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Long Range Planning For The Environment Circa 2000

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The environment that the Armed Services share in the year 2000 will be shaped largely by today's societal trends—economic, political, demographic, technological, and sociological phenomena. Some of these trends are clearly evident today while others are less well defined. However, if military long-range planners are to take advantage of future conditions and hedge against adverse developments, they must anticipate, identify and project the potential impacts of societal trends.

Today's societal trends tend to have greater impact because of accelerated change and time compression. This allows little opportunity for adjustment and remedial action. Scholars speak of the progression from the agricultural era, to the industrial era, to the post-industrial era, to the information era. The transition from one era to another is generally defined by a change in the sector of the economy in which the majority of the work force is engaged. The agricultural era lasted 400 years and ended when the majority of the work force migrated away from the farm and into the factory. The industrial era lasted 200 years and ended when the majority of the work force left the manufacturing arena and turned to the service sector of the economy. The post-industrial or service era began in 1950, and now, less than half a century later, we are moving quickly into the information era in which most of the work force will be involved in the creation and distribution of information. The rapid development of this new era is accompanied by distinctive trends in economics, demographics, politics, technology, and sociology. Military long-range planners must discern the long-term national security implications of these societal trends.

Military planning historically has involved predictions. Short-term forecasts are often accurate enough to be of demonstrable practical use. But

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as the period of concern is moved further into the future, uncertainties multiply, confidence recedes, and scientific technique yields to intuitive judgment. Nevertheless, the Armed Services must focus on the future, and on the distant future as well as the immediate. This type of vision will allow the Services to plan more effectively for possible contingencies.

To hold strictly that the past is the best guide to the future is a recipe for disaster. However, evident in past and present trends are the driving forces of the future. Economic, demographic, political, technological, and sociological trends offer clues to what the future may resemble or, at least, how to construct a model of the future. Some examples: The economic pressures of foreign competition are forcing the US economy to evolve into an open economy thus eroding much of the security once provided by a nearly self-sufficient domestic defense industrial base. Sociological factors threaten to undermine the basis of the traditional family and many of the assumptions on which the Armed Services are based. Technological change places an increasing burden on schools and training programs to train and retrain workers. Demographic trends suggest that the Armed Services may face tremendous difficulty fulfilling manpower requirements under present recruiting procedures. The fragility of modern society—reflected by dependency on energy, communications, transportation, and water infrastructures—tends to increase with technological advancements and economic growth.

Moreover, an increasingly divisive political culture is at a loss for a manner or consensus with which to handle these trends and the problems that may arise from them. Let us examine several of these societal trends in some detail.

Changing Defense Industrial Arena. Far from the post-World War II position of clear technological superiority and industrial independence, the United States is becoming critically dependent on foreign sources for weapon system components, and tools and processed materials of considerable national security importance. This trend in the defense sector mirrors a similar trend in the consumer sector. The post-WWII era has witnessed production facilities shifting overseas for reasons of economics—cheaper labor (assembly) costs—and technology. The implications for national security differ dramatically. For example, during a period of war, the consumer sector could go without imported bicycles, VCRs, shoes, toasters, etc., until production facilities are established in the United States to replace foreign suppliers. The Armed Services, on the other hand, could not adjust so easily to a similar disruption. Many key weapon system components, tools, and materials are wholly designed and produced outside the United States with or without American technology.

For example, horracous tubing, which is essential for the production of fiber optics, is solely manufactured in West Germany. Japan is the sole source of polysilica used for the production of silicon chips. Various advanced

composite materials have single sources from abroad or severely limited domestic supplies. One Japanese firm, Kyrocea, produces 70 percent of all ceramic packages used in integrated circuits. Also, roughly 70 percent of the computer assisted machine tools used in defense industries are Japanese in origin.

In addition to foreign supplies of unique techniques, the Armed Services are also increasingly dependent upon foreign assembly of components. Recent Congressional testimony revealed that 90 percent of the parts used by Texas Instruments in military systems are assembled in the Far East. According to Texas Instruments' corporate office, some types of assembling processes, e.g., the mounting of semi-conductor chips on packaged components, could be reestablished within the United States in several months. More advanced techniques such as wafer silicon processing could not be reestablished as quickly. A recent DoD Tri-Industry Association Study indicates that 85 percent of DoD contractors could find a second source to replace foreign components but leadtimes would range from three months to two years. These key dependencies include nuts and bolts, metal fasteners, fuses, and other basic weapon components.

This growing dependence on foreign sources for defense equipment components must be viewed as part of a larger problem concerning the capability of the United States to fight a prolonged wide-scale conventional war. The issue of US industrial dependency challenges long-range planners to consider the possibility that 30 days may be the maximum period for which the United States can sustain an all-out effort before facing the options of either attempting to weather a two to three year lull until full-scale mobilization is achieved or immediately escalating to nuclear war. Clearly, the growing dependency of the United States on foreign sources for key defense systems components is a long-run trend which the national security community cannot ignore.

The changing US economy is a long-run phenomenon that is just beginning to surface. Indeed, no agency in the Department of Defense has yet compiled a comprehensive list of products on which the United States is dependent upon foreign sources. Dependence is also difficult to identify when dealing with domestic contractors with foreign sources and is difficult to define when dealing with foreign owned onshore producers.

Technology transfer is a closely related issue. Technology transfer is presently discussed in terms of the transfer of civilian technology with military applications (e.g., computer systems) as well as military technology with nonmilitary industrial spinoffs (e.g., aerospace technology shared in fighter airplane co-production). Assuming that it is impossible completely to stop the flow of knowledge or technology transfer in the long run, the key issue would seem to be how to maintain the US qualitative advantage over the Soviets or any other opponent despite the hemorrhage of information

across the Atlantic and Pacific. Technology transfer and economic interdependence have been viewed in terms of a tradeoff between economic and strategic interests. The tradeoff could become increasingly distinct and the debate correspondingly more heated as the volume of trade in defense related industries increases. American companies will increasingly complain about losing business to foreign competition when their technologically sensitive exports are blocked on the grounds of national security. At present, the Reagan administration attempts to control the flow of various exports via export licensing procedures. Yet, this piecemeal process is ineffective. Quite likely American strategic and economic interests could be better served by the vigorous promotion of US high technology through which the United States could maintain a qualitative edge over the Soviets while simultaneously improving the US economy.

Declining Defense Industrial Base. The decline of smokestack industries in the United States is a well documented phenomenon. The pressures of foreign competition have shifted much heavy manufacturing abroad in industries such as steel, automobiles, and trucks. Anti-industrial environmental legislation of the 1960s and 1970s placed additional pressure upon these sectors. Military long-range planners must address the question of whether or not the United States can sustain a defense industrial base under these pressures.

The concept of a defense industrial base not only involves present industrial performance and time schedules of procurement, but also must embrace the nature of an industrial base that can be suitably mobilized. This concept cannot be regarded as being identical to an industrial base designed to be most competitive in world markets. For example, a defense industrial base would tend to encourage excess or surge capacity and strategic stockpiles because of their importance for mobilization. Also, this type of capability would probably have to tolerate a smokestack economy's negative externalities—some water and air pollution.

Conceptually speaking, the use of Computer Assisted Design/Computer Assisted Manufacturing (CAD/CAM) and robotics in flexible manufacturing systems could permit a relatively faster transfer from civilian to military oriented production. A well thought out scheme of industrial mobilization could, theoretically, be implemented and brought on line much faster than at present.

Similar to the conditions of accepting United States dependency on foreign sources for some defense equipment components, acceptance of a decayed mobilization capability represents a tradeoff and probably is fundamentally posited on the belief of never requiring such a capability. There are analyses that indicate that the Soviet Union models and exploits our vulnerabilities in its defense planning. For example, the Soviets have recently emphasized a

buildup of conventional capabilities in light of relative Nato conventional weaknesses. It is likely, moreover, that continuing Soviet pressure will be applied to these vulnerabilities through the year 2000. Thus, to ignore our defense industrial plant based on a short war or no war rubric is myopic at best.

The US government has a clear precedent for intervention in the economy on grounds of national security considerations. The building of the Interstate Highway System, government aid to schools for scientific education, and the stockpiling of various commodities are examples. Present and future discussion of industrial policy could possibly be approached through the same logic. Otherwise, the domestic industrial base in the year 2000 may be so depleted that the mobilization option for the purpose of deterrence may be eliminated and actual warfighting ability may be permanently restricted.

Demographic Trends. Among the important demographic trends faced by long-range planners are a decline in the draft-age population, an older US population, a dramatic change in the ethnic mix of the United States—especially in the southern and western states—and a decline in the quality of US education.

Demographic trends are, perhaps, the easiest trends to project. For example, all of the soldiers, sailors, airmen, and marines of the year 2000 have already been born. The draft pool will decline from the ten million level of 1970 to seven million in 1990 and maintain that level through 2000. The declining volume of the draft pool immediately poses the question of whether conscription is inevitable. Strong arguments have been made that the costs of recruiting and retaining the requisite high percentage of American youth may prove to be prohibitive. However, studies of the All-Volunteer Force (AVF) and the dependence upon the labor market to satisfy the demand for enlistees indicates that this is not the case. The AVF, as a marginal demander of available American youth, can continue to meet its objectives into the 21st century provided that the Services are allowed to make adjustments to changing conditions in the labor market so as to compete effectively with the private sector. Changes in pay, benefits, and recruiting expenditures can offset shortfalls implied by changes in the youth population and unemployment levels.

The baby boom cohort, currently in their 20s, will be well into their 40s by the year 2000 and by 2010 will be at or near retirement age. This “greying of America,” on the other hand, could have a substantial impact on the welfare burden of the federal government and affect DoD’s share of federal expenditures.

By 2000, the minority population of the United States will increase from 19 to 25 percent of the total population. Hispanic Americans are the fastest growing minority group. The implications for national security center

around the adoption of English by minorities as their primary language and upon their increased influence in politics. The increasing political influence of Hispanic Americans could lead to more pressure for political intervention in Latin America.

Startling declines in the quality of US education over the past 25 years correspond with an increasing demand for technically educated and skilled workers. That there is a crisis in US education is well publicized. The potential implications in the long run will range from a narrowing in the technology gap between the United States and USSR, increasing difficulty in fulfilling skilled manpower requirements, and an increase in the need for training programs within the Services.

In sum, a future struggle seems likely between the realities presented by demographic trends and past assumptions made by the Armed Services. Recruitment will be mathematically more difficult, but not impossible. Declining standard exam scores hint at the possibility of a diminishing quality of recruits. Quite likely, not all of the recruits will speak the same language nor will they share the same motivations. These trends may be some of the most predictable and hence lend themselves most easily to preventive planning today. The Services should continue to emphasize reduced manpower intensity as a factor in hardware design. Moreover, we should consider adjusted pay and benefits schemes to fill recruiting quotas and must prepare our training centers to surmount language problems.

Sociological Trends—Changing Family Structure. The American family has undergone a dramatic transformation. With the advent of the industrial era, male wage earners went to work in the factories. Prior to this, men and women could be viewed as roughly equal in terms of their net contribution to the family economy; chores and responsibilities were divided evenly between spouses. Industrialization, however, took men away from households while also removing many of the previous chores of women. However, by 1950 more women began to enter the active work force.

The structure of the Armed Services is based upon assumptions made before the considerable increase in the percentage of women in the work force. The mobility of the officer corps and career servicemen assumes the same mobility of their spouses. Yet, as more women enter into professional careers and earn substantial income, their husbands will have to think twice before accepting transfers to locations where their wives cannot find similar employment. A recent study suggests that senior male officers often retire rather than move their families and career wives. This phenomenon could be responsible for as much as a 10 percent increase in officer attrition levels. As women demand and receive an equal role in society, the Armed Services will be put under increasing pressure to integrate women more fully into the officer corps. For example, in 1950 only 31 percent of women were active in

the labor force. By 1980, 51 percent were active, and this figure is expected to level out at 67 percent in the year 2000. The long-term trend is one in which women make nearly equal economic contributions to society and the Armed Services will be placed under increasing pressure to accept this phenomenon.

Like any societal trend, the waxing participation of women in the labor force has various secondary effects. The most serious implications may result from the impact upon the family structure. It has been argued that the rise of working couples is a handmaiden to subsidized day care, attendant declines in standard exam scores of children, and a demise in the traditional family unit which has proven to be the basis and recruiting pool for potential officers and enlisted men. All of these have potentially dramatic national security implications.

Importance and Fragility of the Infrastructure. One theory holds that as Gross National Product (GNP) rises, demand for public goods increases more than proportionately. This demand is reflected in the growth rate of infrastructure—represented by water supply networks, transportation, communications, and electricity—relative to the growth rate of GNP. For example, the best indicator of the relative wealth of a country stems from the measure of *per capita* electricity use. The wealthier a country is, the more electricity it uses. Also, the expression “information age” implies dependencies upon huge communications networks. Most metropolitan and agricultural areas in developed countries, furthermore, are critically dependent upon water supplies that are pumped hundreds of miles. The various infrastructure dependencies inherent in a modern economy become quite apparent.

Tracing economic development since the Middle Ages reveals that societies have become increasingly dependent upon various infrastructures—roads, irrigation, sewers, telephones, railroads, etc. An emerging question is whether or not in the long run society will pass a critical level of dependency at which point war no longer becomes a viable option, i.e., countries simply will not be able to bear the potential consequences. Accordingly, the striking feature of the so-called information era may be its fragility. Through the process of transformation from an Agricultural to an Industrial to a Post-Industrial and to an Information society, societal interdependency has undergone a telescoping process. Roughly speaking; a farming society was individualistic and independent; a factory society was semi-autonomous; however, the information society threatens to be critically interdependent and, hence, especially fragile. For example, the failure of telephone lines could strangle DoD operations; the failure of one electric transformer (for which no replacement exists) could shut down electricity for most of the eastern seaboard; and an explosion in a communications center in Indianapolis could substantially impede all computer operations in the United States.

The level of guaranteed efficiency in the US economy is not without its price. The price of an efficient, economical infrastructure is leanness—a potential cost is vulnerability to disruption. In the same vein, modern technological efficiency in the provision of food, water, energy, medicine, transport, and communication has been achieved on economic grounds without any attention paid to the systems' inherent fragility. Indeed, in developing technological tools to manage the environment, materials, and energy to ensure a higher quality of life, the very success of our society may be a fatal flaw.

The national security implications of this potential fragility must be contemplated. The questions that have to be asked can be put in terms of the sacrifices that may be required during future conflict. It is doubtful that the United States will remain a sanctuary from foreign attacks in future conflicts as has been the case in the past. Infrastructure may become the primary targets of strategic and terrorist attacks. The psychological implications of this vulnerability will also have to be taken into consideration. During or prior to a conflict, Americans will have to sacrifice or risk more than ever on the home front. Sacrifice will not just take the form of rationing or turning off air conditioners in lieu of operating machinery, rather it will be to live under a constant physical and psychological threat.

Political Consensus. There is no question that the landscape of the American political economy has changed in the past 30 years. Whole new factions that were dormant or nonexistent 30 years ago, now play active roles (e.g., political action groups, environmentalists, moral majority, etc.). The immediate past has been accurately labeled as the period of the rise in single issue interest groups. The result of this rise of multifarious factions has been the decline in the pluralistic national consensus that existed in the immediate post-World War II era.

Isolated events such as Watergate, Vietnam, the Arab Oil Embargo, high unemployment, and high inflation have shocked America. Future projections—Global 2000* and Club of Rome—suggest a gloomy horizon. A growing proportion of the public will make demands for a long term perspective—requiring intentions and a strategy for the future. This approach cannot be divorced from the Armed Services. Past studies of support for the military whether quantified by mood theory or opinion polls lack an analytical basis and no clues can be given as to future behavior. The point is—as Clausewitz pointed out—public support is one of the three pillars of an effective military organization.** In turn, the public will quite

**The Global 2000 Report to the President: Entering the 21st Century.* A report prepared by the Council on Environmental Quality and the Department of State. Gerald O. Barney, Study Director. Washington, D.C., 1980.

**Modern warfare, Clausewitz says, consists of a "remarkable Trinity," the people, the army, and the government. To ignore any of them is to ensure disaster.

likely want a long term rationale for the level of defense expenditure, a rationale more complex than presently suggested by the Soviet threat. Without this rationale and long-term outlook, funding consensus may become unobtainable and support less than forthcoming.

The past 30 years have witnessed a diffusion of power which has transformed the national leadership process into an incredibly messy bargaining process. National security, now more than ever, may have entered the realm of partisan politics. For the Armed Services to obtain necessary and desired objectives, new forms and appeals to the general constituency must be considered. With the creation of Congressional Budget Committees in 1974, the Defense Budget now gets a sedulous review by Congress. Current arguments over whether or not there should be a defense buildup have become increasingly dominated by discussions over the relative merits of the various systems by non-uniformed personnel. Congress is increasingly turning to these sources of information—non-Department of Defense—for analysis. Decisions based on this analysis may greatly impact the future profile of the Armed Services. To control long-range planning, the Services must continue their quest to recapture national security long-range thinking and planning.

Conclusion. The cost of *not* having an early warning system to identify critical societal trends as they develop is increasingly perceived as prohibitive. Such trends shape the common environment that the Armed Services will share. Failure to project, identify, and anticipate the potential impacts of these trends is to abdicate responsibility to the future generation at which time the costs of corrective action may be prohibitive and national security critically endangered.

