuted in an impressive manner and high level command and control reorganized for theatre war, there is much evidence to show that, at unit level, the Armed Forces are plagued with indiscipline, a low level of individual training, and poor leadership and morale. Units are incapable of carrying out the new operational doctrines and of handling the new equipment that has been procured for them at such cost to Soviet society. Furthermore, the Armed Forces were, prior to Gorbachev's accession, demanding an even larger share of the scarce high tech resources.

During the past two years, as his political position has strengthened, Gorbachev has begun to attack the military's position of pre-eminence and to make it clear that key high tech resources must be diverted so as to develop the civilian technological infrastructure and thereby to facilitate economic progress. It will make it considerably easier for Gorbachev to carry through this restructuring of the military system if he can improve the international security situation and thus reduce the Army's grounds for demanding more resources.

5. Eastern Europe.

The Warsaw Pact is not like NATO. NSWP member states do not have the independence of action of NATO's European members, and their national R&D has been artificially restricted by the USSR. Whilst this makes for operational cohesion in war, it creates difficulties in peacetime. A reduction in Soviet defence spending cannot realistically be compensated for by an increase in NSWP contributions. Furthermore, the economies of Eastern Europe are for the most part in a much worse state than that of the USSR, and East European governments would welcome a cut in their own defence expenditure. Reform in Eastern Europe, however, is in many places more difficult than in the USSR because of the tenuous stability of some East European regimes. This will complicate Gorbachev's problem considerably.

6. Conclusions.

The economic savings of reducing or abolishing certain categories of weapons and even of reducing standing armies in Eastern Europe are not of themselves sufficient to force Gorbachev into arms control negotiations.

However, it is a mistake to over-simplify the problem to this degree. Economic and political considerations are inextricably intertwined, and Gorbachev has a long term perspective. Far reaching economic reform is the most basic requirement for improving and renewing Soviet society, but to achieve this, political reform must be undertaken too. An arms control agreement is seen by Gorbachev as the first step towards a greater degree of disarmament, including a halt to SDI research and a reduction of Western investment in high technology weaponry. The resulting improvement in East-West relations would:

(a) enable him to reorientate the Soviet economy and change the priorities of resource allocation so that military requirements take second place; (b) allow him to cut down on military R&D and direct resources to the development of Soviet civilian industry; (c) facilitate technology transfer from the West, and; (d) significantly strengthen his position of authority, enabling him to push for further reforms.

Skilful negotiation might also achieve a military advantage for the USSR in arms control negotiations. All Soviet proposals to date, if accepted as issued, would have resulted in a relative advantage to the USSR.

We conclude, therefore, that economic pressures are indeed a major force in encouraging Gorbachev to engage in arms control, and would suggest, moreover, that he will be prepared to make considerable concessions, if these can be presented without loss of prestige on his part, in order to achieve his end.

"Comments on Papers Outlining Opportunities Offered by New Technologies in Defence."

The author, Ken Brower, is by profession, an engineer and, designer. He is also a competent defence analyst who has worked with SSRC for several years and we consider his comments worthy of note. His main area of expertise in the field lies in the synergystic interaction of technology, tactics and operations. These comments are distributed on private limited circulation to stimulate interest in and details of the subject.

"As I mentioned yesterday I have been told by a former boss not to get involved in policy. I will therefore try to limit the scope of my remarks consistent with this good advice. A respected collaborator has indicated to me that my approach to problems is like that of an engineer with emphasis on pragmatic measurement of real power, what I say should reflect this attitude. I'd first like to start with net assessments of the current conventional balance of power in Europe. Yesterday afternoon a chart was shown confirming what Chris Donnelly has stated earlier. The conclusion was that the Soviets cannot meet their required norms, or the necessary correlation of forces, if NATO is fully deployed, but they can achieve victory if they can achieve at least some degree of strategic surprise. Or, failing that if they achieve technical/tactical surprise they can adjust the correlation of forces even if NATO is deployed. This is not a happy assessment.

We have just been told concisely and, I believe, correctly that:

- Demographics will reduce NATOs manpower base relative to the base of the Warsaw Pact, and;

- Growth in NATO defence budgets in real terms is not practical.

These facts are irrefutable and therefore suggest that the current conventional balance of power - which at best can only be called marginal - will only get worse in the future. I would note that this prognosis is also consistent with the fact that, due to application of Emerging Technology, the Soviets may be able - for the first time - to neutralize NATO tactical airpower which they see as providing 50% of NATO's firepower.

In the handout we were given prior to the start of the conference entitled "the suggested key points of discussion", the following statement was made:

> Technology provides the only viable option to strengthen NATO deterrence of a Soviet conventional assault.

This statement is clearly consistent with the entire thrust of several statements and papers we have heard. But is it true?, it certainly would be if we could show that conventional military strength is a linear, or indeed any type of function of the resources - manpower and money - which are allocated to military forces.

What does an analysis of this assumption prove. First let me present data previously published by Chris Donnelly.

COMPARATIVE EFFICIENCY OF DEFENCE SYSTEMS.

ITEM	UK	SOVIET ANALOGUE (Israel*)
Total Manoeuvre Battalions:	114	198
- Regular	74	45
- Reserve	40	153
% Heavy Battalions	39	74
Tanks	1,100	4,200
Self-Propelled Artillery	275	1,100
Armoured Fighting Vehicles	5,000	9,000
Annual Cost	9×10^9 dollars	4×10^9 dollars
Cost/Unit	4.725	1.0

Source: Institute of Strategic Studies.

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* Israel organizes her Army on Soviet lines with a large percentage of active reserves, but uses Western Equipment.

NATO COMPARISON.

COUNTRY	(ARMY BUDGET) (TOTAL MANOEUVRE BNS)
United States	11.1
United Kingdom	3.9
Federal Republic of Germany	1.7
France	1.4
Italy	2.4
Soviet Analogue	1.0

Source: Institute of Strategic Studies.

IMPACT OF INTERACTION.

ITEM	3 SHOCK ARMY, as compared with BAOR
Active Manpower	approx same, i.e. 55,000
Tanks	2.5 times
Artillery	6.0 times
Infantry	1.5 times
Logistics Lift	1.5 times
Supporting Arms (Air Defence, NBC Defence)	considerably more
Total Cost of Kit	1.15 times

Source: Strengthening Conventional Deterrence in Europe - Soviet Operational Concepts, C. N. Donnelly, pp.105-137.

This data indicates that it is not true that conventional military strength is a function of resource allocation. Therefore it is not how many people NATO has under arms, or how much is spent, but rather how wisely these resources are allocated.

Thus my personnel belief is that NATOs most effective option to strengthen its deterrence against Soviet conventional assault is to allocate existing resources more effectively.

I would now like to return to the question of technology.

Recent military history has consistently shown that technology is rarely decisive unless the relative levels are dramatically different. Emerging technology, as I have heard it described here, includes advances in warhead terminal lethality and improvements in the cost, speed and physical parameters required for computations. My perception is that most elements of "emerging technology" already exist. What may be new is the synergistic combination of these elements in particular weapon systems. Therefore, the effectiveness of the proposed weapon systems will be significantly degraded by:

- lack of surprise;
- long lead times (allowing the USSR to develop counter-measures in parallel);
- low rates of deployment and the uneven distribution of assets within NATO (what use strengthening US Corps further if the main blow falls on UK or Belgian sectors?);
- vulnerability of these systems to counter-measures against any one element of a series of elements required for operation;
- disproportionate cost;

- tendency to deploy these systems in a militarily inefficient way;
- use of new technologies to expand capabilities in lieu of making changes to the distribution of roles and missions;
- finally, the assurance that the Soviets will ultimately deploy similar systems against which we will need to provide counter-measures.

Therefore it seems to me highly likely that the cumulative impact of ET will be to increase, not to reduce, the cost of defending Europe.

What of the impact on personnel? Once again if roles and missions are not adjusted, the tendency will be to require more people for support and supplementary systems. Moreover, these will have to be highly skilled people, and in recruiting or training these, we will be facing an ever increasing problem. Do we assign our best and brightest to be small unit commanders? Or, do we use them behind the computer displays of ET weapons? Unfortunately I believe the latter is more than likely, and therefore there is a distinct probability that ET will in fact result in less, rather than more, defence capability.

I must admit, however, that if our institutions can adjust the allocation of defence resources to functional aims, ET could conceivably lead to significant cost reductions. However, my experience is that institutions are very reluctant to do this since it means radical alterations in the distribution of money, posts and therefore power.

One theme I heard yesterday was an assumption of technological superiority for Western Arms over those of the Warsaw Pact. Mention was made, in particular, of the results of Third World combat. The air war in the Bekaa

Valley, the Falklands, Grenada, Iran, Vietnam.

I have studies US and Western weapon systems as a design engineer for all types of systems deployed over a 40 year period. Basically NATO has not been able to convert the inherent advantages of its economic system and its diverse advanced technological base into weapon systems that are qualitatively superior, more easily operated and much lower in cost than their Soviet equivalents. There is even evidence to suggest that, because of the inherent strengths of their cohesive defence system the Soviets have been able to generate more effective, more operable, and much lower cost weapon systems than we.

As a technologist, what do I see during the post 2000 environment? Frankly, like the Soviets, I am not sure that anyone can forecast the future beyond about 10-12 years in an age of rapid technological advance. However, I am willing to pull out a crystal ball, but please, don't remind me tomorrow of the predictions I have made today. I believe that under ideal circumstances there will be:

- decreasing emphasis on large surface combatants and submarines;
- very less emphasis on tactical air;
- an increase in strategic mobility;
- a decline in tactical mobility;
- a search for a means to reacquire tactical mobility;

Unfortunately because of what Joe Braddock* calls cultural factors I, in

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* Member of US Defence Science Board and President of BDM Corp.

fact, doubt that ET will change our allocation of manpower and dollars to roles and missions.