

NATIONAL SECURITY IN THE 1990s

Michael D. Rich

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RAND, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138

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We are all aware of the abundant technological contributions to national security made by engineers. Lately it seems like the profession has also lent its vocabulary. We hear about:

- o Constructing a "new world order;"
- o Building a "common European home;"
- o Designing a new "European security architecture."

So, discussing national security affairs on an occasion like this seems quite natural.

Let me begin the way that all talks these days on international events should begin--with a disclaimer in the form of a pledge. I promise not to make any predictions. But, if I slip up and you hear something that sounds like a forecast, please note that I also believe that there is good chance that the opposite might happen, too.

It was natural to feel a surge of hope and optimism at the end of the 1980s. The dangerous and costly elements of the Cold War appeared to be receding. Accelerating negotiation and cooperation seemed to justify expectations that defense funds might be diverted to our other social priorities.

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Then, all of sudden--and it was sudden--there are about 500,000 American troops and 200,000 troops from other nations fighting an intense war in Southwest Asia.

The dramatic and unpredictable events of the last two years give rise to justifiable concerns about the future security of the United States and its allies. Well, to borrow a line from Yogi Berra, "the future ain't what it used to be."

Today I will describe what the future geopolitical environment might well look like, what we should expect in terms of defense spending, and, finally, what this all means for the defense industry, which relies so heavily on scientists and engineers.

For 40 years, our defense requirements have been dominated by the objective of defending Western Europe and deterring Soviet threats there and elsewhere. That included nuclear threats to our homeland.

Our competition with the Soviets presented us with demanding strategic, operational, and technical challenges. These challenges influenced nearly every aspect of our security establishment, including the way we organized and equipped our military forces.

We generally assumed that forces capable of deterring Soviet threats would be capable of protecting our security interests from non-Soviet threats, as well. Les Aspin has put it more vividly. He has said that we assumed all along that "if we could skin the cat, we could also skin the kitty."

Whether or not this orientation was the best way to view defense requirements then, it is almost certainly invalid now.

The Soviet threat, at least in its historical embodiment as a cohesive bloc of advanced multinational forces and capabilities, is severely diminished. Nevertheless, some anomalies remain. Let me give you a few examples:

- o The USSR has not perceptibly slowed its nuclear force modernization;
- o The Soviets have moved large quantities of tanks and other combat equipment out of the CFE Treaty area to east of the Ural Mountains. Although this transfer may be technical legal, it means that they will destroy far fewer tanks than the West had expected;
- o Although they have begun to demilitarize the Sino-Soviet frontier, the Soviets have maintained the quality of their force structure that threatens Japan;
- o They continue financial support to various client states, such as Cuba and Vietnam, although such assistance is shrinking and will probably end before long; and
- o At home, there are mounting indications that Gorbachev is drifting from his plans to liberalize Soviet society and reform the economy.

Although the Soviets could still in theory focus over 50 combat divisions on Central Europe in a matter of months, the loss of Eastern Europe as part of its military alliance means that a sudden massive mobilization of firepower close to the German border is no longer conceivable.

There are positive signs, too. These include:

- o Moscow's off-and-on flirtation with a market economy and a democratic society;

- o The reestablishment of official relations with Saudi Arabia and of consular relations with Israel;
- o Soviet support for the U.S.-led coalition against Iraq;
- o Relaxation of their restrictions on emigration, particularly with respect to Soviet Jews; and
- o Certain positive steps in the East, such as the new diplomatic ties with South Korea.

These developments, and especially the disintegration of the Warsaw Pact, are significant enough that most people have consigned the Cold War to the history books.

Ironically, though, the passing of the Cold War has left a vacuum that is not being filled by peace, but rather by the emergence of more traditional instabilities. At least 35 conflicts, in addition to the war in Iraq and Kuwait, are being fought around the world. There is ample reason to believe that this situation may worsen before it improves.

Let me begin with a quick survey of residual problems in Europe, where we face the possibility of:

- o Reversals in the democratization and free-market initiatives of some former Warsaw Pact nations. Already, we have seen promising developments in Hungary, Poland, and Czechoslovakia, but little progress in Romania, Bulgaria, and Albania.

We will almost certainly see:

- o A resurgence of dormant national and ethnic conflicts, such as that between Hungarians and Romanians over Transylvania. The state of Yugoslavia, which has three

major religions, two alphabets, and three official languages, is on the brink of dissolution, with Slovenia and Croatia leading the break-up. A break-up there will intensify numerous simmering disputes, such as the one between Serbia and Albania over the province of Kosovo. Similar internal animosities could again beset Bulgaria, Romania, and Turkey.

We could encounter:

- o Rapid demobilization within Western Europe, especially in the smaller NATO members, constraining our choices should untoward developments arise;

We almost certainly will see:

- o Further divergence in the international objectives of our European allies and reduced American leverage to bring about a convergence;

Perhaps most important, there seems to be an increasing likelihood of:

- o A reversal in the positive trends in the Soviet Union, perhaps even leading to its disintegration and, in the process, causing massive flows of refugees into Western Europe. A bleak version of this scenario has the Soviets changing their mind about their promise to withdraw troops from Germany and Poland--or even reentering Eastern Europe by force.

Even a relatively peaceful dissolution of the Soviet Union will give rise to a whole host of new problems. There are, for instance, serious disagreements about the boundaries of the Soviet republics themselves. One of the first to surface will be Lithuania's claim on territory in

Byelorussia. Furthermore, newly independent republics could well face secession demands from nationalist movements within their borders, such as the Tatars and the Chuvash within Russia.

To appreciate just how much the situation in the Soviet Union has changed, consider that in 1980 (shortly after its invasion of Afghanistan) we were worried that it might attempt to invade Iran and gain control of the Persian Gulf shipping lanes. Today, there is speculation about the possibility that a country near the Gulf--like Iran--might grab Soviet territory should the Central Asian Republics spin out of the Soviet orbit. That is quite a reversal.

The situation in the Middle East and Persian Gulf region will depend heavily on the outcome of the war, of course. And, in prosecuting the current conflict we face something of a dilemma--a tension between our desire to win the war quickly and decisively, and the possible longer-term consequences of leaving behind a gravely weakened Iraq in what will remain a highly volatile region.

If Iraq is too gravely weakened it will be vulnerable to a renewed demand from its Kurdish minority for independence. This might aggravate nationalist tensions among the Kurds in the Soviet Union, Iran, and southeastern Turkey. For this reason, Turkey might seek to gain Kurdish territory in Iraq, which was long part of the Ottoman Empire and (not incidentally) is an oil-rich region. Syria has claims to parts of northern and western Iraq. Iran, the only Shiite-controlled nation in the region, could well have designs on the oppressed Shiite majority that is concentrated in Southern Iraq, another oil-rich region. The dismemberment of Iraq would lead to a massive realignment of the traditional power balances in the region.

Even if we can end the conflict without leaving Iraq so vulnerable, we still face numerous long-term problems, including:

- o the enduring challenges to the legitimacy of current national boundaries and regimes, which many in the region take to be legacies of the European colonial powers that once governed the region;
- o the non-representative character of current governments and the growth in movements calling for their liberalization;
- o the deep conflict between Arab "haves" and "have-nots," compounded by the failure of wealthy Arab states to make substantial investments across the region;
- o the growing strength of Islamic fundamentalism, which could one day imperil the monarchies in Jordan, Morocco, and Saudi Arabia and threaten even moderate regimes, such as Egypt's;
- o disputes over control of scarce or vital resources such as water and oil;
- o the issue of a Palestinian homeland;
- o the seemingly intractable tensions between the Arab countries and Israel; and
- o the increasing militarization of the region, which I will speak more about in a moment.

The effect of the Gulf War on regional economies, social structures, and political relationships has yet to be fully assessed. However, the War's aftermath will surely result in profound changes in all of these areas, as well as in the attitudes of Arab states to each other and to the West.

In Asia, there is significant tension between India and Pakistan and India and China, all thought to be nations with nuclear weapons. Pakistan is plagued with domestic political instability and an increasingly militant Islamic fundamentalist movement. India is torn by religious strife between Sikhs and Hindus and Hindus and Moslems that is worse today than at anytime since the partition. There is a smoldering civil war between Tamils and Sinhalese in Sri Lanka. In addition, we have seen regional muscle-flexing adventures, such as India's interventions in both Sri Lanka to the southeast and the Maldiv Islands to the southwest.

Problems in Southeast Asia continue unabated in Cambodia and Myanmar and there could be growing political and social tension ahead in Northeast Asia, where more than 1.5 million heavily-armed troops still face each other on the Korean peninsula.

While today's turmoil in Eastern Europe and the Soviet Union is spawned by economic failure, in East Asia there is turmoil caused by the region's economic success and dynamism. The extraordinary economic growth in China in the 1980s contributed to the movements that the government tried to crush in Tiananmen Square at the end of the decade. Elsewhere, national economic growth has been paralleled by an increasing pace of regional arms production and acquisition. Although superpower instigation of overt conflict is no longer very likely, disputes over access to resources and markets, not to mention ancient internal disputes, hold out the constant potential for sparking a crisis.

In Latin America, numerous conflicts threaten stability, including:

- o The terror campaign of the Colombian cocaine cartels against the Gavaria government and among themselves;
- o The Maoist revolution fomented by Sendero Luminoso in Peru; and
- o The brutal violence between the government and the left-wing rebels in El Salvador.

The last two are particularly disturbing because they dramatize the failure --and perhaps the inherent limitations--of U.S. assistance and influence.

Armed conflict is widespread in Africa, too. Somalia and Liberia have recently had their governments violently overthrown. Libya instigated and backed a rebel victory in Chad. There are civil wars underway in Angola, Ethiopia, Mozambique, and the Sudan. It is safe to say that there will be more social turmoil in and around South Africa for some time to come.

Many of these conflicts are localized, with little or no direct effect on U.S. interests. However, the proliferation of sophisticated weaponry, the potential for disruption in access to important resources, the threats these conflicts pose to U.S. citizens and travelers, and the potential for large-scale refugee movements all tend to extend the effects of such conflicts. In the future, it is by no means certain that conflicts that were once localized will remain so limited.

Israel, India, and South Africa are thought to be nuclear weapons nations. Last year, for the first time, the President was unwilling to certify to the Congress that Pakistan did not possess a nuclear weapon and as a consequence we have cut off financial and military assistance. Argentina, North Korea, and Brazil have domestic nuclear power programs and are capable of producing weapons-grade uranium or, possibly in the case of North Korea (which does not allow international inspection of its nuclear facility), plutonium.

Ten nations have confirmed stockpiles of chemical weapons, including Vietnam, North Korea, Taiwan, Libya, Syria, Iran and Iraq. Six others, including China, Israel, and Ethiopia, are believed to be pursuing chemical programs. In addition, there may be as many as ten nations working to produce biological weapons.

Thirty-two nations currently possess ballistic missiles. Within the current decade, at least 15 developing nations will be PRODUCING their own

ballistic missiles and six will have missiles with ranges of 1,500 miles or more--several times the range of the infamous Iraqi SCUD missiles. Most of the third-world nations with ballistic missile programs did not sign or ratify the Nuclear Nonproliferation Treaty. Examples include Brazil, China, India, and Pakistan.

There are now 15 "blue-water" navies in the world and 42 countries have attack submarines, including 19 nations in what we normally call the third world. We saw during the Persian Gulf reflagging operation in 1988 how even obsolete mine warfare capabilities could severely jeopardize sea lanes.

Even more troubling is the proliferation of Exocets, Silkworms, and other relatively "cheap-kill" systems. It is almost easier to compile a list of nations that don't have them, but those that do include Argentina, Brazil, Chile, and Ecuador in South America; China, India, Pakistan, Indonesia, South Korea, and several Persian Gulf nations in Asia. The proliferation of man-portable anti-aircraft systems like Stinger is another case in point. Eighty nations now possess Stinger-class surface-to-air missiles and countries like China, South Africa, and Egypt are producing them.

We are also all familiar with the accumulation of armor systems in Iraq. Israel, India, Vietnam, and China also have substantial inventories, with Thailand, South Africa, Pakistan, Brazil, and others close behind. Both Egypt and Syria have more tanks than either Great Britain or France. These are not, by the way, exclusively hand-me-down tanks. A sizable fraction consists of front-line combat vehicles.

My rundown has not been scientific, but it is sufficient, I believe, to conclude that the geopolitical environment will continue to contain many sources of instability and the likelihood that resulting armed conflicts impinge on U.S. interests will grow, not diminish.

Many of the potential crises I have described are quite different than the ones we have focused on in the past. Many will have more than just a military dimension and we will discover that military instruments may be less important than other kinds of initiatives. We will thus need effective diplomatic and economic instruments as well as creative capabilities for orchestrating their use in combination with military force. However, wishful thinking must not blind us to the regrettable fact that military power will remain an important instrument of national security strategy--even, and some might say, especially in the aftermath of the Cold War.

It is by no means certain that the strategy, force capabilities, and systems that we currently possess are appropriate for a future so unlike the one we envisioned when they were developed. Even with an ideal blueprint, containing a new strategy and force structure, it would take many years and dollars to revamp our posture and capabilities to meet new and evolving challenges.

But whatever choices we make, the fact is that our success may in large part depend on the amount of budgetary resources available.

Since peaking in FY 1985, the defense budget has declined in real terms in every year since. Despite the Iraqi invasion of Kuwait a couple of months earlier, last fall's budget compromise continued that trend and, indeed, locked in several more years of decline in exchange for the abandonment of the automatic Gramm-Rudman sequestration process. Through the present, the average rate of decline has been about 3 percent per year in real terms--a fairly gradual rate, but one that, over the long run, translates into substantial reductions.

The fundamental forces that motivated the acceleration of the defense budget downturn in last couple of years are still with us. The U.S. economy is in recession, other national priorities exist (including reduction of the budget deficit), and the Soviet Union's military position

has decayed. Therefore, despite very recent events and the geopolitical outlook I have provided, we can expect a continuing decline in the defense budget that, if it continues, will by FY 1993 last longer than the previous post-Vietnam decline.

On the other hand, the starting point for the decline--the 1985 defense budget--was the largest peacetime defense budget ever and the largest budget in peace or war since World War II. That budget capped several years of large increases known as the Reagan build-up. The main beneficiary during the Reagan build-up was the procurement account. This reflects an unchanging historical pattern: when the overall budget has increased, procurement has increased even faster.

Unfortunately, the reverse pattern holds for periods during which the total budget declines. Thus, between FY 1985-1991, the total budget has declined by one-seventh in real terms, procurement by almost one-third. Although investment in research and development will probably keep pace with inflation, procurement will continue to lose ground and will likely constitute a smaller and smaller portion of the overall defense budget.

Budget issues aside, however, there is no need to remind you that, ultimately, our long-term success in modernizing our military forces will depend on the capabilities of the defense industry. In light of the budget decline, many people question whether we can continue to depend on it.

I think the pessimism is not entirely justified. Let me outline some of the bad news and good news.

Bad news: Substantial layoffs have already occurred. Overall defense industry employment has declined more than 10 percent since 1988 and is expected to decline another 10 percent in the next two years. Some companies have been hit especially hard, and several are on their second or third round of layoffs. The negative effects on the economies in areas with major aerospace concentrations are already clear.

There are those, however, who argue that these contractions are not bad news at all. In some cases, the layoffs are the result of overdue corporate restructuring and streamlining; in others, especially where the reductions have been concentrated in the white-collar ranks, it's said that the layoffs may have actually strengthened the companies. In still other cases, such as instances of relocations to escape the high costs of doing business in areas such as Los Angeles, the restructuring seems to be independent of the budgetary trends.

Plus, we have been through such contractions before and lived to tell about it. There were even greater corporate reductions during the last era of extended budget declines--1969 to 1975. During that period, employment at McDonnell Douglas, Boeing, and Lockheed each shrunk by about 40 percent, while General Dynamics contracted even more.

But, more bad news: Both the overall economy and the individual firms in the defense industry are not as healthy as they were at the start of previous periods of budget decline. Stock prices are low, revenues are down, and heavy debts are more common, especially among firms that entered into large cost-sharing commitments during the 1980s. And the competition from abroad is today far more determined.

On the other hand, there is a substantial backlog of military business, roughly three times the size of the backlog a decade ago. Those defense firms that are also involved in commercial airline work also have large order books in that sector.

No one can deny that the defense industry has changed markedly, but the main reason is not the up and down of the defense budget in the 1980s. It is the fundamental changes in the character of defense demand that date back to before the Reagan buildup.

For one thing, there was a sharp drop-off in the frequency of new major programs. Take Air Force fighter aircraft. In the 1940s and 1950s, seven new fighters were developed AND produced per decade. In the 1960s and 1970s, two new systems were developed per decade. It seems possible that the last two decades of the century will see just one new Air Force fighter aircraft--and, it is conceivable that that the number will eventually turn out to be zero.

Not only did the number of new fighters decrease, so did the average number of model variants developed from each design and the average number of units produced of each variant.

To provide a striking illustration, between 1951 and 1956, the Air Force, Navy, and Marine Corps bought substantially more fighters and attack aircraft than we have in all the years since 1956.

Production volumes and rates dropped and the differences between commercial and defense production methods grew.

As a result of these trends, and others, the aircraft industry began to change markedly in the 1960s.

- o Companies in the industry merged (McDonnell and Douglas, Fairchild and Republic, Vertol and Boeing, McDonnell Douglas and Hughes Helicopters)
- o Companies were absorbed by firms from other industries (Textron and Bell, Rockwell and North American, General Motors and Hughes Aircraft)
- o Prime contractors became subcontractors, often very successful ones (Vought, Fairchild)

Also during this time, military aircraft themselves underwent a change.

Once just an airframe, engine, and gun, military aircraft became loaded with electronics. They began staying in the inventory much longer.

- o Airframe contractors began adding electronics capability
- o They developed significant modification and refurbishment capabilities.

Some firms became adept at marketing their products overseas (like McDonnell Douglas, Lockheed, and, especially, Northrop). Others adapted by developing or expanding capability to design and produce new types of defense systems, most notably, space launch vehicles and satellites.

Important new firms, with their main roots in electronics, emerged as new powerhouses--first E-Systems, more recently Loral.

All of these examples suggest an industry that is adept at adaptation, responsiveness, and even anticipatory innovation.

The track record of attempted cross-overs to the commercial world has not been good, however. Raytheon has done well with appliances and energy services, but failed with televisions and data processing terminals; Boeing has attempted to build monorails and hydrofoils; General Dynamics attempted commercial ships and asbestos mining; and, of course, there is the example of the Grumman buses.

I am not sure that this phenomenon is well-understood, although there is no shortage of explanations. Some of the more commonly heard are:

- o Defense firms lack marketing and distribution smarts
- o They are generally geared to low-volume production and lack the flexible manufacturing systems necessary for adapting efficiently to production-rate changes

- o On account of the historical focus on "state of the art" technology, they have little tradition of confronting quality/price tradeoffs
- o They typically have large overhead cost structures as a result of government and military supervision and the need to maintain surge capability
- o Defense industry diversification pursued some lines of endeavors, such as steel and ships, where profitability stymied even more specialized firms.

I am sure that we'll see more attempted crossovers. There's a company that makes advanced voice recognition equipment for the military that thinks it can apply this technology to automated teller machines and home security systems. One company that makes rocket propellant is making automobile airbags. Look for cellular telephones made by Hughes Aircraft. I assume that we'll soon see someone marketing radar-absorbent coatings for sports-cars and interstate truckers--if it hasn't happened already.

Well, enough of this mix of criss-crossing indicators. Let me offer a brief net assessment.

Large backlogs of orders notwithstanding, the paucity of new programs and the decline in overall procurement budgets will require further adaptation and streamlining by the industry. In addition to the workforce reductions that have already begun, I expect that we'll see more of the kinds of structural adaptations that have already taken place. We could well see one or two of the traditional prime contractors leave that tier of the industry--perhaps as the result of absorption by another firm. We will see more automation in design and fabrication and more attention paid to more typical business considerations (local cost of living, labor relations, and so on).

This type of consolidation is occurring frequently in Europe, too, and those of you who remember notable prime contractors like Vultee, Curtiss, Temco, Piasecki, Stearman, North American, Taylor, Ryan, and Stinson know that it has happened often in our own history. I do not think that it is something that should necessarily be feared.

I am not enough of a seer to pick the threats that will dominate the future geopolitical security environment. I think it is possible, though, to describe how this environment will differ from the Cold War era that appears to be drawing to a close.

First, although the heated superpower rivalry has cooled, the likelihood of crises of other sorts has increased, as deep-seated and long-repressed disputes have revived and potential new conflicts have emerged.

Second, many disputes that were once limited in geographic scope will be played out with modern weaponry, with far-reaching destructive effects. The potential for escalation will be high and military conflicts will hold a greater potential for generating large flows of refugees.

Third, just as nations have become increasingly interdependent, power among nations has become more diffuse. The international problems facing the United States will face numerous other nations as well. As a result, the necessity for collective action will grow, whether under the aegis of international organizations, multinational alliances, or ad hoc affiliations.

Fourth, the importance of collective action notwithstanding, the United States will continue to stand above all other nations in its global military reach and overall influence. The U.S. economy will remain the world's largest and we will remain the world's largest exporter. Thus, it will have to take a leading role in the creation of a new world security order, though the existence of competing resource claims and my previous point will mean that it will not be able to dictate the new order unilaterally.

Fifth, if it is to address the thorniest security problems of the future--such as the proliferation of sophisticated weaponry--the collective action must embrace more than the United States' traditional international partners. Take the case of the spread of nuclear weapons capability: Brazil has assisted Iraq, North Korea has helped Iran, and there are indications that Argentina is helping Libya.

Finally, our deliberations over our longer-term security requirements should be dominated by two critical considerations: The formulation of a new national security strategy, which should guide, among other things, our force modernization and resource allocation priorities. In parallel, we must strengthen the industrial capability that supports our global military reach and influence. This effort should start with a reduction of the barriers between the defense and commercial sectors and a commitment to bolster the incentives for industry innovation, which have been weakened during the defense budget decline.

In closing, let me caution against any expectations that a new national security strategy will be formulated quickly. Recall that our Cold War strategy was not formulated immediately after the end of World War II. It took numerous events in the late 1940s--the Communist takeovers in China and Czechoslovakia, the Soviet atomic test, the Berlin blockade--and ultimately the Korean War in the early 1950s to shape the vision that guided us through the Cold War.

We will require equal patience and equal wisdom in the years ahead.

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