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THE NEW CHALLENGES TO NATIONAL SECURITY:

ONE SOLDIER'S VIEW

by

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The Characteristics of the Emerging International Environment

The new international environment differs in three important ways from the operating theories which drive this and other nations' security and foreign policy machineries.

The Distortion of the Nation State. The first difference is that countries have ceased to be definable, physical entities, colored spots on the map, surrounded by inviolable borders, vulnerable, in the main, to physical damage and territorial invasion. The outward thrust in search of resources, goods, services, and markets to sustain inner growth and prosperity has put an end to this developmental phase, even though it survives in a false self-image. The fact is that nations are evolving into multinational entities in the literal sense of the term. They exist wherever their capital, industrial processes, technical skills, raw materials, and trading areas contribute to the domestic well-being and citizen aspirations. It is altogether possible today that the loss of a foreign source of earnings or supplies could prove more damaging to national integrity than the loss of a province.

Security measures have not kept pace with the increase in extra-territorial vulnerabilities. Put in insurance language, national defense efforts offer but one kind of coverage: homeowner's protection. The risks encountered away from home which any prudent family includes in a policy -- the national equivalent of automobile accidents, job loss, catastrophic illness, or getting mugged in the street -- must still be written.

A Foreign Policy Shaped By Needs, Not Choice. The second difference is that the foreign relations of these distorted, growth-dependent nations are dominated by the need to identify willing suppliers and markets. Where to buy, where to sell, and for some, where to borrow emerge as the principal external goals of the state. Planners who still believe that cultural kinship, shared ideologies, missionary reform, or regional arrangements are the cornerstones of policy will find their recommendations preempted by the turbulent directions of unanticipated and unpredicted marketing factors.

Thus, Jew and Christian must bow to Mecca if a subservient gesture keeps the oil flowing. A seemingly strong belief like apartheid can be readily set aside, lest it becomes a stumbling block for a business deal. Lack of political recognition will not be allowed to come between a major commodity transaction. Ideological alliances, even blocs, are left to crumble if the cement that holds them together can be sold elsewhere, for a harder currency. Grand designs drift away on a floating valuta. And should the state still exhibit a measure of reticence about where and with whom to deal, the multinational corporations quickly step into the breach, thereby voiding the need for a hard decision.

In a further deviation from the past, common producers of raw materials like petroleum unite to form tough, globe-straddling bargaining fronts which make a shambles of all geography-based methods for slicing up the world. Environmental pressures add their weight and momentum to the new direction of nations. Countries which share a badly polluted physical feature like a major river, an inland sea, a tidal current, or a wind pattern have little choice but to join hands in a clean-up.

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One victim of the new directions is the traditional conduct of foreign affairs, elitist, and bound by esoteric rules and concepts which had evolved over the years to compensate for an absence of shared or disputed real interests between nations. Only the men in foreign offices understood the ritualized interpretation of events which dictated when to lunge, thrust, or parry. The common man's support for these moves had to be won with noble language or the evocation of lofty sentiments. It was the only way to involve him; for the shifts in alliances, axes, blocs, ententes, power balances, and spheres of influence seldom affected his pocketbook or way of life.

Now, however, the esoteric must yield to the exoteric; the elitist to the popular. If traditional policies had focused on keeping nations apart, the prevailing pressures operate to bring them together for compensating needs. If traditional national interests had been based on theory and sentiment, their modern successors are anchored in the hard realities of comfort, convenience, jobs, money, and future earnings. Of what use is a power balance when today's man in the street, faced with an energy shortage, deems access to power--for cooking, heating, and operating an automobile--far more important than any need to balance it, and expects his government to act in accord with these priorities.

The hardest hit by these shifting patterns are military efforts to safeguard the nation's physical survival. Strategic plans, by necessity, segregate countries into friend or foe. Those assisting our forces by extending basing or overflight rights are placed in one category; those with the potential to destroy us in the other. But this time-honored

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classification has sprung major cracks in the modern atmosphere. The new economic interests propel this nation and others along paths which diverge sharply from the direction of traditional security interests. It is entirely possible today that the reliable partner in defense stands exposed as a dangerous rival for a scarce raw material, while the traditional opponent has become the major supplier of a critical need. Confronted with this quandary, statesmen tend to assume an ambivalent posture which permits them to straddle the two interests. But their legs will not extend that far; and the schizophrenic, Alice-in-Wonderland pattern in which allies for strategic survival emerge as threats to the conduct of every day, way-of-life business, and vice versa, remains unresolved.

Multiple Power Channels. The third difference between reality and prevalent foreign affairs theories is the proliferation in the channels and methods for projecting power.

Historically, military force had a monopoly on power. It was the sinew added to foreign policies, the sole means for extending one's influence or resisting aggression. A strong army was an asset; a thinly guarded gap in a mountain chain, through which another's army might descend, a liability. The mere possession of military power could become an invitation to its use; and a presumption of superior strength frequently led to action. Alternative forms of power - Arabian oil, Canadian wheat, Western timber, and hoards of hard currency - were still waiting in the wings for the time when economic or environmental dependencies or inter-dependencies would be elevated to the rank of vital interests.

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Today, the military has lost its monopoly. The modern, distorted state's vulnerabilities extend beyond strong armies and weak frontiers. Many of its vital organs have been located outside the territorial shell; and many of its internal processes are within the range of external forces which need not violate borders or air space, in the physical sense, to reach their objectives.

This modern state, in make-up, peculiarities, and vulnerabilities, bears no resemblance to its predecessors. It is no longer a self-contained, homogeneous aggregate of family units which grow their own food, fiber, and fuel. Rather, it has become a complex machine assembled from specialized components which contribute a distinct function to the operation of the whole. One doesn't have to discipline it with a bomb. It can be made to respond to a wide range of threats and promises, applied from without or within, that have no connection with military force.

Consider but one vulnerability of the new state: the linking of its way-of-life, strength, prosperity, and prospects to fuel sources located nearly half way across the globe. Overt hostilities are not needed to harass this state's workings; it can be disrupted in dozens of ways through nonmilitary techniques. One can, for instance, complicate the issuance of tanker insurance; advocate ecological restrictions on tanker design, tanker routes, and port operations; incite dock strikes; or launch terrorist activities, seemingly criminal in motivation, against officials or equipment employed in fuel movements.

If hostilities must be escalated, a more severe set of tactics can be brought to bear. The target country's currency can be weakened to limit its purchasing power. Its foreign assets can be frozen. International

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merchant marine unions (in imitation of a threat from the airline pilots) can be fired up into striking against the world. One can precipitate a major shortage in ship bottoms, or pressure the supplier into limiting production or restricting sales to the target country.

Interference with fuel supplies is but one channel that parallels military action. There are others; and their number increases as quickly as new vital linkages are being formed. In the international power game, there are now opportunities for withholding the sale or purchase of agricultural products; diverting water; modifying the weather; delaying loans and capital assistance; erecting selective traffic barriers; or refusing to share a beneficial technological process. Each of these channels, by itself or in combination, can rival saturation bombing in halting production lines. If there is a difference, it is in form. The nonmilitary methods rely on slow strangulation; the military on direct, explosive thrusts. The results, however, are the same.

The new channels have many uses. In the most obvious, they become a substitute for the application of military power. In another context, however, they can reinforce the military by presenting strategists and tacticians with an almost infinite number of locations for cutting, snipping, or disrupting today's arterial linkages with decisive consequences. In this application, the tank army is on the left, the oil embargo on the right, and the currency assault goes through the middle. In still a third way, two nations can be locked into a contemporary conflict each employing the newly available, nonviolent means to erode the other's power base; yet profess, at the same time, to be staunch military allies, willing to join forces in the common defense.

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Not all nations can make use of the new channels; nor are all nations vulnerable to the forces which they convey. The test is in the linkages: how extensively are nations tied into the new network? How deeply have they become dependent on external inputs? Primitive nations still operate outside the context of these interlocking systems. Hence, any serious dispute to which they become party must still be settled in the style of Frederick's Prussia or Napoleon's France--by organized, armed forces.

But where the channels exist, one should expect them to be used, if only because they are there. Room must be made for them on the scale of force; and serious thought must be given to their potential for displacing from the scale the lower forms of war which, according to current doctrine, would precede resort to nuclear weapons.

The Two-Phase Future

The conjectured direction of international relations embodies two distinct phases. In Phase One, domestic scarcities promote the extra-territorial search for economic growth. It is in this phase that the political landscape becomes transformed by the distortion of nations, the rise of the way-of-life interest as the driving force behind foreign policies, and the appearance of multiple power channels. In Phase Two, it is no longer possible to compensate for local limits by going abroad. There is no place left to shop. The entire globe faces a shortage situation.

Phase One, I noted in a recent essay in the Proceedings¹ of the Naval Institute, though marked by recurring monetary and trade crises, should be

¹Robert Leider, "A Different World," Proceedings of the Naval Institute, April 1973.

a peaceful period; for the supply of raw materials, fresh water, clean air, fertile soil, and marine resources, if not evenly distributed, still exceeds demands. The dominant interest in the United States, during this phase, is commercially inspired. Nations vie for the right to tap our riches or cater to our wants. We are regarded as a source of aid, loans, capital, and technology, and as a market for finished goods and raw materials. For our part, a relatively high level of self-sufficiency continues to blind us to the demands of the way-of-life interest. The neglect is costly. One penalty is a growing isolation from friends who, out of necessity, can no longer share a world view that is dominated by the concern over physical threats to survival. The second penalty is the widening strategic gap in the development of safeguards for the way-of-life. Others have taken the front position in this race and continue to widen their lead.

In Phase Two, perceptions--here and elsewhere--change as the limits of the universe close in. Our wealth and appetite continue to be of major interest, but for different reasons. No longer a sales target, we emerge as a threatening competitor. Other industrial powers fear that we will not hesitate to evict them, with superior economic and military strength, from markets and raw material supplies which they had come to consider their own.

Tensions mount and spread to the developing world. The gap between rich and poor remains as wide as ever; but, worse, it has grown intolerable with the loss of hope that 10 or 20 years hence the poor will be, indeed, where we are today. There are no unlimited horizons left, no El Dorados at the end of the next day's march. There is only so much;

and most of it is already in the hands of the rich who own it, use, consume it, quarrel over it, and show no intention of abandoning their first-class passenger status on what has been called Spaceship Earth. From the perspective of the poor, the choice seems clear: if confinement to steerage is not to be a permanent condition, the developing world must force a roll-back in Western consumption, of which the United States serves as a symbol, and begin mining the wealth accumulated by the rich. The means for this endeavor are constrained by the resources at hand. The assembled military power of the poor would be quickly crushed. But there are alternatives: expropriations; a heating up economic nationalism; a share in the ownership of the transport, processing, or marketing of raw materials; the neutralization of strategic areas such as straits and gulfs; enlarged territorial seas; and a sprinkling of multinational terrorism could be the instruments--the sharp knives--for carving out a larger slice of the pie.

Phase Two is not peaceful. The stage is set for conflicts, but conflicts of a different type than we know today. The transition to distorted nation status, to interests based on economic needs, and to multiple power channels has been completed; and any disagreements, thereafter, can be expected to take full advantage of the opportunities and vulnerabilities offered by the new arrangements. Tomorrow's wars, in other words, will bear little resemblance to past conflicts. They will be triggered by entirely new causes, fought for new reasons and new gains, in new ways, and under new definitions.

The Challenges to Security

It is a giant leap forward and outward, from safeguarding strategic survival through methods perfected by operations research and systems analysis, in such places as the Harvard Business School, Rand, and the Radiation Laboratories, to protecting the way-of-life amidst the shrill clamor of hunger and rising pollution, trade deficits and currency devaluations, a population explosion and energy crisis, expropriations and economic nationalism, an Oklahoma land-rush for the seabed and marine riches, rampant nationalism and advanced politicization, resource asymmetries, and the tensions among the rich and between the rich and the poor.

But this new task, so different in purpose and method of execution, should not be thought of as a replacement for current security concerns. Deterrence planning must continue so long as just one foreign power possesses the strength and wickedness to destroy us. Rather, it becomes what the military call an "additional duty," though one that may consume more time, attention, resources, and ingenuity than survival insurance, with at least as much at stake.

Hence, the general challenge to national security is not the substitution of one system for another, but the enlargement of current concepts. They must be made responsive not only to the dangers facing the way-of-life interest, but also to the peculiarities of the new environment in which both way-of-life and survival are to be protected.

The First Challenge: The Irrational Way-of-Life. The strategic threat to survival stems from the confrontation of instruments, not interests. Any increase in capabilities, by one side or the other,

triggers an offsetting response. Usually, numbers can be attached to the force add-on. Hence, managers are in greater demand than strategists for commanding the security effort.

On occasion, there is debate over the extent of the danger, the amount of money that can or should be spent on defense, and the choice of weapons systems. But opponents in the dispute, though they might never concede it, are really on the same side of the fence. There is unanimity, unruffled by any doubt, over the identity of the threat and the need for a deterring force; and universal silence about the possibility that other threats or different responses might exist.

The exposed way-of-life now confronts this orderly business world of security planning with scenarios that turn habitual procedures and career-long styles of thinking upside down.

--The clash of capabilities gives way to the collision of opposing interests. "Respect my fishing zone, my source of oil, my currency, my right to trade, my right to imports, and my needs for water to cool power plants and irrigate crops," become new challenges to stability which cannot be checked through power balances.

--The accustomed technological-military methods for gaining or defending an objective are replaced by other force instruments. Since the new conflicts pit nations of unequal strength, the capacity to stand-up under pain assumes greater importance than the capability to inflict it; and the skillful probing for vulnerabilities becomes a more effective tool than the blind release of overwhelming power. In this environment, the sophisticated opponent presses his demands by any

means--social, political, or psychological. Their one requirement: they must exert painful pressure on any component of the urbanized, politically conscious, and technologically and economically interdependent modern states.

--The threats, previously so easy to locate in one capital, proliferate. Any number of nations, singly or in constantly changing combinations, and in reversible roles as buyers, sellers, owners or rivals for markets and raw materials, can endanger the way-of-life interest to varying degrees.

--Finally, the vast, computerized force planning machinery is faced with inputs that refuse to be translated into wings and division on a mirror-matching basis. Is there a wing equivalent that will deter multinational terrorism? A division equivalent that will solve an energy crisis? How much force is required to dissuade a nation from committing an ecological folly, like altering its weather, which could turn into a wider disaster? Can the fleet that keeps the sealanes open compel other nations to sell us the goods that will move over these channels?

The Second Challenge: The Altered Environment. The next round of conflicts, when it occurs, will take place in a drastically changed world of distorted nation states, foreign policies that follow the beacon of economic needs, and multiple power channels which efface all distinctions between war and peace. These developments, no less than the peculiarities of the way-of-life interest, demand responses which run counter to all accustomed ways of thinking about security or planning for defense.

The Distorted Nation

Consider the distorted nation. Clausewitz wrote at length about "centers of gravity" which he defined as the fulcrums of a nation's strength. He located them in capitals, strong generals, and weak allies. Seize the first, capture the second, or smash the third--and the enemy's cohesion melts. His resistance crumbles and surrender follows. But where is the center of gravity of the distorted nation? Is it a domestic element, an extraterritorial component, or the transnational arterial system linking the two?

If the latter two qualify as centers of gravity, as surely they must, the distorted nation is easier to attack than to defend. Its far flung dependencies open it to the risk of being defeated by decisive moves aimed against territories and systems beyond its sovereign control: cut off the oil, for example. It can go under without the victor ever having set foot on its heavily guarded territory, sunk any of its ships or airplanes, or physically harmed any of its citizens.

The defense strategies for this contingency are costly, but necessary. All extraterritorial risks must be elevated to the status of vital interests. The security perimeter must be enlarged to encompass the newly declared interests. And no doubt can be left in anyone's mind that, henceforth, an attack on A or B (nations which, conceivably, might not be of a type one brings home to dinner) will elicit the same response as an attack on the homeland itself.

New Direction in Foreign Affairs

Or consider the new directions in foreign affairs. In this chess game, the squares become more important than the figures, especially if

there is oil beneath them. Their economic worth overrides any traditional values they might have had as friendly or politically acceptable regimes or as strategic airfields. Even more important, one must keep an open mind about all squares and not take any action that might foreclose future access. An earth satellite could discover that they harbor enormous deposits of previously unsuspected mineral wealth.

Not only oil and raw materials, but also pools of cheap labor, markets that pay in hard currency, and sources of developmental capital mark today's choice neighborhoods, the desirable places to live, shop, trade, or set up a branch store in. Concurrently, locations which offer no gain, or locations which seem headed for ecological disaster, as populations explode while soils deplete, are places to be avoided at all costs, even if they command a major strait or make a splendid site for a strategically advantageous missile installation. The resource drain that might result from these concessions is more than anyone can afford to pay.

To assess this environment from the perspective of strategic survival can only lead to grief and disappointments. The universe no longer revolves around national security; and alliances formed exclusively for the purpose of balancing military power omit a large part of reality from their design. One should expect them to quickly lose their shape, and be remolded and retwisted by the far stronger pressures of market place, natural wealth, and ecological concern which tend to form their own arrangements. But then, consider who today can still afford to waste a stretch of white sand beach for dragon's teeth and underwater obstacles, when high rise condominiums are waiting in the wings?

But no matter what the difficulties, the requirements of security cannot be dismissed. New strategies must be designed that take the shifting patterns into account. First, and most important, there is the need to unbundle security matters from all other concerns. It is too risky to lean on partners who are under unique pressures to develop new or even opposing interests or to entrust one's plans to such uncontrollable factors as the balance of trade and the health of the dollar, or the constraints imposed by an unforeseen and unexpected economic dependency. Second, in viewing the globe one must adopt a real estate mentality which judges properties in light of their present and potential worth, and buy and sell in accord with these perceptions.

Multiple Power Channels

Finally, how does one respond to the third characteristic of the new environment - the proliferation in international linkages, networks, and dependencies through which power can be conveyed by nonmilitary means? Many still regard the ruthless use of the new channels as a legitimate activity, a friendly competition between nations. In fact, it should be viewed as an exercise in force, co-equal with the application of military power. We may have entered the most recent phase in the evolution of warfare: the discovery of non-explosive munitions for weakening an opponent and forcing him to his knees.

The new power channels pose a unique problem for defense and deterrence. They can reach deeply into a nation, disturb the everyday life of its citizens, yet remain screened from any association with war by their

resemblance to trade and business transactions. In consequence, although the victim is threatened, pummeled, constrained, and hurt in every sense, he may be loath to reach for martial remedies.

The offensive use of the new power channels encounters stumbling blocks of its own, especially in the United States. The responsibility for activities that might qualify as instruments of nonmilitary force is fragmented among numerous agencies, many lacking any notion of the uses to which their functions could be put. "Bringing it all together," however, would not hasten the forging of the new weapon. Regardless of the organizational arrangements, the forces would remain in the custody of men who are not accustomed to think in terms of vulnerabilities, disruption, and destruction, and who might balk at seeing their discipline or specialty employed for such ends. An agricultural expert, after all, gains professional satisfaction from increasing yields; not from soybean leverages or food for crude quid pro quos.

Not even the unprecedented vulnerability of modern systems to old-fashioned physical disruption is fully recognized or understood. The military has yet to develop the larger view which visualizes the enemy society as an intricate machine with interacting components, one that can be halted by the relatively simple act of finding the right wire and jerking it out. The concept of the enemy which continues to dominate is the image of a map with objectives, opposing divisions, and weapons installations; and much thought is devoted to the doctrines, tactics, and equipment that will seize the high ground, while suppressing enemy fires that could interfere with the accomplishment of "the mission."

What strategies must be invoked now, if we are not to be deprived of a powerful weapon that others are learning to employ with increasing effectiveness?

The first task is semantic. There is a need to redefine "war," to endow the concept with a larger meaning than the customary association with physical violence, death, and destruction. In a world where opportunities for its use have come into being, force of any kind, violent or nonviolent, "is the continuation of political intercourse by other means."

Second, we must learn to master all methods that can be used to defend or secure a vital interest. We have moved already to combine the separate ways of blocking or reaching an enemy, by land, sea or air, into an integrated strategy. Now we must go one step beyond and incorporate into the defense structure the fourth, other-force capability.

Lastly, we must gain a far better understanding of the operations of large systems than we now possess. We must be able to identify their most sensitive components. And we must develop expertise in predicting the effects of removing a stage or injecting an irritant that the system's own circulation will distribute to all its parts.

In Conclusion

Will there be a generation of peace? The strategic threat to survival seems to have receded for the time; and one can point to developments which may lessen the risks to the way-of-life.

--Dependencies Intertwine. Hurt one nation, and all others will feel the pain.

--Problems reach transnational proportions. Nations cannot solve them by unilateral means. They must join hands in concerted action.

--Multinational groupings, in business, labor, and the sciences increase in numbers and power. They string nations, like beads, on a common thread of interests.

--National contacts on trade, ecological, and regulatory matters multiply. They offer disputants a wide choice of overlapping, give-and-take bargaining points.

--A younger generation could yet develop second thoughts about the wisdom of unbridled consumption and wasteful resource expenditures.

--Finally, there is the beginning of a faint dissent from the belief that economic growth is the path to happiness.

These are hopeful trends. However, one can point with equal facility to a like number of developments which do not bode well at all for peace and tranquility.

Hence, today as at every other point in our history, we are committed to hoping for the best while preparing for the worst. There is one difference, though. This time, our perceptions are challenged more than our muscles. The planning mechanisms, strategies, and force structures which brought us safely through the Cold War are not designed for tomorrow's threat. Unless we enlarge our thinking and adapt our power to the new sources of danger, we will find ourselves--modern, fierce-faced Horatios--guarding the bridge against an enemy of swimmers.

RESOURCE AVAILABILITY AND NATIONAL SECURITY POLICY

Daniel W. Christman

I. THE BACKGROUND

National security and US energy policy have become increasingly intertwined as a consequence of recent, spectacular developments in the Middle East. On the eve of these developments, President Nixon emphasized:

"One major problem that will face us during the next two decades will be ensuring an adequate supply of energy from secure sources at reasonable prices...The energy problem will have a major impact on our national security and foreign policy planning."¹

The Arab boycott has focused attention, long dormant, on the security of natural resources. In spite of official announcements to the contrary, US foreign policy is being shaped daily on the basis of securing natural resource supplies, particularly petroleum.

However, the national security justification for resource availability has never been carefully articulated. Early legislative attempts to deal with the petroleum facet of resource supplies produced vague criteria for problem identification. The Trade Agreements Extension Act of 1955, for example, authorized increased restrictions "on imports threatening to impair national security."² The security dimension was not clarified until 1958. The Extension Act of that year identified two security areas in which the impact of imports might endanger national security: (1) domestic production needed for projected national defense requirements and (2) domestic industries whose contribution to our internal economy was considered vital to sustain economic growth.³

Because of the obvious ambiguity inherent in the 1958 legislative criteria, the President's Cabinet Task Force on Oil Import Control eleven years later attempted to specify more narrowly the Security Criteria. They met with little success. Their 1970 report recognized that the main security objectives were (1) the protecting of "military and essential civilian demand"⁴ against foreign supply interruptions, and (2) the preventing of a decline in the petroleum sector of US industry that would severely weaken the national economy.⁵ Such objectives were little different from the 1958 legislation. Thus, while recognizing the need to identify security criteria useful for policy enactment, successive policy advisors have not improved upon the vague standards promulgated more than 15 years ago by a concerned Congress.

To understand the impact of the "energy crisis" on the current management of national security, one must begin by re-evaluating the nature of the threats to national security posed by resource shortfalls. Ideally, such threats would be accompanied by precise criteria to guide the enactment of policy. It is the purpose of this paper to reexamine the threats, and to suggest testable criteria. Policy recommendations, when appropriate from the defense standpoint, will be then offered as one approach to possible crisis resolution.

II. THE HISTORY OF RESOURCE SECURITY

Perhaps the first American to identify, and articulate, the relationship between secure resources and national power was Alfred Thayer Mahan. His thesis that national prosperity is

strongly influenced by trade and shipping, protected by a powerful Navy⁶, still receives great attention by world leaders. As national economies grew more complex and interdependent, however, policymakers became increasingly concerned that, during armed conflict, their navies would be incapable of ensuring a needed flow of critical materials to sustain the production base that had contributed so sharply, in Mahan's model, to their nation's preeminence. This concern prompted measures, following WW I, to protect vital resources needed in wartime from likely interruptions caused by war. The protection included either the stimulation of domestic production of vital resources through import restrictions, such as tariffs, or the stockpiling of needed materials by purchasing, ideally overseas, those critical raw materials deemed indispensable for wartime production. In truth, the United States pursued much more aggressively the former policy, following recommendations by its War Industries Board in 1922 to institute high tariffs for domestic industrial protection.⁷ It was not until 1937 that stockpiling was considered in earnest. However, appropriations were generally insufficient to create meaningful stockpile levels, with but \$100 million authorized by the Strategic Materials Act of 1939 for the fiscal years 1939-1943 inclusive.⁸ Such an authorization stands in sharp contrast to the approximately 8½ billion dollars spent by 1963 on the Strategic Stockpile program.⁹ The stockpile appropriations, together with the Mandatory Oil Import Quota Program initiated in 1959 on resource security grounds, reflected the general approach the US pursued following

WW II to provide secure resources that were considered vital to the nation's defense. In this paper, such an approach to resource security, which stresses trade interference and material stockpiles, will be termed a "post-Mahan" model.

Not all observers of the resource security issue have agreed with the theory implied by the above policies. A contrasting view gained popularity following the Second World War. It reflected the belief that the nuclear era rendered a World War II-type of war extremely unlikely. Emphasis was consequently placed on forces in being. Concomitantly, traditional economic war potential that would be fully mobilized for war production following the outbreak of hostilities was deemphasized. Hitch and McKean articulated this view in 1961, concluding that, in both thermonuclear and limited war scenarios, "the economic war potential of the US is important only to the extent that it has been effectively diverted to security purposes before war starts."¹⁰ Such a conclusion did not stress raw materials stockpiles or import controls, but rather, recognizing resource constraints, emphasized greater economic strength through research and development, industrial efficiency, and managerial expertise. "We are in an era," stated Hitch, "in which a single technological mutation can far outweigh in military importance our substantial resource advantage."¹¹

In a less publicized work, Mancur Olsen Jr. in Orbis reemphasized Hitch's view on the declining importance of raw material resources. Contrasting the abilities of Japan and

Germany in responding to raw materials shortages during WW II, Olsen observed that, since Japan was relatively later to industrialize, its lack of administrative and scientific skill placed it at a great disadvantage when confronting strategic materials shortages. Germany, on the other hand, with no large resource stocks and with critical shortages of copper, tin, and molybdenum, increased its war production 400% from 1939-1944. Such developments were the result, concluded Olsen, of Germany's desire not to protect inefficient industries with tariffs (as she had done before WW I), and to invest in the development of education, administration, science, and industrial capital. In short, to cope with shortages of food and raw materials, a nation needed resourcefulness as well as resources.¹² This second approach to resource security will be termed the "Hitch" model.

While it is difficult to point to policy actions that reflected the "Hitch" security model, specific measures were instituted in the 1960's based on Hitch's theory. Strong government support of research and development outlays, the declining Congressional and executive interest in maintaining the strategic material stockpile, and the general US support of the trend toward free trade expressed in the Kennedy round of tariff negotiations, manifested a recognition of the need to reshape the nation's resource security policy in the nuclear era.

Not until the oil embargo by the OPEC States has interest been rekindled, particularly by the United States, in reemphasizing a resource security system based upon the post-Mahan model.

President Nixon's "Project Independence", for example, which would undoubtedly require heavy governmental subsidies should the world market prices of crude decline from its current inflated levels, and the renewed calls for strategic petroleum stockpiles as a security hedge against future supply interruptions, suggest an autarkic, restrictive trade approach reminiscent of the recommendations by the War Industries Board in 1919. However, the President's concern for research and technological investment in energy and resource alternatives, reflected in his FY 75 budget, demonstrates a continuing awareness of the importance of the "Hitch" model in guiding the nation's resource security policy during the decades of the 70's and 80's. Perhaps the best statement that synthesizes the "post-Mahan" and "Hitch" models in explaining the current administration's resource policy was offered by Oscar Morgenstern in a report sponsored by the Office of Naval Research. He stated:

"While natural resources have become generally overshadowed by technology as a constituent of military potential, they have not ceased to be significant, and the significance tends to rise as vital non-renewable resources become globally scarce."¹³

In light of the administration's energy proposals, then, two questions seem especially relevant in analyzing the future of resource security. First, should energy resources, and petroleum in particular, be treated differently from other "primary" products (raw materials and food) which have received security policy attention? And second, do the "post-Mahan" and "Hitch" models adequately guide present resource security missions in light of developments following the recent Arab petroleum boycott? It is

a thesis of this paper, that (1) energy resources, to include petroleum, can, and should be, subject to the same analytical criteria for security policy as other primary products; and (2) a new security model is required to supplant both the "post-Mahan" and "Hitch" treatments of resource security to direct security planning in the coming decades.

At first glance, the importance of oil would seem to argue for separate treatment of this vital resource. Indeed, Wassily Leontief has articulated a by now familiar theme that, without oil, a nation will not only have to abandon its automobile, but that the entire economic system may be stopped for lack of energy and transportation.¹⁴ Such concern has of course led to agencies specifically designed to deal with petroleum security requirements, but which at the same time have siphoned authority from broader organizations established to administer war production or resource policy.¹⁵ However, the experience of the two world wars, and of oil boycotts during the 60's and 70's, have revealed not only a remarkable propensity for substitution between different energy sources, but as well the unremarkable ability to conserve on what to this point has been a profligate use of energy of all forms by advanced industrial nations. While petroleum and energy shortages could well cause distortions in the pattern of international trade and relations, and lead to internal political problems attending reallocation decisions, such an outcome, it is being increasingly appreciated, is not confined to energy resources alone. The possibility of resource-scarce developed countries facing

cartel pressure from resource producing states has reaffirmed the need to consider energy and raw materials as part of an overall reexamination of resource security. It has also revealed the difficulties of proceeding with "post-Mahan" and "Hitch" models, since neither dealt explicitly with the foreign policy implications of resource availability. Indeed, the complete identification of security threats posed by the problems of resource availability is an important task to which we now turn our attention.

III. CONTEMPORARY RESOURCE SECURITY THREATS

Three divisible areas for contemporary resource security study seem evident from the unfolding of raw materials policy in this decade. Not surprisingly, the first involves traditional military readiness and preparedness. I have chosen to include within the rubric of "military preparedness" the providing of essential non-defense resource demand deemed indispensable to sustain an economy during total war. While the problem of deciding how much raw materials to allocate to essential non-defense production has proven particularly vexing, it has been recognized for years that the inability to provide essential civilian goods and services would impair the mobilization itself, and hence endanger the purely military tasks required of a nation preparing for war.¹⁶ Second, internal economic dislocations caused by a sudden loss of a critical resource, either because of general war or in the absence of general conflict, can produce serious distortions in employment and output. The consequences of such dislocations on a nation's economic potential have been quantitatively

assessed through recent advances in input-output analysis.¹⁷ Qualitatively, the economic vulnerability represented by threatened cut-offs of the vital resource, petroleum, has already reduced the political autonomy of Western Europe and Japan. Such an outcome reveals the third security area now widely recognized as a separate component of resource planning, the foreign policy, or international political, dimension. While this area is the newest to be explicitly identified, international politics threatens to be the most troublesome of the three security areas to analyze. For example, Morgenstern, in his study cited earlier, has categorically stated:

"If a severe world energy squeeze unfolds, the countries depending on fuel imports will lose international bargaining power vis-a-vis the fuel exporting states."¹⁸

Yet an obvious result of the most recent resource embargo is the factionalism surfacing between the OECD petroleum importing states. Potential superpower implications are involved as well should the race for secure supplies lead to territorial ambitions in the latter stages of a successful resource embargo. To complicate additionally the third security area, significant changes are taking place with respect to international currency flows, and in the terms-of-trade between the less developed and the industrialized nations, that have portentous implications for the international relations of all nations, irrespective of their direct involvement in the availability of a particular resource.

Succinctly, therefore, the current resource security threats facing the United States are primarily military, domestic

economic, and international political in nature. These security threats differ in two principal respects from earlier, governmental identifications. First, the international political dimension is recognized manifestly as an object of policy attention. Earlier policy interest treated international implications of resource security as an adjunct to likely developments following an erosion of security on military or economic grounds. It has become clear within the last six months, however, that even without a deterioration of military or economic security through resource cutbacks, the international bargaining position of resource importing states has been severely constrained by resource exporters. Second, the concept of "essential civilian demand", while always recognized as a vital component of national security from a resource availability perspective, has never received attention as a guide to security policy. The vagueness of the concept has contributed in part to this shortcoming. However, the sudden concern over energy resource availability has revealed the importance of determining which economic sectors should be insulated from possible adverse effects of resource constraints in order to provide a continuing production base for sustaining military preparedness. I have chosen to distinguish the security implications of providing such "essential civilian demand" from the broader issue of domestic economic dislocations caused by the sudden cutback of a vital resource. The former is critical since attention is directed primarily at maintaining available supplies to continue defense operations on a scale sufficient to meet the military threat.

The latter emphasizes shifts in the use of the vital resource, either to alternative resources or to more efficient resource usage, to minimize dislocations encountered by the resource shortfall. While the security implications in this area are less obvious than those involving military and essential civilian demand, it is apparent, for example, that internal social unrest caused by consumer disagreements over resource redistribution policies can pose serious internal security problems. Although attention historically has centered on external security implications, experience with the recent truckers' strike suggests the need to establish a resource security policy that is responsive to both internal and external security demands. Such policy should be developed from an appropriate security criterion.

IV. A REVISED RESOURCE SECURITY CRITERION

Difficulties in interpreting earlier resource criteria as a guide to security policy have resulted not only from the vagueness of the criteria themselves, but from the fact that policy in many cases was formulated based upon probable effects of resource shortfalls, and not upon causes. For example, one of the main objectives of the 1970 study by the Cabinet Task Force on Oil Import Control was the formulation of resource policy to "protect essential demand against foreign supply interruptions".¹⁹ But the cause of the threat in this case was the inability to respond to an interruption of foreign oil, a problem not completely resolved through the oil tariff policy recommended. While the tariff would have stimulated domestic production and fulfilled the need to protect

essential demand on a short-term basis, the policy overlooked the longer-term consequences implicit in natural resource characteristics. Accelerated domestic production hastens the exhaustion of our own resource stock, a lesson learned painfully during the second world war. Thus, restrictive tariffs, by themselves, would be counter-productive in the long-run to the Task Force objective of protecting essential demand. Treating symptoms, or effects, invariably biases policy in favor of short-term remedies.

To resolve contemporary resource threats, a new security criterion model is suggested. As outlined above, national security from the resource perspective should be couched in terms of our ability to withstand an interruption of resource supplies. There are two subissues. The first refers to the stock of resources domestically available to provide future, or long-range, national security. The second involves an increase in flow of production from the stock to provide present, or short-range, security in the event of foreign supply interruptions. Thus, by this model, any resource policy which increases our ability to respond to a supply interruption, (through stockpiling, stand-by production, etc.) and which simultaneously reduces the flow of resources from our given natural resource stock unambiguously improves both short and long-range resource security. However, policies which call only for reducing resource imports to zero and intensifying domestic production provide just short-range security. Long-range security is reduced, since the available stock of domestic resources would be exhausted at a more rapid rate. Alternatively, an unrestricted import program,

in which the US was almost totally reliant on foreign resources, would grievously impair short-range security if there were not simultaneously provided means to replace the resource in an emergency. But this program would improve long-range security by minimizing the depletion of the domestic resource stock.

This "stock-flow" model places the earlier "post-Mahan" and "Hitch" models in a broader context, and clarifies the current administration energy policy in light of the "stock-flow" resource criterion. First, the "post-Mahan" model emphasizes short-range resource security. Considering the state of domestic resource exhaustion by the end of World War I, such an emphasis is not surprising. Genuine concern had not yet been expressed about imminent depletion of vital domestic resources, and even the stock-piling programs instituted in the 30's stressed obtaining needed storage levels from domestic sources. On the other hand, the "Hitch" model reflects long-range resource security policy by emphasizing additions to effective domestic stocks through technological development of resource substitutes, or by minimizing resource exhaustion through development of more efficient resource utilization.

The Nixon proposal for energy security, "Project Independence", is a blend of long and short-range security considerations. The administration has planned, for the decade of the 80's, an increase in the domestic flow of energy resources to improve the nation's ability to respond to overseas interruptions. Simultaneously, the President has proposed investment outlays and R & D expenditures

to increase the effective stock of energy resources, hence improving long-range resource security. The President's program, analyzed with a "stock-flow" model, represents a rational, though not necessarily optimal, approach to national security policy. While serious questions remain about the costs of "Project Independence" in light of alternative security programs, it remains a singular proposal because of its explicit treatment of both long and short-range resource security.

Thus, the revised security model suggested here should improve the ability to analyze resource security. By emphasizing causes of resource threats and not effects, and by distinguishing long-term and short-term resource security, the "stock-flow" model should guide more effectively the policy options available to national security decisionmakers. The analysis of such options in light of the threats posed by the shortfall of energy resources is a critical next step.

V. NATIONAL ENERGY RESOURCE POLICY

"Project Independence", while a balanced resource security system as analyzed by the "stock-flow" model, raises serious questions of program efficiency. If successful in the 1980's, it would satisfactorily meet the military preparedness and internal economic resource security threats, and should as well prevent an erosion of our international political power by lessening our dependence on insecure energy sources.

But alternative security systems are available which can accomplish these same objectives, at different levels of risk, and

at different total costs. The "stock-flow" criterion model suggests another program that emphasizes continued importation of crude, backed by replacement measures to cover insecure crude supplies in the event of a crisis. Such a program would as a consequence conserve domestic reserves and hence improve long-range resource security. In comparison with "Project Independence", this resource security system does not stress increased domestic output from a broad spectrum of new petroleum energy sources, but rather relies upon proven technology and the avoidance of costly new investments in synthetic crude that could easily prove unnecessary by the end of the next decade.

"Project Independence" seems worrisome from a national security standpoint for two reasons. First, it is clear that the comparative advantage in producing oil does not belong to the United States. The marginal cost of extracting oil from the well head in the Middle East is less than 20 cents a barrel,²⁰ about one tenth of the cost in the US. As Herman Kahn and others have emphasized, the dilemma facing the United States in providing petroleum resource security is that, after extensive private and public investments have been made in such projects as shale oil, the world market price could easily decline, requiring government subsidies on a continuing basis to ensure profitability.²¹ Second, the scale of investments required to ensure complete energy independence (if that is in fact the President's goal) is astounding. The requirements to raise sufficient capital for expanding coal production, offshore drilling, oil shale, coal gasification and

liquefaction to name just a few, could easily approach one third of a trillion dollars.²² Such an investment total excludes the exotic energy potentials, (solar, hydrogen fusion, etc.) that hold the promise for secure, long-term energy supplies. Indeed, the investments implied by "Project Independence" could preempt not only the capital needed for developing the ultimate energy sources, but could as well be provided at the expense of developing those scientific products and services in which we have traditionally had a comparative advantage, and which have provided much of our national security in the age of rockets and computers.

Thus, a complete reliance on domestic energy sources, while providing resource security, hardly seems the most efficient means of providing that security. I would suggest that a program of continuing energy imports could prove less costly, yet provide the same level of security, as a plan of total energy self-sufficiency. Such a national plan would distinguish between secure and insecure oil imports, and require that imports obtained from insecure sources be covered by replacement measures such as storage, shut-in production, or spare production capacity. If the world oil price dropped below the domestic price, import tickets could be issued to oil companies to permit them to import the insecure crude, but only if they could demonstrate that they had provided sufficient stored oil or spare production capacity to replace each barrel imported with a 6 month domestic supply. Should the price differential between domestic and foreign crude be insufficiently large to make such a "ticket program" profitable for the companies,

the government would provide the strategic reserve as a precondition for allowing companies to import insecure crude.

Such a strategic reserve, provides a means to carry the nation through a transitional period, stretching into the next decade, where security would be endangered by unexpected foreign supply interruptions. It also avoids an immediate and costly commitment to an oil shale program until it can be determined what supply and demand responses will be forthcoming as a consequence of the President's decision to let domestic petroleum prices rise. Assuming boycotted crude sources are reopened and Middle Eastern production totals are eventually raised, the US will undoubtedly rush to acquire whatever Middle Eastern supplies are available. However, a lesson from the most recent OPEC conduct should be that we must never again treat oil from these insecure sources as anything but a most risky and vulnerable supply. "Project Independence" would reduce our vulnerability from these sources, but not until the 1980's. A strategic reserve can be adopted immediately, with benefits enjoyed within 12 months.

The costs of such a reserve are speculative. However, private and public study groups have shown that crude oil can be stored in salt domes, (naturally occurring salt cavities in the on-shore Gulf Coast area with a capacity of about 700 million barrels) at a 20 year total cost of approximately 75 cents per barrel, and in steel tanks for about twice that cost.²³ Given the extent of the current boycott, and import projections to 1980, the need to replace 5 million barrels per day for 180 days seems appropriate

as a first approximation. Such a need would cost approximately 800 million dollars per year if salt domes were used to capacity.

The advantage of such a storage proposal is that it not only provides short-term security far earlier than "Project Independence", but that it delays a decision on costly investment projects such as shale oil until the need for such an investment is demonstrable. It seems premature to commit the nation to a program requiring the development of crude from new technology sources when conventional technology and rational pricing policies applied to such energy sources as coal and off-shore oil could significantly improve the nation's short-term energy resource requirements. The investment requirements for additional coal production and off-shore drilling alone will strain the nation's capital markets. We should develop extensively industries with an established production base, and concentrate remaining government and private dollars on developing ultimate energy sources, rather than move swiftly into a new area like oil shale where environmental and economic factors raise serious questions about program efficiency.

The modification to "Project Independence" guarantees only short-term security as guided by the stock-flow criterion model. An additional element is required to provide long-range security. Such an element might consist of a conditional leasing program, which linked full development rights on government land to the cost of oil imports and the amount of proven reserves.

Such a leasing program would encourage an expansion of exploratory drilling for oil offshore and on the North Slope, and

for geothermal production sites in the "Lower 48". Companies would be entitled to production from the exploratory wells, but leases for the full development would depend on the price of foreign crude, and the proven reserves substantiated by the exploratory drilling. If the price of foreign crude increased, full development leases would be granted, with the size of the lease a function of the amount of proven reserves at the time of the price hike. The larger the amount of proven reserves when the cost of oil imports increased, the greater the increase in reserves made available for domestic production. Such a policy, with a strategic reserve program, would allow continued imports without sacrificing national security. It should as well create a disincentive for Middle Eastern countries to increase the price of oil, and would emphasize conserving natural resources, rather than depleting them through immediate leasing and production.

"Project Independence", therefore, while providing a rational resource security system as guided by the "stock-flow" model, fails to give explicit recognition of the distinction between secure and insecure imports. It commits the nation to a costly investment in fossil fuel supplies to cover not only reasonably secure imports, but as well, fuel imports in which US production is comparatively disadvantageous. Canadian production, perhaps the securest of our foreign sources, should remain a strong energy contributor for years. Dr. Seastone of the University of Calgary recently commented:

"discoveries and developments in oil and gas fields of Canada have so rearranged the energy resources of the North American continent that the US can look to Canada as a continuing, stable source of energy supply..."²⁴

South American production and discoveries have similarly diversified potential secure supply sources, and when combined with likely accretions to US offshore and "lower 48" production following the freeing of domestic oil prices, makes the marginal investment to cover the totality of imports a very questionable undertaking. The proposed alternative to "Independence" would provide a resource security hedge only against insecure petroleum sources, and through a controlled leasing program linked to foreign prices, would seek to control the spiral in petroleum prices by increasing the elasticity of demand for Middle Eastern energy resources. It would provide short-term security more quickly than the President's proposal by emphasizing a badly needed but seldom provided element in an energy security system, a strategic reserve of standby production or petroleum stockpiles. Finally, reflecting "Project Independence", the alternative would continue to stress R & D outlays toward achieving an ultimate energy source and would hasten administration efforts to free energy prices from constraints which have for years artificially depressed the cost of fuel to users. The profligate use of energy caused by such pricing policies has contributed to a steady erosion of resource security as, in the absence of replacement measures, readily available domestic supply stocks have been gradually depleted. Policies outlined above would stress appropriate short and long-term replacement measures, and seek to control increases in energy use by pricing actions in the marketplace.

Such measures represent unambiguous improvements in energy resource security.

VI. ENERGY POLICY AND RESOURCE THREATS

In light of the two energy security systems outlined and compared above on an efficiency basis, comparisons on ability to meet the three categories of resource security remain to be examined. Such a comparison will be followed by particular recommendations for the Department of Defense as an institutional guide in the management of national security resource policy.

The resource threat dimensions examined earlier were military, domestic economic, and international political. Using the "stock-flow" security criterion model, I suggest that the military security threat involves principally short-term resource security, the international political threat reflects primarily long-term resource security, while the domestic economic threat should be approached through policies that address both short and long-term resource security.

Of the industrialized, oil importing nations, the United States is clearly least susceptible to an erosion of resource security from a military dimension. With a current domestic crude production of 11.5 million barrels per day, purely military needs in a general war have been estimated by the Joint Chiefs of Staff to approximate 1.8 mb/d, more than double the present military usage rate of 800,000 b/d but only 16% of US production.²⁵ By contrast, during the peak of the second world war, military demand of 1.6 mb/d comprised 32% of total US production.²⁶ However, the

military dimension of resource security also has been assumed, in this paper, to include sustaining essential civilian demand indispensable for economic mobilization. Although a quantification of such demand has never been rigorously performed, if both military and essential civilian demand were to be provided entirely from domestic sources, essential civilian demand would be limited to approximately 9.7 mb/d. In all likelihood, military and essential civilian demand would total less than 11.5 mb/d,²⁷ leaving other economic requirements to be met from remaining domestic production, and from imports that could be sustained during a war or political boycott. Because of the size of continued US petroleum production, then, a resource security threat from a purely military perspective is not significant. An improvement in short-term resource security will provide little increased security gain. Long-term security is likewise of little importance, since priority will always be given to defense production in wartime irrespective of the size of the resource stock. Hence, from the US military perspective, there is no clear basis for choosing between alternative resource security systems.

Western Europe is regrettably not as fortunate from a short-term perspective. Over 90% of this vital region's petroleum needs is imported, and over 70% is obtained from OPEC countries participating in current embargo activities. Thus, during a crisis, the flow of energy supplies to provide military and essential civilian demand affects national security significantly. Any program which accelerates the providing of short-term security is to be preferred.

In Western Europe's case, the need for strategic reserves of energy is even more pronounced, since the alternative to providing such short-term security, an "independence" scheme of the type proposed for the US, is obviously years away. (Great Britain and Norway, with their discoveries in the North Sea, are NATO partners perhaps the closest to achieving short-term security through an "independence" approach.) Again, however, concern over resource stocks, an object of long-term security attention, would be subordinated in a general or limited conflict to the need to ensure priority flows of available energy to satisfy military requirements. Thus, in political regions where domestic resource production is a small fraction of resource needs, programs hastening the provision of short-term resource security to meet military requirements have strong advantages over alternative systems that delay such provision through gradual development of domestic resource supplies.

The United States and Western Europe have very similar problems, however, in choosing between programs to provide resource security from a domestic economic perspective. This resource security dimension encompasses problems the solutions to which are both short and long-term. For example, after military and essential civilian needs have been preempted on a priority basis from available energy supplies, the remaining energy flows would be allocated to lower priority civilian requirements. In effect, such remaining civilian needs would be treated on a "residual" basis, with allocation and rationing programs designed to minimize economic dislocations associated with remaining residual supplies. Consequently, a

key to minimizing allocation difficulties is a short-term resource security system that can maintain sufficiently large flows of energy resources to non-critical civilian needs until state administrative machinery can institute a program to apportion supplies to competing, non-essential users. Again, an "independence" scheme is less effective in ensuring an adequate administrative response than is a program providing strategic reserves through storage or spare production capacity. The delays (probably 10 years as a minimum) in adjusting to an independence program would render economies extremely vulnerable, during the adjustment, to internal political unrest that would in all likelihood attend bureaucratic responses to a sudden cessation of resource supplies. Of course, as true independence is eventually achieved, the domestic economic threat to short-term resource security disappears. The choice between an independence or strategic reserve program, then, must rest on the rapidity in providing short-term security, given the domestic economic vulnerability implied by the size of resource imports.

Similarly, the domestic economic threat is very sensitive to long-term resource security as implied by the "stock-flow" criterion model. Since non-essential civilian demand has been treated as a residual, the stock of energy resources available to support these needs has been, effectively, drastically reduced. Hence, programs to increase this effective stock, which I have termed long-term resource security actions, will diminish the domestic economic threat more drastically than it will diminish the military threat, since priority will already have been placed on meeting military and

essential civilian needs. In this regard, no significant policy advantage can be seen by comparing the "independence" and "strategic reserve" programs outlined here. Both programs place strong emphasis on R & D outlays and investment expenditures to increase effective resource stocks. The programs differ only in their emphasis on conventional technology petroleum production. Competing evidence unfortunately makes a judgement on the effectiveness of such emphasis in adding to available resource reserves very speculative.

For the United States, given the current usage and production pattern of energy resources, the domestic economic resource threat may well have been overemphasized in an environment short of general conflict. While the economic dislocations in specific sectors during the most recent OPEC boycott have been noticeable, I would argue that future energy consequences in sectors receiving media attention, such as autos and airlines, will be very slight. For example, the layoffs in the airline industry have been attributed totally to energy shortfalls. Between December and January, 1974, 15,000 employees have been reportedly furloughed. However, the airline industry has been plagued with chronic overcapacity for three years, and it is one of the most cyclical industries in our economy. Between June and July, 1962, over 15,000 airline employees were released, even though no general economic downturn was evident.²⁸ But during recessions, which many economists were already predicting for the first 6 months of 1974, monthly airline employment drops have been much larger than the total reported to

date as an alleged consequence of constrained fuel supplies.²⁹ In the auto sector, layoffs have been four or five times the total for the airline industry, and the demise of this vital economic contributor have been widely predicted. Yet Ford has been able to completely retool an assembly plant from large to compact car production in less than 100 days, and with auto transportation so deeply ingrained in the American ethic, consumer outlays for small cars should, after a retooling delay, restore automobile profits to acceptable levels. Energy constraints will undeniably impose changes in consumer tastes which will affect durable goods producers, because of capital intensity, more severely than non-durable or service sectors. But the responsiveness of American industry in adapting to changing consumer tastes has been, historically, a hallmark of our post-industrial economy. Indeed, the steel industry itself has found demand for heavy plates and tubes to be used in energy related production already offsetting the decline in steel sheet used for consumer durables.³⁰ When such shifts in production activity are combined, as they have been, with steps to improve our unnecessarily high ratio of energy input to unit of output, the threat to domestic economic security posed by the current scale of energy shortfalls becomes less a problem of sustaining resource flows than a problem of social and political willingness to adapt to a higher cost energy environment.

While I have minimized resource security threats, particularly for the United States, in the military and domestic economic areas, current, significant threats are evident in the international

political sector the importance of which cannot be minimized. Japan and Western Europe, for example, have no obviously satisfactory remedies to avoid painful losses in international bargaining power vis-a-vis energy exporting states. While it is possible that a growing world energy squeeze, accompanied by political blackmail, could incite Japan and Western Europe to provide themselves with military means to operate overseas in sufficient strength, it is much more likely that they will adopt foreign policies designed to accommodate and placate the oil-exporting states consistently.³¹ Such a loss in international power and influence is not necessarily predestined for the United States, which has interesting options both to reduce its own political vulnerability, and to assist its allies in managing, but not resolving, the political dimension of their energy supply dilemma.

Perhaps the source of most immediate concern driving international relations between all nations is the phenomenal increase in foreign exchange costs for imported energy. Most estimates for OPEC foreign exchange earnings for 1974 exceed \$80 billion, with but \$30-\$35 billion being absorbed by Middle Eastern internal development.³² Such a flow of "petrodollars" is worrisome not only for its potential impacts on currency speculation, but for the concomitantly heavy drain on Western European and Japanese currency reserves. Possible consequences involve not only an unravelling of traditional alliances and organizations in a scramble for bilateral energy contracts at secure prices, but, even more injuriously, a series of competitive devaluations in attempts uni-

laterally to fortify weakened currencies. In spite of the dangers, the potential for US political leadership is very great, particularly since the United States, of all oil importers, stands to lose the least in forthcoming currency scrambles. Such leadership might begin by the US acting as financial intermediary in accumulating European and Japanese currency presently undesired by the Arabs.³³ But actions could logically be extended to broader economic and political assistance if initial US overtures were accepted in good faith, and were successful.

Short-term resource security actions can, unfortunately, do little to resolve threats in the international political arena. Both the "Project Independence" and "strategic reserve" security systems fail to provide energy replacements either in sufficient time, or in sufficient quantity, to alleviate currency reserve drains and to contribute to resource price stability. Long-term resource security actions can prove extremely helpful both in diversifying production sources, the goal of "Independence", or in contributing to resource price stability, an explicit objective of the conditional leasing program. However, the risk in relying on such long-term security options was reflected in J. M. Keynes preference for dealing always in the short-term, since, he added, in the long-term, all will be dead. Nevertheless, I suspect that the death of the monetary system can be indefinitely postponed by not moving towards a national commitment of complete energy independence. Economists have increasingly realized that, while balance of trade statistics for oil importers will undoubtedly

turn strongly negative, balance of payments figures could be cushioned by a reverse flow of investment dollars from the excess reserve holdings of the oil exporting states. In effect, the industrialized nations, for years mature creditors in international markets, could become debtor nations as resource-rich exporting states sought attractive returns either "downstream" in petroleum marketing, or in other investment outlets agreed upon by recipient nations. But, it is unlikely that Middle Eastern states will contribute investment dollars to capitalize US or European energy self-sufficiency programs. It is much more likely that reverse investment would be encouraged in an environment of continued trade in international commodities unencumbered by calls for autarkic programs of the type symbolized by "Project Independence".

To this point, national resource security policy has been analyzed by a "stock-flow" model not only in terms of efficiency in providing given levels of resource security, but also in terms of ability to resolve contemporary resource security threats. In comparison with a program of energy self-sufficiency, a system involving strategic reserves of petroleum resources possesses significant cost advantages in providing short-term security. It also improves the nation's ability to meet a domestic economic resource threat by providing, more rapidly, needed energy supplies. Additionally, it can contribute to an improvement in the international political threat by encouraging resource producer investment in energy consuming nations, thereby relieving a serious strain on the international payments mechanism.

VII. A DEFENSE DEPARTMENT RESPONSE

Policy recommendations by the Department of Defense will undoubtedly play an extremely important role in the formulation of national security policy for the remainder of this decade. Consequently, policy guidelines that follow from earlier discussions of resource security will be offered as a first approximation to crisis resolution from the defense perspective.

Perhaps the most vital recommendation concerns the actual employment of US armed forces. Succinctly, military power cannot resolve the energy crisis. US policy must not be directed, even in subtle form, toward intimidation through military force of Arab leaders. Such force might only very briefly improve short-term resource security by increasing the flow of petroleum resources. It could provide no long-term security since attempts at permanent acquisition of territory or drilling rights would be rebuffed by an intensely hostile regional environment. Even if military forces were initially successful in seizing and securing oil facilities in a Mid-East country, the capability to extract and transport the petroleum is very doubtful. Oil workers are chiefly producer country citizens whose loyalty and support are not likely, and even oil companies themselves, sensing vulnerability of assets in other areas, would be reluctant to support such a move. As well, the possibility of superpower confrontations is very great, whether the military actions are conducted by the United States or by proxy military forces. Most importantly, the rapidly evolving nature of petroleum resources suggests constant reappraisal of the significance

of the resource to economic security. There would be no point in risking general war over a resource whose importance a decade hence might have significantly decreased.³⁴

However, the constraints implied above on military actions in the Middle East should not be cause for concluding that all forces should be withdrawn. The possibilities of conflict based upon access to resource stockpiles, an intervention typology perhaps manifested most recently by Chinese-Vietnamese conduct over the Paracel Islands, suggest the need to reconsider limited war doctrine for American ground forces. CPT Sinnreich of the US Military Academy has proposed a "conflict control" doctrine to guide US military action in a scenario of inadvertent conflict between superpowers.³⁵ "Inadvertent" has been defined by CPT Sinnreich to encompass superpower confrontations neither anticipated nor desired by either contestant. Such a confrontation might arise, for our purposes, either in an area where both powers sense vital interests are at stake but where stability cannot be guaranteed by either side, or in an area where one superpower's interests are ambiguous, leading the other into a mistaken assessment of opportunity. The recent Soviet and US actions in the Middle East demonstrate unambiguously that both superpowers perceive vital political and economic interests are involved in a region where instability is endemic. As well, the redeployment of US forces from the western Pacific, a potentially rich energy resource region, leaves an assessment of US goals in the area extremely speculative, not just for the Soviets, but for the PRC. In

addition, given the political climate of detente and rapprochement existing between the superpowers, the likelihood of contingencies which had provided much of the rationale for US strategy has diminished. Thus, the need for a reevaluation of ground force doctrine seems manifest. Indeed, in considering the fluidity of the current international order, CPT Sinnreich has concluded, "...it would be surprising if inadvertent conflict failed to occur."³⁶

"Conflict control" seeks to make the progression from failure of deterrence to full-scale commitment an event which is not necessarily automatic. In a conflict-control scenario, inadvertent conflict might arise as a consequence of Persian Gulf border instability as competing resource claims exacerbate historic border tensions. Iran and Iraq are likely candidates, since each receives superpower largesse to an almost equal degree. Should a serious Gulf conflict erupt, it might easily embroil the superpowers, who sense the geographical and economic criticality of the region. Conflict control would seek to insulate the unstable conflict conditions in order to re-establish local order at the earliest possible time. Military forces would seek to impose a local stalemate, not a local advantage, and would encourage an immediate shift to superpower negotiation by making local military success subservient to the goal of successful early diplomacy.

A conflict-control posture demands a quick-reaction force, relying on highly trained forces-in-being, deployed forward in areas where the risk of inadvertent conflict is high. Equipment issued would stress a forward position defense employing mines and barrier-

producing conventional munitions, anti-tank weapons, and intense local air defense capabilities. It would likewise stress redundant, highly reliable command-and-control systems, since tactical commanders down to battalion level could expect direct political control of tactical operations. An even more difficult change for a military officer to accept however will be the requirement to remain on the tactical defensive. But, given the political character of an inadvertent conflict, any offensive action (such as a deployment of armor or a "fly-back" of troops to pre-positioned war stocks) having even minor tactical significance can convey a message with perhaps disastrous strategic consequences.³⁷

It should be noted that conflict control is not aimed at resolving purely regional conflicts. The United States has no stated ambition to replace the departed British as a Persian Gulf protector, and there is some doubt, given the rapid arms build-up in the region, and the increased scale of Soviet activities, whether such a "policeman's" role, even if desired, could be effective. The adoption of a conflict-control posture indeed could provide a deterrent influence on superpower and regional forces alike. But conflict-control doctrine is intended manifestly to freeze a local engagement involving another nuclear power, an engagement made more likely by concerns over security of resource supplies in regions where instability is heightened by inflated resource values. Should conflict-control fail, eventual escalation, conventional or nuclear, would likely follow. But, given the uncertainty of the world order displayed by Soviet-US countermoves

during the Yom Kippur War, conflict control "reduces the likelihood that an uncalculated act must necessarily lead to a general war, unwanted or perhaps catastrophic."³⁸

The employment and disposition of combat forces in response to threats to resource security are of course policy recommendations that can be made irrespective of the choice of national resource security systems. An "independence" or "strategic reserve" program would not fundamentally change the response required of the US military in meeting challenges to the world order for the remainder of this century.

On a less cosmic level, and again irrespective of specific security systems, particular institutional objectives seem obvious. First, the Defense Department should move as rapidly as possible toward procurement and operations programs that reflect the increasingly costly nature of petroleum supplies. The recent acquisition by the Army of the "Gamma Goat" as a one-for-one replacement in tactical units for the standard 3/4 ton truck illustrates the procurement dilemma. Designed and procured during the "cheap energy" era, the "Gamma Goat", while a quality vehicle in task performance, is an inordinate consumer of expendables. Its fuel mileage is less than half that of the vehicle it replaced,³⁹ and with a virtual doubling of unit fuel costs in the last 18 months, operating expenses for tactical units in achieving a given level of combat proficiency will rise precipitously.

Second, too little attention has been paid to the link between available fuel supplies and specific levels of operational

readiness. Operations have been constrained, in some instances severely, by fuel allocations that have reduced steaming, flying and training hours. The energy availability-operational readiness link must be established, and then argued persuasively for in budgetary hearings. To be persuasive, such bargaining will require substantial, continued contributions in energy conservation, since the political, if not economic, cost of any other action is simply too high. But until the armed forces can adapt to constraints which scarce energy supplies have imposed on operations, training, and procurements, they must avoid actions which reach into standard of readiness, and they must have the courage to defend mission-essential requests before a skeptical Congress and public.

In comparison with "Project Independence", however, a "strategic reserve" program would undoubtedly require an increased DOD role if significant petroleum storage or standby production facilities were purchased. While the US has never maintained a large strategic petroleum stockpile, the physical security of such a system, if deemed appropriate during a national emergency, would undoubtedly fall on land and air forces. And since 1912, the Navy has had the responsibility for the only existing strategic reserve of spare petroleum production capacity, the Naval Oil Reserves. Under a strengthened national program of strategic reserves, and considering tri-service petroleum needs in which the Navy is no longer the primary consumer of petroleum, an oil production reserve, if adopted, should probably be managed at DOD rather than Secretary of Navy level. Political difficulties would almost certainly

attend, as they have to date, the administration and the tapping of the production reserve for defense use during an energy emergency. But the consequences of having no standby production or storage program, during a period when vulnerability to import interruptions continues to be high, risks a potentially serious erosion of military preparedness and national security.

VIII. CONCLUSION

The examination of resource security in general, and US energy security in particular, has revealed three resource threats which a comprehensive security policy should address. The military security implications of current energy shortfalls have not proven significant, and the domestic economic implications, while portentous, are manageable at present production and import levels. The international political dimension is currently of greatest importance, but the most worrisome facet of this security dimension is the trend toward massive payments imbalances which proposed resource security programs are incapable of controlling in the short-run.

As the present boycott draws to a close, first priority should be given to restoring price stability to world resource markets. The era of cheap energy is indeed over, but it does not follow that the era of irrationally priced energy is upon us. Price stability goals reflect the serious international political dimensions of the resource threat, and are a necessary first step to effective resource security for any security system. During this present crisis, the real test for the United States could well be

whether we have the domestic patience, and international leadership, to await the development of economic trends that lie at the heart of resolving an intrinsically economic problem. The temptation to employ costly short-term solutions will only delay economic and political adjustments which can carry the US through a troublesome, but not unresolvable, resource pinch.

FOOTNOTES

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¹Richard M. Nixon, US Foreign Policy for the 1970's, A Report to Congress, 3 May 1973 (Washington: Government Printing Office, 1973), pp. 225-227.

²U.S. Cabinet Task Force on Oil Import Control, The Oil Import Question, (Washington: Government Printing Office, 1970), p. 3.

³Ibid., p. 6.

⁴Ibid., p. 8.

⁵Ibid.

⁶CPT Jack E. Godfrey, "Mahan: The Man, His Writings and Philosophy," Naval War College Review, June, 1966, p. 65.

⁷COL Herman Beukema, Raw Materials in War and Peace (West Point: United States Military Academy Printing Office, 1947), p. 88.

⁸Ibid., p. 89.

⁹Mancur Olson Jr., "American Materials Policy and the 'Physiocratic Fallacy'," Orbis, Winter, 1963, p. 670.

¹⁰C. J. Hitch and R. McKean, Economics of Defense in the Nuclear Age, (Boston: Harvard University Press, 1960), p. 15.

¹¹Ibid., p. 18.

¹²Olson, op. cit., p. 688.

¹³Klaus P. Heiss, Klaus Knorr, and Oskar Morgenstern, Long Term Projections of Political and Military Power (Princeton: Mathematica, Inc., 1973), p. 120.

¹⁴Beukema, op. cit.

¹⁵See, e.g., Harry B. Yoshpe (ed.), Requirements: Matching Needs With Resources (Washington: Industrial College of the Armed Forces, 1964), p. 32.

¹⁶Ibid., p. 31.

¹⁷See, e. g. Economics, "Input-output: Sizing Up the Squeeze on Energy," Business Week, January 19, 1974, p. 62.

¹⁸Weiss, op. cit., p. 176.

¹⁹U.S. Cabinet Task Force on Oil Import Control, op. cit., p. 8.

²⁰Jahangir Amuzegar, "The Oil Story: Facts, Fiction, and Fair Play," Foreign Affairs, July 1973, pp. 678-679.

²¹Lecture interview taped and delivered to Students, U.S. Army Command and General Staff College, 28 Jan 1974.

²²A range of estimates for the period to 1985 has been provided in National Petroleum Council, U.S Energy Outlook, December, 1972, p. 296.

²³Computations performed initially by the petroleum industry for Cabinet Task Force on Oil Import Control. Updated and revised estimates performed by Office of Assistant Secretary of Defense (Systems Analysis), August 1972.

²⁴The Kansas City Star, February 10, 1974, Section D, p. 1.

²⁵Wesley K. Clark, "The Defense Department and the Energy 'Crisis' " (unpublished manuscript, United States Military Academy, 1973), p. 8.

²⁶Ibid.

²⁷Interview with Joint Chiefs of Staff, J-4 (Petroleum Branch), October, 1973. Estimate provided indicated "essential civilian" demand as defined here might be as small as 4.0 mb/d.

²⁸U.S. Bureau of Labor Statistics, Employment and Earnings Statistics in the U.S., 1909-64 (Washington: Government Printing Office, 1964), p. 527.

²⁹See, e. g., U.S. Department of Labor, Manpower Report of the President (Washington: Government Printing Office, 1972), Table A-18, p. 180/

³⁰The Kansas City Star, February 11, 1974, p. 12.

³¹Heiss, op. cit., p. 178.

³²John Cunniff, "New Petrodollar Cast in Jekyll-Hyde Role," The Kansas City Star, February 15, 1974, p. 14.

³³See, e. g., William C. Cates, "Arab Oil and the Currency Crisis," The Wall Street Journal, February 11, 1974, p. 10.

³⁴Bernard Gordon, Toward Disengagement in Asia (Englewood Cliffs: Prentice Hall, Inc., 1969), reprinted in "Strategic Studies Handbook," RB 100-1, Vol. 1, p. App-276, USACGSC.

³⁵CPT Richard H. Sinnreich, "Limited War and American Ground Forces: Toward New Doctrine" (unpublished manuscript, United States Military Academy; 1973).

³⁶Ibid., p. 10.

³⁷Ibid., p. 20.

³⁸Ibid., p. 26.

³⁹Statement by MAJ Becking, Mobility Training Dept., Aberdeen Proving Ground, personal interview, February 11, 1974.