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## Challenge

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## CHALLENGE !

"The modern nation which turns its back on technology is doomed to a second class existence." Despite this warning by Dr. John S. Foster, Jr., Defense Director of Research and Engineering, the United States is apparently about to lose its technological lead.

Ten years ago our overall R&D funding—public and private—was twice that of the Soviet Union. Today it has shrunk, and we now spend only 20 percent more than the Soviets. If this trend continues, by the midseventies we will clearly be second in overall R&D expenditures.

Nor is the Soviet technological challenge limited to R&D funds. The United States and the Soviet Union have roughly equivalent numbers of full-time scientists and engineers engaged in R&D activities. However, the Soviets are graduating technicians on a virtual production-line basis. In the past 15 years, for example, they have quadrupled the training of engineers so that today they produce annually six times the number we do. If this trend continues, by the mideighties they will have a R&D force one-third larger than our own.

The disparity between both nations is even more disconcerting in terms of strictly defense-related R&D, which includes atomic energy, space, and, of course, military technology. In 1950 the U.S.S.R. defense R&D expenditure amounted to half ours. By the 1968-69 period they had matched us. Today the Soviet Union is investing about 15 percent more in defense R&D than is the United States. And in light of their past 10 percent annual increase in defense R&D spending, they may well exceed us in this area by some 50 percent as early as 1975.



Our sluggish R&D base is threatening to put us out of the running as a world power. Today we have land and sea-based strategic deterrents only because of the impressive defense-related research and development undertaken in the forties, the fifties, and the sixties. But our posture tomorrow will no longer depend on what we did yesterday. It will depend on what we do today.

We all remember the shock of the first sputnik. It took us 10 years to regain the lead in space. On matters of nuclear deterrence and strategic weaponry, we can hardly afford that time. Indeed, we cannot afford even a 1-year gap. However, unless we respond today to the Soviet R&D challenge, we will have no alternative. New systems necessary to counter and match the burgeoning Soviet capabilities would require 4 to 10 years of planning, R&D, and production leadtime. Thus, failure to respond immediately to the deteriorating R&D situation in this country could well lead us to second-class status.

Secretary of Defense Laird has repeatedly warned that the most serious threat to our national security is the "large and growing military research and development of the Soviet Union." Addressing the declining R&D base, Dr. Foster has urged that "this trend has got to be reversed... the problem is we haven't been able to find a way to galvanize a reaction to this." In short,

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the Nation seems unconcerned. And yet the expanding Soviet and decreasing American investment in defense R&D is rapidly reducing our overall relative defense capability—both strategic and conventional.

Dr. Foster has observed that “in certain areas we no longer lead; we follow. No reversal of this trend is in sight.” In short, the weapons gap has closed.

I have already discussed in previous “Challenges” the ominous warning by high Defense Department officials that by 1974 the Soviet Union may well have the capability of destroying 95 percent of our land-based missiles and our Strategic Air Command bases. The Russians already possess more ICBM’s than we do, and the end to production and testing of their SS-9’s, 11’s, and 13’s is nowhere in sight. And, as Secretary Laird has stated, they are producing Yankee Polaris type nuclear submarines at a remarkable rate. In this regard it is noted that just one Soviet shipyard, Severodvinsk, has the capability of building more nuclear submarines than all of our yards, private and public, together.

Other recent additions to the Soviet arsenal are equally awesome. These include several new classes of attack and cruise missile submarines, new antiship surface-to-surface missiles, new ASW ships with sophisticated sensors and attack capabilities, new radars and missiles for antimissile defense and air defense.

There is another area severely affected by expanding Soviet and decreasing American R&D. That is our ability to estimate what the Soviets are doing. Intelligence data is always fragmentary, even with the best collection efforts. As Dr. Foster has explained, in the past we were able to fill in the gaps because of our technological expertise. Superior R&D protected us from Soviet secrecy and surprise. We were able to interpret data about Soviet develop-

ments and deployments with some confidence. Armed with those interpretations, we were able to initiate exploratory work on systems to meet the latest Soviet advances.

But as we cut back on R&D, we fall farther and farther behind in our ability to assess new Soviet developments and, above all, in our ability to respond to them. Today our R&D is a preventative shield. In 5, 10, or 15 years will it still be? Loss of our R&D leadership means the loss of the best protection we have against Soviet secrecy and surprise.

Our job is to maintain a strong defense posture. But the problem is *how*? As the challenge from the Soviet Union mounts, our own R&D and military budgets are shrinking. This is due to many factors, primary being the reorientation of national priorities and the underestimation of the growing Soviet threat.

Reduced R&D funds, manpower, facilities, and time, coupled with spiraling production costs, demand a new strategy if we are to respond to the technological challenge. One avenue would be by capitalizing on our allies and their technological expertise.

Too long have we suffered from “N.I.H.” syndrome, the “not invented here” complex. We have avoided buying from our allies and friends, feeling we had the expertise, money, and time to do a better job. The pride and dignity factor comes into the equation too. But the situation has changed. We may well have to reconsider or compromise our national security.

Many of our friends and allies have demonstrated a high level of capability in weapons design, development, and deployment. These weapon systems are frequently sophisticated in performance as well as rugged and reliable; and, furthermore, they are often available at relatively modest cost.

The British Harrier aircraft is the world’s first operational V/STOL. The Israeli surface-to-surface missile Gabriel,

as well as the Italian destroyer ASW helo are both extremely successful. The Dutch have a new combination air search/surface search radar which is highly thought of by a number of NATO nations. Should we not give serious consideration to adaptation within the American military inventory, if only as a stopgap until we develop and produce systems more suitable for our specific requirements?

Reliance on the technological progress of our allies will not only save on expensive planning, research and development, and testing. Perhaps more important it will save valuable production leadtime in the face of the burgeoning Soviet threat.

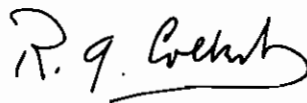
The Soviets have not been reluctant to copy our weapons and improve upon them. An excellent example is the Sidewinder air-to-air missile, which they have reportedly copied and modified. In so doing, they would have saved invaluable R&D time, money, and effort. And, simultaneously, equipped themselves with a first-rate missile.

Finally, pro rata sharing of R&D and production costs has worked well in developing such foreign jointly produced systems as the multirole combat aircraft, developed by the British, Germans, and Italians; and the Anglo-French Jaguar, a close-support aircraft. There is no reason why the United States should not avail itself of its talented allies and undertake similar pro rata sharing arrangements.

For years we in the Navy have ignored surface-to-surface missiles. This

in spite of the development of a large and sophisticated "family" of these missiles by the Soviets. With the sudden surge in Soviet maritime potential, with hundreds of Russian surface ships and submarines equipped with these missiles, greater attention is now being paid to the possible development of similar American missiles. We are far behind in the specialized technology for this type of missile. Is there any reason why we cannot select the best missile available from our allies, buy it overseas, or build it here on license? We will be saving possibly as much as 5 years and, at the same time, be bringing a badly needed weapon quickly into our inventory. And we will be saving money for use on other vital R&D projects.

We have never been in as precarious a position as that in which we find ourselves today vis-a-vis the Russians. With the Soviet Union's R&D in defense now exceeding that of the United States for the first time and with its overall R&D rapidly approaching that of the United States, the momentum is no longer ours. The ramifications are ominous, the possible results all too clear: degradation of the United States to a second-rate world power. The trend must be reversed.



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Cover: Adm. Joseph Mason Reeves (1872-1948), U.S. Naval Academy Class of 1894, and former Commander in Chief U.S. Fleet. See page 48 for biography.