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**WHITHER MODERNIZATION
AND MILITARIZATION?
IMPLICATIONS FOR INTERNATIONAL
SECURITY AND ARMS CONTROL**

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Modernization and militarization are closely associated. Militarization responds to the imperatives arising from the global modernizing process begun five centuries ago with the rise of the territorial state and with the destruction of the European feudalism and its gradual replacement by capitalist-based economy.¹ To establish this association -- and the direct and indirect causal connection between them -- the discussion below first defines the principal characteristics of modernization as a global process of socio-economic change and political transformation and defines militarization in terms that can be linked to key characteristics of modernization. Some of the implications of this argument for global arms control accords are subsequently outlined in the concluding section. Aims of modernization will have to be re-directed and the means used by the world community in this pursuit will have to be re-defined if militarization is to remain the servant, not master, of modernization.

PRINCIPAL CHARACTERISTICS OF MODERNIZATION

1 Search for Global Order and Legitimacy

As a social process, modernization has four characteristics that can be associated with militarization. First, it is the search of peoples everywhere for a global order based on a claim of universal legitimacy. The nation-state has emerged

* I should like to thank Andrew Ross for helpful criticism of this paper

as the provisional answer to this aspiration. The destruction of Christian unity and the eruption of internecine religious wars between Catholics and Protestants generated the need for an arbiter, independent of these communal struggles, to resolve differences and to protect both persons and property within territorially defined states and to provide for the collective security of populations -- progressively defined as national entities -- against foreign opponents. Thomas Hobbes' Leviathan became the model for western Europe. The modern secular state crystallized around hereditary monarchs who, basing their authority on divine right and blood, monopolized the functions of internal order and external security. Religious and hereditary tests eroded eventually as determining principles of legitimate rule. While political regimes today differ with respect to their claims to legitimately exercise the state's monopoly of violence, they almost all rest on some secular principle of legitimacy whether defined along liberal republican, democratic socialist, or autocratic lines of rule. The Iranian revolution and reactionary movements like Islamic fundamentalism are, ironically, evidence of modernity's ascendancy.

The nation-state triumphed for several key reasons. Its appeal was more broadly based than the personal loyalties underlying feudalism. It elicited the support of rising entrepreneurial classes, appealed increasingly to artisans and small landowners and peasants, and absorbed the energies and talents of those elements of the old aristocracy, like France's de Tocqueville or the Prussian Junkers, who sensed the irresistible force of the new social and economic movements sweeping Europe.² Under the centralizing control of monarchical rule, the nation-state proved more successful than its opponents at mobilizing the material and human resources of the realm for war and economic growth.³

The victory of the nation-state in Europe was simultaneous with its extension to the globe as the principal vehicle for organizing the world community⁴ The struggle among European states for continental dominion was widened to a global scale, encompassing peoples everywhere National survival, prosperity, and greatness justified empire and legitimated the manipulation of alien peoples and their exploitation for the benefit of Europe's ruling classes and populations Rival European states projected their local struggles to the world environment with the result that through colonization the modern world system became an extension of European politics Over five centuries to the present era, first Spain and Portugal, then Holland, Britain and France, and finally Germany and Italy successively entered the competition for European hegemony resting partially on empire abroad Europe's quarrels defined the world's political agenda The Euro-centric system prevailed until its collapse in 1945 with its temporary replacement by a bipolar system, polarized between the United States and the Soviet Union

Since 1945, the world community has been in the grip of two movements, both rooted in the nation-state The first has been the pursuit of competing imperial systems by the superpowers They may be viewed as just the latest in a long succession of nation-state contestants bent on fashioning a world order to suit their aims and interests The superpowers, as their predecessors, have so far been frustrated in their quest for dominion by their counterbalancing rivalry The superpowers also confront scores of new nation-states in the decolonized southern hemisphere as well as the old but still vigorous states of Europe and Japan, strong regional powers with a global political and economic reach This network of nation-states limits the hegemonic pretensions of Moscow and Washington The centripetal force of the superpower struggle and the centrifugal tendencies of third state rivalries around the globe obscure the victory of the nation-state as the

provisional answer to the imperative underlying modernization the search for a more inclusive and reliable order than that afforded by inherited or traditional forms of political organization

2 Search for Welfare

The demand for ever greater levels of prosperity is the second distinguishing feature of modernization Populations around the world refuse to accept the low and deprived material standards of life to which they were born Emulated is the example of developed states, located principally in the northern hemisphere, which have enjoyed progressive and accumulating economic expansion since the fifteenth century Commercial capitalism followed by state-led mercantilist practices induced the search for raw materials, the internal development of European markets, and the expansion of trade first to the Mediterranean littoral, then to the New World, and, subsequently, to Asia and Africa Beginning with the eighteenth century, commercial and mercantilist capitalism gradually gave way to industrial and finance capitalism The process of constructing a world capitalist economy on which the wealth of the European states increasingly depended was completed by the end of the nineteenth century While a European centered global order collapsed as a consequence of the destruction wrought by World Wars I and II, liberal western capitalism survived as a consequence of a strong and expansionist American economy and the defeat of the protectionist imperial regimes of Germany, Italy and Japan

Even before the emergence of the United States as capitalism's champion, perceived inequities of the capitalist system led to political movements and revolutionary forces that created Socialist and Communist regimes, committed to state ownership of the means of production as an antidote to the real and alleged excesses of capitalist market practices Industrialization was not so much rejected, as were

the mechanisms by which its productive fruits were to be distributed and future investment priorities determined. In place of the market, distributive decisions on profits, wages, and investments were assumed by state officials, exercising power through mass-based parties. With decolonization, collectivist solutions to economic growth gained additional force. The western, capitalist states were challenged in the North by the Communist bloc and by developing states of the South which often preferred a Soviet to an American model of modernization.

3 Search for Scientific Discovery and Technological Progress

The search for greater world security and wealth is associated with a third characteristic of modernization: the unique prestige enjoyed by scientific discovery and technological advancement. Traditional man expected little or no change in nature or society. He accepted his fate as a product of God's will, blind force or social inheritance. There existed few widely accepted objective tests for physical or social truth. Traditional explanations of the physical universe reinforced social and political controls exercised by religious leaders or rulers claiming divine investment. Once scientific knowledge established itself as an independent source of truth, it challenged traditional religious and social authority and undermined the legitimacy of these institutions relying on these principles of rule. In applying scientific knowledge to technological innovation, modernizing societies created a powerful instrument for change, physical and social, whose limits have yet to be fully exploited.

With scientific knowledge and technological progress, man could control and shape physical nature to his liking. He also had access to an unprecedented array of powerful instruments to shape his socio-economic conditions and political destiny. What could not be anticipated, as discussed below, was the extent to which the

principal beneficiary of this new knowledge and know-how would be the nation-state. Science and technology have proved critical in assisting nation-states to respond to the security dilemma underlying the global nation-state system and to the welfare demands of populations who either consent or are coerced to pledge loyalty to them.

4 Search for Personal Worth

Modernization, defined by the globalized nation-state, industrialization, and the spread of science and technology, has produced new institutions to ensure its ascendancy and spread. These institutions of governance, of economic productivity, and of knowledge acquisition and application confer power, privileges, and position on the elites who command and control them. Status is determined, not as before, through inheritance, blood, or ascription, but through talent, performance, or societally defined tests or criteria of utility. As Samuel P. Huntington and Robert Dahl observe, "The traditional distribution of status along a single bifurcated structure characterized by dispersed inequalities gives way to pluralistic status structures characterized by dispersed inequalities."⁵

At the same time modernization implies a conception of personal merit that is radically egalitarian. Talent and performance, as tests of individual worth, compete with the conflicting claim that equality, unmixed by qualifications of national origin or ethnic, religious, tribal or racial background, should alone be a proper measure of personal value. This levelling process, as de Tocqueville recognized,⁶ unleashes pressures for socio-economic improvement and expectations of popular participation in the domestic politics of states. While mass participation has become a common feature of modern rule, participation variously manifests itself, often in contradictory fashions. e.g. in authoritarian regimes, through mass mobilization by elites, operating through nationally based parties or bureaucracies,

or in liberal democracies, through public opinion expressed through open elections, media representations, or private associations and pressure groups

II MILITARIZATION AND MODERNIZATION

How is modernization associated with militarization? How are its four characteristics -- the rise of the globalized nation-state, worldwide demands for welfare, the spread of science and technology, and the re-definition of personal worth based on talent, performance, and equality -- linked to militarization? Some notion of what is meant by militarization is essential if a relation is to be established between these two powerful forces that shape the world community

Militarization refers to all forms of social activity which are directly or indirectly related to the organization of violence for the purpose of deterring, defending against, or defeating an opponent. The need for organized violence initially arises from the conflict of political units which are unable to resolve their differences by mutual consent, by accepting rules for non-coercive competition, or by an appeal to universally applicable moral principles or laws. The opponents rely on violence or its threat to impose their demands on each other. They are thus locked, as Schelling suggests,⁷ in a bargaining process where killing, maiming, hurting, and damaging are the instruments by which they seek to have their way. Carried to the extreme, with no other limitation on their struggle than the competition of opposing will with force as the arbiter, the clash approaches what Clausewitz has termed "pure war"⁸. Clausewitz' "pure war" may be extended to what Kenneth Boulding terms a "pure theory of threat systems," wherein political communities devote all of their time, energy, and resources to preparation for war and do so in the pursuit of what is perceived as a social good.⁹ The Napoleonic Wars, World Wars I and II, the religious wars of the seventeenth century, the Punic

Wars, and the struggles between the Greek city-states provide examples of conflicts that enveloped and absorbed almost all social relations within and between political units. Militarization thus includes not only the preparations for warfare and its execution but "an emphasis," as Alfred Vagts observes, "on military considerations, spirit, ideals, and scales of value, in the life of states."¹⁰ National human and material resources are oriented toward activities associated with expenditures for military forces and arms as well as for industrialization, research, and development dedicated primarily to armaments. Conversely, opportunity costs are incurred in terms of civil pursuits defined by the production of consumer goods and services, education, welfare, the arts, and leisure.

1 Response to Order and Legitimacy: The Nation-State and the Permanent War System

Analysts of modernization have generally excluded the nation-state from their consideration as a vehicle of modernization of the global community. They have preferred instead to view modernization as a phenomenon occurring principally within the borders of the territorial state.¹¹ Consequently, the distinguishing feature of the nation-state system -- war -- is excluded from examination. The nation-state is fundamentally different from all other social groupings because it monopolizes the legitimate use of organized violence.¹² If this critical feature of global relations is excluded from an analysis and evaluation of the modernization process, internal or domestic socio-economic and political institutions which respond to the conflict producing sources of interstate relations appear alien and exogenous to the modernization process rather than a response to it. Forgotten is the historical lesson that the success of the nation-state, as a modernizing force within the global political community, was due precisely to its capacity to wage war better than alternative

forms of social organization Michael Howard reminds us that "the growing capacity of European governments to control, or at least to tap, the wealth of the community, and from it to create mechanisms -- bureaucracies fiscal systems, armed forces -- which enable them yet further to extend their control over the community, is one of the central developments in the historical era which, opening in the latter part of the seventeenth century, has continued to our own time"¹³ The nation-state, first within Europe and, later, in the developing world, reflected an expectation, translated into a demand during the decolonization era, that the global community be based on a principle of order and legitimacy that transcended religious ethnic or class origin and even cultural and linguistic differences The success of the nation-state was testimony to the quest for a unit that could function as the vehicle for an enlarging consciousness of unity in organizing political affairs in opposition to restrictive, parochial, or non-secular principles of organization

Excluding the nation-state from an analysis of modernization also simplifies the problems that must be resolved if the needs and demands animating the modernization process are to be satisfied¹⁴ Controlling violence as a problem is narrowed to control within the state although the issue facing the global community is limiting violence simultaneously within and between states The possibility of total militarization, defined along lines suggested by Clausewitz' conception of "pure war" or Boulding's notion of "pure threat systems," arises today from nation-state conflicts that presently revolve, interdependently, around East-West and North-South axes The superpower power conflict is as intrinsic to the global modernization process as is the process of nation-state building in the countries lying largely in the southern hemisphere Viewed from an historical perspective, encompassing over five

centuries of evolution, the distinction between developing and developed nations loses much of its force if one views them as different elements of a single if heterogeneous, political community confronting, as a collectivity, the overriding issue of establishing a stable and what is perceived as a legitimate global order. While each unit may well differ for the foreseeable future with respect to its internal definition of modernity, all face the issue of order as a common problem to be resolved together if a workable international political system is to be progressively formulated and instituted.

Even if nuclear war had not raised the prospect of total war, one would still be obliged to address the problem of the militarization of the modernization process. If one examines various measures of militarization the trends are markedly upward. Table 1 indicates that there were increases between 1973 and 1983 in world military expenditures for developed and developing states, armed forces, the ratio of military expenditures to GNP (accompanied by an increase in the rate of GNP growth), and military spending per capita. Only the ratio of military expenditures to central government expenditures and armed forces per 1000 of population declined.

Arms deliveries and agreements also climbed in this period. In current dollars, world totals rose in current dollars from \$56.9 billion in 1973-1976 to \$147.3 billion in a comparable three year period from 1981-1984. The corresponding totals for developed states in these two time periods are, respectively, \$15.1 billion and \$27.6 billion. Those for developing states show an even steeper ascent from \$41.9 billion to \$119.7 billion¹⁵.

What seems clear is that the security dilemma, endemic first to the evolution of the nation-state system within Europe which led to successively larger wars in the nineteenth and twentieth century, now absorbs the world.

community The spread of the security dilemma has three distinctive but mutually reinforcing features which institutionalize regional and global conflict and instability and militarizes international relations First, the superpower conflict draws third states into its vortex The superpower conflict replaced the struggles among the European states as the principal axis around which world politics revolves These two competitors, with military means capable of being speedily directed to any part of the globe, advance fundamentally different visions of how the modernization process should proceed These two secular religions clash over the principles of world order, economic solutions to material plenty and equity, and conceptions of personal worth and social status Whatever the merits of these ideological stances, they still serve, as Charles de Gaulle never ceased to contend,¹⁶ the parochial national needs and interests of their superpower proponents

The superpower competition and arms race that has motored world conflict since World War II penetrates regional disputes arising from the same security dilemma underlying the Cold War The East-West blocs testify to this process The superpower struggle in the developing world provides additional evidence The battlegrounds today are Central America, the Middle East, southwest Asia, and southern Africa whereas the Balkans, Korea, and Vietnam were the cockpits of conflict a decade or more earlier Even the all-but-defunct non-aligned movement can be viewed as essentially spawned by the superpower conflict since it sought to preserve some measure of independence for the newly emerging states of the South from superpower depredations and the risk of nuclear conflict

Conversely, local rivalries risk assuming a global significance as regional opponents seek superpower assistance in resolving their quarrel on favorable terms During the era of colonial empires, the European states performed this

policing role The dismantling of the Euro-centric system left few effective international agencies to fill the vacuum left by the withdrawal of European forces The United Nations, divided against itself, has failed to perform this role, notwithstanding some successes in minor peacekeeping roles Its effectiveness has been progressively narrowed and marginalized by superpower discord and the intransigence of local states which reject its edicts or advice What is left to preserve peace is the precarious counterbalancing military power of local rivalries International security leans on a weak reed Regional arms races in Europe, the Middle East, Africa, and Asia deepen the superpower global arms competition The military requirements of superpower intervention, in turn, must be valued upward as local resistance is strengthened by the growth in the size and sophistication of national armed forces, the development of indigenous arms production facilities, and easier access to multilateral supply sources for weapons, equipment and material

Third, the strength of the delicately woven cloth of security arrangements defining interstate conflicts is further tested by the rending impact of modernization on traditional societies Since World War II these societies have unravelled at a faster rate than the new classes and elites produced by modernization could be woven together into a cohesive fabric to replace anciens regimes The worst of both worlds is visited on the world community, as in Lebanon, where inherited communal rivalries clash with new secular forces within an international environment driven by irreconcilable regional rivalries and the superpower conflict At stake is the future of modernization, at issue is the heightened militarization of the international system between and within states

2 Response of Militarization to Welfare

The security dilemma confronting modern states has also generated a requirement for the creation of military industrial-scientific-technological complexes (MISTs) to develop and produce weapons. The quest for political independence prompts states to pursue, within their resource possibilities, autarchic weapons acquisition policies, preferring indigenous production to external dependency. The state's claimed monopoly of the legitimate exercise of violence would have little effect if it did not simultaneously seek a corresponding control over the means of arms production. The rise of the modern state has been almost synchronous, if not synonymous, with its weapons making capability. The superpowers are almost totally independent of other states in weapons production. Both also supply most of the arms sold or transferred to third states. The developed states of the North also meet much of their own arms needs. France, as the world's third arms supplier, is essentially autonomous in meeting its military requirements. The other major states of East and West Europe, measured by arms sales, also possess impressive arms production capabilities. Between 1979-1983, seven East and West European states delivered \$46.5 billion in weapons to third states. The superpowers transferred weapons valued near \$97 billion during the same period. The Europeans controlled approximately 27 percent of a \$170 billion market, the United States and the Soviet Union accounted, respectively, for 33.3 and 23.7 per cent of world trade in arms.¹⁷

One particularly striking feature of the post-colonial period is the growth in the number and sophistication of weapons production centers in the developing

world In 1950, there were only five countries producing one or more major weapon systems, including ships, armor, aircraft, or missiles In successive decades, this number rose from 14 (1960), to 21 (1970), and, finally, 26 (1980) ¹⁸ Over this period the number of states producing one or more systems within one of the four major weapons categories also increased

Table 2 outlines the enlarging capabilities of developing states to manufacture a wide array of systems In 1960, only seven countries in the developing world had entered the aircraft industry They turned out 15 different systems Twenty years later 13 countries produced 67 types of equipment In 1960 no developing state produced ground armor, a generation later six countries produced 17 systems, ranging from tanks to armored bridgelayers The same upward trends are visible for missiles and naval vessels By 1980, nine states were producing 26 different kinds of missiles, and 25 countries were constructing 45 naval systems within six ship categories Six countries (Argentina, Brazil, China, India, Israel, and South Africa) maintained production lines for all major weapons systems ¹⁹ Some, like Israel and Brazil, succeeded in developing their own research and development base for some arms Depending on the system or state, one can discern a progressive expansion among developing states of weapons development capability defined at the lowest level of capability as licensed component production to -- in succeeding orders of sophistication -- licensed system production, system modification and reverse engineering, dependent R and D and production, and independent R and D ²⁰

Once in place, these MISTs tend to make claims on internal investment resources that progressively enlarge their impact on their national economies and, collectively, on the world economy In its initial stages, the MIST

TABLE 2

ARMS PRODUCTION IN DEVELOPING COUNTRIES
1960 1970 1980

<u>AIRCRAFT</u>	1960		1970		1980	
	# of countries	# of systems	# of countries	# of systems	# of countries	# of systems
Fighters	1	2	3	4	6	10
Trainers (jet)	3	3	4	4	3	5
Trainers (basic)	6	7	5	6	11	13
Maritime (recon- naissance)	-	-	-	-	2	2
Transports	1	1	4	6	8	11
Aircraft (engines)	1	1	2	2	6	8
Helicopters	1	1	2	2	11	15
Avionics	-	-	-	-	3	3
Total	7	15	8	24	18	67
<u>GROUND EQUIPMENT</u>						
Tanks	-	-	3	3	5	6
APC	-	-	1	2	5	6
Armored Cars	-	-	2	2	2	2
Reconnaissance Vehicles	-	-	-	-	2	2
Armored Bridgelayers	-	-	-	-	1	1
Total	-	-	5	7	6	17
<u>MISSILES</u>						
Surface-to-air	-	-	-	-	5	6
Air-to-ground	-	-	1	1	5	6
Air-to-air	1	1	2	2	5	5
Surface-to-surface	1	1	1	1	3	4
Anti-tank	-	-	1	1	7	8
Total	1	2	5	5	9	26
<u>NAVAL VESSELS</u>						
Frigates	1	1	1	1	4	5
Corvettes	2	2	2	2	1	1
Patrol Craft	8	8	13	13	20	25
Submarines	-	-	-	-	3	3
Amphibious Craft	1	1	2	2	4	4
Support Craft	6	6	4	4	7	7
Total	13	18	15	22	25	45

Sources Andrew L. Ross Arms Production in Developing Countries The Continuing Proliferation of Conventional Weapons No N-1615-AF, Rand Corporation Note, Santa Monica, California, 1981 pp 16-19 and Stockholm International Peace Research Institute World Armament and Disarmament Yearbook 1974, pp 230-258, and ibid, 1980 pp 168-173 (Cambridge Oelgeschlager Gunn and Hain Inc) The People's Republic of China is excluded

complex of a state responds primarily to security imperatives. The historic growth of weapons producing centers in the developed world appear to fit such a pattern of development. Set in motion, the MIST complex tends to perpetuate and enlarge its hold on a state's economy and welfare producing policies.²¹ The MIST complex can claim to produce a useful public service and product -- security. Added justification for an autarchic weapons policy is also found in the claim that the independence of the nation-state and the maintenance of the domestic regime are pre-conditions for the material development of the society.

As their resource and bureaucratic base expands, MIST complexes gradually gain increasing control over their demand function. Not only military but civilian goods and services are offered as evidence of the welfare producing capability of the MIST system. These are defined in terms of import substitution policies to preserve scarce foreign reserves, increased exports to lower unit costs, stimulation of R and D, and high employment, especially of skilled workers, technicians, and scientific personnel. The privileged access of the MIST complex to policy circles and its central bureaucratic position enlarge its capacity to create and stimulate demand for its products and services. Its power derives from its manipulation of the symbols of security and welfare, fundamental societal values, from its self-serving interpretation, circulated in the media, of its contribution to social well-being, from its unique importance in the national decision-making process, and from its control over the participants within the MIST system. In the latter case, the processes of recruitment, promotion, worker and professional socialization, and punishment fall within the purview of MIST leaders.

MISTs re-define the traditionally understood trade-off between guns and butter. No choice need be made. Indeed, the leadership speaks of "more butter (i.e. welfare) because of guns (security)". The arms complexes of the developed systems do not present themselves as burdens on the national treasury but as assets in welfare production. This same positive stance also manifests itself in developing countries, as the partisans of MIST systems in India,²² Israel,²³ and Brazil²⁴ -- advanced weapons producing states -- emphasize the economic and technological advantages of military weapons development.

Whether these claims are true or not is less compelling than that they are perceived as true. Conversely, it is very difficult, partly because MISTs control the information needed to evaluate them, to measure conclusively the opportunity costs of adopting a model of development dependent on military production. Arms production and sales by developing countries continue to mount. Presently concentrated in nine states (excluding China), arms production in 1980 (licensed and indigenous) reached a high of \$1.2 billion in 1975 prices. An estimated one million workers were directly engaged in the arms industry, with India topping the list (280,000), followed by South Africa (90,000), Israel (75,000), and Egypt (75,000). From a negligible level in the 1960s, arms exports by developing states, currently representing four percent of the global market, shot dramatically upward in the 1970s, reaching a high of \$250 million in 1982.²⁵ By contrast, in the developed world, more than 10 million workers in 1982 were engaged directly in arms production,²⁶ and arms deliveries by these states were roughly 25 times greater than their counterparts in the developing world.

MISTs are subject to what Johan Galtung characterizes as an Eigendynamik of economic growth. The incentives to expand, defined as the continued supply of

investment to keep the system operating at efficient levels, appear compelling "Thus, if the raw materials are there, the labor is there, researchers have done their job so that the model of what to produce exists, and the whole administrative machinery is present, there will be a tendency to try to provide the missing capital rather than to send the raw materials back, dismiss the workers, let the research findings be shelved unused, and transfer the administrators elsewhere "27 These pressures work quite independently of the security considerations that may have originally led to the organization of a MIST complex They have a ratchet effect on managing conflict relations between opponents A relaxation of tensions does not lead immediately to a reduction in arms making capability as the arms complex resists reductions in its size or influence

3 Response of Militarization to Scientific and Technological Development

As nation-states and MISTs have responded to security and welfare imperatives, they have relied increasingly on scientific discovery and technological development in pursuing their aims and interests The modern state cannot be conceived apart from the close, symbiotic relation between its spread and the development of techno-scientific establishments and the evolution of increasingly destructive warfare 28 It is now commonplace to note that armed struggles between rival states are now fought increasingly in their respective laboratories Progress in basic physics, chemistry, and mathematics opened the way to the development of new technologies These produced a revolution in metals and materials, communications, transportation, electronics, and energy As men and states learned to understand and control nature, not merely adapt to its exigencies and seeming vicissitudes, they have applied techno-scientific

tools of control to better their material condition and, not surprisingly, to resolve their conflictual relations. Science and technology now simultaneously serve beneficent and hostile aims. The result is a continuous, cumulative, and potentially unlimited process of new product developments and services, expanding economic growth and wealth-production, and, simultaneously, the mounting lethality of conventional and nuclear weapons measured by the rapid speed and distance of their delivery, destructiveness, and target efficiency.

The organization of national and international scientific and technological resources has not proceeded along a defined, linear course, free of other societal needs or forces. It has not evolved as an unmixed good wherein scientific discoveries and technological advancements were mobilized and directed altruistically to mankind's socio-economic improvement. As often as not, these resources were mobilized for war and coercion. It is no accident nuclear physics and engineering were given significant impetus by World War II. The same claim can be made for progress in naval and air transport, civilian communications, ground transportation, electronics, and modern computational systems. That these developments could well have occurred in the absence of the push given them by war, while certainly true, is somewhat beside the point from an historical perspective. Their synchronous evolution suggests more than a happenstance relation. As a social process, one has supported the other.

Conflicts between modern nation-state and those arising at a socio-economic level from modernizing processes within states prompted and guided -- as they still do today -- the militarization of global scientific and technological resources along nation-state lines. It was only to be expected that models of modernization -- the postwar Japanese case notwithstanding -- would rest on the assumption of scientific and technological progress as a precondition of

national security and domestic welfare. If one examines France's postwar socio-economic and political development, for example, it was explicitly patterned after the American case. The leadership of the French Fourth and Fifth Republics consciously applied an American-inspired development plan, aimed at broadening and deepening France's scientific and technological base, so that France would be propelled along the same path as the United States toward economic and military strength.²⁹ One sees the same forces operating throughout the developing world.³⁰

Confidence in science and technology as the instrument of national security and welfare remains a powerful modernizing and militarizing force. Investment in national scientific research and development is for most modern or modernizing nation-states skewed heavily toward military weapons. The ministries of defense are important funnels for the allocation of research and development funds often on a scale surpassing what is channeled through educational establishments and industrial programs. Over half of the R and D resources of the French government and approximately one-third of all R and D expended by the French state stems from expenditures made by the Ministry of Defense.³¹ The Soviet Union appears no less committed to an economic development strategy tied closely to sustained military modernization. Its foreign assistance program, not surprisingly, is consistent with this strategy in assigning priority to arms transfers and military over economic aid to developing countries.³²

The American National Defense Education Act to foster scientific education was principally spurred by the fear of a scientific-technological breakthrough in the Cold War in the wake of the Soviet launching of the first man-made satellite in 1957. A generation after the initial passage of this legislation,

the search for scientific and technological solutions to national welfare and security concerns proceeds unabated. These sentiments and expectations are at the surface of President Ronald Reagan's promotion of the idea of a Strategic Defense Initiative to re-construct fundamentally the nuclear balance of terror defining U S -Soviet strategic relations

Let me share with you a vision of the future which offers hope. It is that we embark on a program to counter the awesome Soviet missile threat with measures that are defensive. Let us turn to the very strengths in technology that spawned our great industrial base and that have given us the quality of life we enjoy today

What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U S retaliation to deter a Soviet attack, that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?

I know this is a formidable, technical task, one that may not be accomplished before the end of this century. Yet, current technology has attained a level of sophistication where it's reasonable for us to begin this effort. It will take years, probably decades of effort on many fronts. There will be failures and setbacks, just as there will be successes and breakthroughs.

But isn't it worth every investment necessary to free the world from the threat of nuclear war?³³

Science and technology are expected to resolve the security problems to which their own success has contributed. Societal and state resources are marshalled to modernize the military establishment and, paradoxically, to perpetuate the modernization process.

4 Response of Militarization to Personal Worth and Social Status

A final function served by militarization is its response to the rising expectation of populations everywhere for a differential definition of personal worth based on talent and performance and, conversely, on a notion of fundamental equality.

While both reject birth and blood as well as religious, ethnic, linguistic or racial tests of individual merit, modern military organizations and MIST complexes are built on differential professional standards that rest ostensibly on objective performance criteria. Those who rise to ranks of importance are accorded access to power and special privileges that distinguish them from their peers. In the modern state, high position in the military establishment and in those structures castellated around it must normally be earned through advanced educational degrees, long apprenticeship within a military or civilian bureaucracy, and tested loyalty to the professional code and organizational needs of the military system. The benefits of loyalty and performance -- power, position and privilege -- may, of course, be enjoyed through service in other valued socio-economic and political structures -- in industry, finance, education, or the media. But to the degree that militarization responds to the personal needs of the modernizing individual, its hold on the modernization process is tightened and the state's resources are deflected to lethal concerns.

MISTs and military structures recruit society's best and brightest. Talent that might otherwise fill non-coercive roles is siphoned off into activities intimately tied to organized coercion and violence. In the absence of other outlets for ambition and talent, military establishments and their supporting MISTs discharge what are perceived as an indispensable role in discovering new talent, in socializing new generations to the norms of modernity, and in investing high social value in the activities of a significant segment of a nation's leadership classes.³⁴

As the French Revolution demonstrated, the military also respond to egalitarian compulsions within modern society. Since the French Revolution, the citizen has been defined as a soldier. Together, they are valued facets of what is posited as one integrated national personality. The destitute and deprived, as well as the gifted and advantaged, find outlets for social acceptance in the armed forces. New

possibilities for personal satisfaction and advancement are available for those from even the lowest rungs of the social ladder. Note, for example, the disproportionate number of Blacks in U S armed forces relative to their number in the American population, a circumstance partly explicable by the blockages to personal betterment operating within American society.³⁵ Observe, too, the number of governmental leaders, particularly those holding positions of power in the developing world, who rise from modest circumstances to high position after a long incubation within the military bureaucracy. The rise of military officers to national political leadership, like Gamal Nasser and Anwar Sadat in Egypt, Mengistu Haile Mariam in Ethiopia, John Doe in Liberia, and Mu'ammad Khaddafy in Libya are symptomatic of tendencies within modernization that respond as much to the personal expectations and needs of modern man as to military requirements of national security.

The personal satisfactions accorded by the military and its ancillary support mechanisms -- for differentiation and equality -- are complemented by the discharge of critical socio-political roles. For many nation-states, particularly those in the developing world, the army is the nation. In some instances it is the primary vehicle in building a nation to replace the local, familial, tribal, or communal bonds broken by the march of modernity. It infuses a sense of national consciousness and central authority within societies in the throes of rapid and disruptive social change. This national integrative function is hardly unique to the twentieth century. Prussia was first an army before it was a nation. Using the military to enforce integration can also be costly. Witness civil strife in Nigeria in the 1960s, the decimation of Cambodian society a decade later, and the pursuit of a revolutionary reconstruction of the Ethiopian nation with little attention devoted to the basic care and nurturing of the population. On the other hand, when civilian rule breaks down, as in Turkey, the army may act as the self-styled guardian of the

state until societal conflict can be brought under control, but inevitably at a cost to personal freedom and, as often as not, to socio-economic development ³⁵

SYSTEMIC IMPLICATIONS OF MODERNIZATION
AND MILITARIZATION ON ARMS CONTROL

The implications of the preceding analysis are sobering. First, modernization is no automatic answer to militarization. It is part of the problem since its imperatives, as these have been historically recorded, have directly and indirectly contributed to the militarization of relations between states and that of socio-economic and political development within states. This dilemma is most acutely confronted when one examines the war-prone tendencies of the nation-state system. The nation-state provisionally resolved the need for personal and collective security. Possessing a monopoly over organized violence, it could arbitrate internal differences between clashing factions and impose an order backed by courts and coercion. Against foreign enemies, it could wage war more efficiently and effectively than city-states or feudal lords. As Hobbes made clear, much of its claim to legitimacy rested on its ability to provide internal and external security. War, too, was legitimated since it authoritatively settled differences between states when other modes of resolution failed. It served as useful medium of exchange in estimating the power of states, much as the free market settled accounts between buyers and sellers.

So long as the nation-state could wage war effectively, its authority to rule those pledging loyalty to it remained essentially intact. Now that war, especially global nuclear war, threatens the nation-state and the incipiently anarchical system on which the tenuous governance of the world community has been built, the claim of the nation-state to legitimacy is seriously impaired. Total war threatens to rend

the tie between function -- successful war-making as the prerequisite of security -- and the legitimacy of the state flowing from the discharge of this function. The right of the state to monopolize organized violence is fundamentally challenged. In this light, there is a kernel of truth in the argument, advanced by Kenneth Boulding and others, that the war-system and national security establishments are insecurity systems since they cannot guarantee security and their arms competition threatens the security that they claim to accord.

The growing measures and modes of lethality at the disposal of a world of nation-states erode the viability of the nation-state and the war system on which it is based. The very effectiveness of the nation-state in waging wars -- once a solution to personal and collective security during the long breakdown of the feudal system -- is now a major threat to world order. The security dilemma, intrinsic to the nation-state system, drives the militarization of the modernization process. In attempting to address one issue -- security -- the modern state, in competition with itself, threatens the world community. The ironic consequence is that modernization is itself its own enemy since it is a primary source of potentially de-stabilizing militarization. How the world community will extricate itself from this self-imposed impasse is not clear, for the nation-state has never been more ascendant, faute de mieux, over other conceivable social alternatives in organizing the world community, yet never has it been as vulnerable to its own potentially self-destructive tendencies.

Second, if the world community insists on modernization and yet is threatened by its lethal elements and if there exists no arbiter, as before, in the form of a powerful monarch to resolve the quarrels of feudal lords, then one must primarily count on the imperfect, self-regulating mechanisms of the system itself until more stable and less coercive mechanisms for global social control are in place. A

premium must be placed, therefore, on arms control and on buying time until such mechanisms can be fashioned, their implementation negotiated, and their institutionalization ensured

As for arms control, the growth of centers of organized violence around the globe establishes an objective condition advising the extension of the concept of arms control to the entire global security system ³⁷ In its simplest form, arms control may be understood as the definition of rules for the use or threat of force between adversaries by which they mutually regulate their competition Since the world security system is increasingly interdependent, wherein the eruption of violence in one part of the globe affects others, rule-making in conducting war and in manipulating threats between states cannot be confined only to the superpowers Such a narrow approach has several drawbacks States whose interests are affected by superpower conflict or condominium have few avenues to promote their views and to act, implicitly, as counterbalances to the superpower arms race On the other hand, the damaging impact of local conflicts are not easily confined to a region Long distances and poor communications no longer separate areas of the globe as before Because opponents at regional and global levels possess such destructive military capabilities, potentially damaging to each other and to third states, they exercise as a matter of fact and circumstance a droit de regard -- a right to take and give notice of each other's preparations for war Mutual recognition of these opponent and third state rights, implicitly acknowledged in the superpower SALT and START processes, prepares the way not only for mutual acceptance and legitimation of military modernization but the institutionalization of regional and global arms control processes as prerequisites for the creation and maintenance of order-bearing regimes between states

If arms control accords can limit the size of national arsenals, reduce the pace of weapons development, and stabilize arms competition by mutual legitimation by opponents of their modernizing programs, then another major purpose of such accords is served. They buy time. Tension-less time is needed to afford the opportunity to construct alternative structures and institutions, primarily within states, to satisfy the welfare, knowledge acquisition and application, and personal needs of populations. Unless these imperatives of modernization are addressed, the world community will be perpetually condemned to revolve in a vicious circle of its own making. Conflict and arms races will compel increases in defense spending, the expansion of military establishments, and the growth of MISTS, correspondingly, elites and mass needs will be met through an increasingly militarized modernization process.

Creating alternatives for personal and collective satisfaction will take time, resources, and the mobilization of political will to withstand the resistance to change of those whose personal stake is rooted in the current military environment. A less war-prone world implies not only the construction of international regimes to regulate and resolve interstate differences but also, and of equal importance, the erection of domestic supports to uphold the inevitably fragile arms control arrangements that one currently expects from nation-states which are jealous of their independence and prerogatives. To build arms control constituencies across nation-state boundaries implies non-governmental contacts based on professional and personal contacts that promise to have a long-term impact on moderating the deep and genuine differences currently splitting governments and political regimes. Since modernization generates global interdependences in welfare creation, in techno-scientific development, and in defining human rights and personal worth, one can conceivably build on these elements of modernity -- and on elite and mass

sentiment associated with them -- in checking the damaging and debilitating tendencies of unbridled militarization

From a global perspective, slowing arms races, buying time, and legitimating the continual modernization of national arsenals can serve to relax, if not transform, the urgency to build more and better arms. To assist in regulating these processes there is a corresponding need for independent international agencies to monitor and measure the militarization process to determine whether it is getting out of hand and engulfing the non-coercive and civil forces of modernization. Governments, as biased observers, are not always credible observers. Regional security organizations -- NATO or the Warsaw Pact -- are similarly defective. Their assessments are principally designed to magnify the threat posed by their opponents and to minimize the menace that their own military preparations, characterized with unflinching consistency as defensive, pose for others. The United Nations is also flawed since it is currently more the battleground of nation-state conflicts than an arbiter.

This pessimistic assessment notwithstanding, the global political community has made headway in creating institutions capable of objectively determining the real and potential costs of militarization. Universities, their research centers, and professional academic associations, like the International Economics Association and the International Political Science Association, can play a useful role in developing the data and measures needed to know whether the trend toward militarization is increasing or decreasing. They can usefully supplement the work of such international bodies as the Stockholm International Peace Research Institute (SIPRI) and the International Institute for Strategic Studies (IISS). All of these instrumentalities are critical components of a worldwide network of independent centers dedicated to measuring militarization and to evaluating its impact on modernization.

International efforts to build a body of reliable facts and measures of militarization cannot be expected to resolve the dilemmas of militarization and modernization. They can be expected to produce a more revealing mirror than exists now, of the flaws and fissures of the world community. Accurate diagnosis of the sources of conflict and their institutionalization and reinforcement within military establishments and MISTs is a necessary, if not sufficient, condition of remedy. Unless states and their societies know where they are in modernizing themselves and where they have been, it will be impossible, except by chance or force, to direct the global community down less destructive paths than those it has already stumbled along. To be consistent with itself, modernity implies control over physical nature and over the instruments, including organized violence, that will fashion and fabricate a viable world community.

Only a modernization process attentive to the global forces driving it will possess the guiding vision and capacity to mobilize world resources to discipline militarization to the conflicting imperatives of modernization: the search for global order and legitimacy based on universally accepted principles of authoritative rule, increased prosperity and the equitable distribution of expanding global wealth, access to scientific knowledge and technological advancement, and a definition of personal worth that harmonizes, on the one hand, the competing notions of merit as a function of talent and performance and, on the other, the contesting demands of equality and personal freedom.

NOTES AND REFERENCES

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