MILITARY PROCUREMENT IN THE SOVIET UNION

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MILITARY PROCUREMENT IN THE SOVIET UNION

A MONOGRAPH

by

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Although much has been written about the political and strategic power of the USSR, there is a need to examine the fundamental mechanics of Soviet military procurement. Very little information in the English language has been written to assist Western students of logistics to appreciate the fundamentals of the Soviet military procurement organization. This paper uses unclassified sources to outline, in basic terms, the USSR military-industrial complex and describes the power implications of such a system. Research sources include US Congressional reports, private correspondence with a former Soviet economist, economic texts, and various periodicals. The so-called Russian bureaucratic inefficiency is examined and found to differ in performance between the consumer and military marketplace.

The main conclusions are that the Soviet consumer industry is not as centralized as is the military; the USSR Ministry of Defense uses the army as a single service procurement source; the military-industrial economy is the principal financial indicator of the overall Soviet production effort; and, finally, the United States should consider the relative success of the Soviet military procurement organization as the most important tool for continued USSR industrial mobilization.

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SOVIET INDUSTRIAL CONTRADICTIONS

The American astronaut who reported to the press that he felt concerned about sitting on 500,000 components, all procured from the lowest bidder, communicated the awesome complexity of modern state-of-the-art military-style procurement. He could have added, with some enthusiasm, that there is a parallel complexity in the administrative mechanism of Government contracting agencies. Military-industrial efforts are never so obvious or apparent as when a sizable procurement is let and administered.

One could speculate that a Soviet cosmonaut would mention "the great victory of the Socialist workers' achievements" and let it go at that. The point is, both the astronaut and the cosmonaut were prepared to enter deep space based upon the ultimate in government-industrial efforts thus far. The more subtle point may be that the achievement of NASA represented the function of a sophisticated Government-industrial team, while the Soviet space program was symbolic of the military-economic achievement of the USSR. There is a need to examine this type of Soviet effort in terms of fundamental power, applied within a structured bureaucracy.

The success of Sputnik I, for example, need not be detailed here. The international press in those days projected a new image of Soviet technological superiority. The Western community did not attempt to analyze this feat in terms of economic or pragmatic paramilitary efforts made by the Soviet system; it was enough that a space race was beginning. The economic and organizational mecha-

were not considered significant--it was the end effect of technological superiority that counted. Only a few economic and scientific observers questioned the ability of an economy such as the Russian model to continue onward to greater achievements. Did the USSR, in fact, step away from the "five year plan" economic pattern and enter into a new period of program managership, military-industrial teamwork, and quality control? Or was this capability planned and surfaced on schedule?

An examination of the present Soviet industrial organization shows a matrix of vertical consolidations along predominately functional lines. Separate Ministries through functional organizations have attained a great degree of specialization since the late 1960s. These departments integrated small factories into single large groups. In a sense, management by centralized plan, per commodity, makes up the Soviet vertical industrial network. The "industrial reforms" of 1965 gave plant superintendents greater managerial latitude, although full planning authority remains still at the highest level of the appropriate ministry.[1] (The military-industrial organization fits another pattern and will be discussed later.)

The production of civilian consumer articles continues to burden the apparatus in terms of quality and quantity. Vertical industrial organizations which tend to overly specialize are not in the best position to develop new or improved products. The Soviet citizen's reaction to poor quality goods, once a whisper, is now being published and discussed openly. There appear to be

the beginnings of public concern for the extraordinary needs of the people. Quick reactions, however, are not accomplished at the factory level; all remedies in terms of industrial engineering "fixes" usually trickle downward from the highest level of control. The economic apparatus in Moscow is now made to consider the consequences of unwanted inventories of useless goods. In December 1965, the Soviet economist Professor A. Birman offered a most practical method to effect consumer item improvement. He wrote:

> Now it becomes clear to everyone that it is necessary to fabricate that which will be accepted and paid for. From the sphere of conviction and agitation, quality of the product has made a transition into the sphere of practical functions: a product that is not accepted is not listed in the fulfillment of the plan, with all of the consequences derived therefrom for each worker of the enterprise supplying it.[2]

In other words, the quota for consumer item "X" shall not be accepted as accomplished until the product meets certain criteria of quality and utility. A new form of competition for consumer State-planned items sets the trend for more and better products. Plants may now "compete" for orders on the basis of style, quality, or better delivery schedules. This may appear to be a conscious effort to please the consumer, but a more realistic view is that the State needs to prevent further wasteful accumulations of unwanted surpluses of low-quality merchandise.

In 1966, there were serious attempts to improve performance in the USSR's clothing and textile industries by allowing some decentralization plus quantity competition at main plants producing clothing and footwear. Factories in Moscow, Leningrad, Kiev,

Odessa, Khar'kov, Minsk, L'vov, Vil'nyus, and Tallin all participated in the experiment.[3] For the first time, the Soviet economic hierarchy discussed the effects of decentralized management and concluded that some relaxation of vertical control was worth consideration. This economic tokenism was never extended to the military-industrial organization.

Within the last 10 years, the USSR has begun a long-range purchasing plan for totally packaged plants for nonmilitary heavy and light duty transport products. FIAT of Italy has installed a complete automobile assembly plant in the Moscow suburbs to provide a small sedan for the commercial market. The car is modified for the harsh USSR winters and rough country roads. Mack Truck and Ford of the USA were invited to build complete factories for heavy truck and bus manufacture. Although no commitments were made, the USSR appears eager to take advantage of proven production systems and the industrial management techniques of Western nations to fill selected commodity vacuums. How and why such vacuums exist in parallel with the extensive USSR military production effort emphasizes the Soviet political-military concentration. One may well question the curious application of an economy that can produce complicated space vehicles and weaponry but cannot mobilize its resources successfully for ordinary transport vehicles. If this seems to be bureaucratic ambivalence, I suggest that it is a planned ambivalence. The primary heavy production function by the Soviets themselves continues to be military in nature. Further, the so-called bumbling organization of party and producer may well be

a more effective system than is often described in international economic journals.

SOVIET INDUSTRIAL ORGANIZATION FOR MILITARY PRODUCTION

The Soviet military consumers are the five major service branches. These are the Army, Navy, Long-Range Air Force, Air Defense Command, and the Strategic Rocket Force.[4] Although they are administratively coequal, the Soviet Army is the most predominant in size and influence; the highest ranking officers and most powerful spokesmen are Army officials. The Army for years has been the central procurement agency for the other services for weapons systems, aerospace items, and common military hardware.

Figure 1 shows the present organization of the Soviet military-industrial segment. The Ministry of Defense Industry (Ministerstvo Oboronnoi Promyshlennosti--M.O.P.), headed by Sergei Alekseevich Zverev, is responsible directly to the Council of Ministries of the Supreme Soviet. This organization has a dual capacity--it operates from within the Defense Ministry itself and maintains staff surveillance over the other seven industrial ministries:

(1) Ministry of Aviation Industry
(Ministerstvo Aviatsionnoi Promyshlennosti--M.A.P.)

(2) Ministry of Shipbuilding Industry
(Ministerstvo Sudostroitel'noi Promyshlennosti--M.S.P.)

(3) Ministry of Electronics Industry
(Ministerstvo Electronnoi Promyshlennosti--M.E.P.)

(4) Ministry of Radio Industry
(Ministerstvo Radiopromyshlennosti--M.R.)

(5) Ministry of General Machine Building
(Ministerstvo Obshchego Mashinostroenia--M.O.M.)

(6) Ministry of Medium Machine Building
(Ministerstvo Srednego Mashinostroeniia--M.S.M.)

(7) Ministry of Machine Building
(Ministerstvo Mashinostroeniia--M.M.)

These interrelated industrial organizations,[5] through vertical levels of specialization and high economic priority, provide the USSR with a continuous source of military material. Figure 2 shows the interface of the political, economic and military portions of the military-industrial network. It is important to examine the bureaucratic dualism between commercial planning, goals, and production with the military mechanism of vertical bureaucracy. Once the party agrees to the particular political-military theme for a planned period or contingency, the Council of Ministers assigns the Gosplan (State Planning) of the USSR and the Ministry of Finance the authority to translate an abstract economic appropriation to direct expenditures for military procurement.[6]

The Soviet industrial system overall tries the imagination of those who attempt to study it. Although the Ministries described previously are subject to central control by the economists and technicians who cluster about the Supreme Soviet, there is a vast difference between management and control of the civilian vis-a-vis military industries. Since the first Five Year Plan, military industry was assigned to "Group A" (production of the means of production) which was being developed much faster than Soviet industry as a whole. The second Five Year Plan (1933-1937) recorded a defense output increase of 286 percent. Just prior to World War II, the Soviet "arsenal" could boast a 39 percent increase in production

per year from 1938 through 1940.[7] Group A for military-industrial purposes still sponsors the Soviet military-industrial complex.

The system of regional economic councils,[8] begun in 1957 to organize participation in short- and medium-range industrial-consumer planning goals, did not apply to defense industries. The geographic decentralization of "Sovnarkhozy" (Soviet Peoples Industry) was never considered for military procurement or manufacturing.

It is difficult for the West to grasp that the USSR is a mobilized society. The military-industrial segment of the economy has and will continue to have automatic priority for raw materials, machine tools, transport, and talent. Dr. Constantin A. Krylov, Professor at the US Institute for Advanced Russian and East European Studies, quotes the official Soviet economic priority,

> Therefore, industry must be completely prepared in peacetime to create the State mobilization reserves and necessary military supplies. Thus, three most important tasks assigned to the industrial complex (armaments production) are:
>
> 1. Ensuring that the Armed Forces are fully equipped with modern weapons.
> 2. Building up weapons reserves, the size of which is determined by the supposition that there will be great material losses in the armed forces.
> 3. The continuous up-dating of the most complicated and expensive types of weapons both in active armed forces and in the reserves maintained in case of war.[9]

The fundamental differences, apparently, between the military-industrial organizations and consumer enterprises are centralized control at the highest levels in the USSR with highest manufacturing priority vs token regional decentralization and secondary manufacturing

priority. This model of industrial dualism articulated in terms of US traditions of competitive advantage may seem scheduled to collapse under implied organizational weight. Many US economists regard the USSR as a failing economic entity. A few Soviets have similar misgivings. One Soviet expert calculated that the USSR's planning task alone in 1964 was sixteen thousand times more difficult than in 1928. Another individual urged reform of the USSR's bureaucratic structure, or, by 1980, the Government would employ every adult Soviet citizen![10]

In 1972 hindsight, such predictions have not, of course, come about; yet Western economic analysts insist that the Soviet centrally controlled system of goods production (especially military production) depends upon the generation, storage, and retrieval of huge amounts of data. The assumption is that these data must be transmitted upward and downward upon each rung of each vertically organized ministry. We could assume that Gosplan administration is bound to collapse unless the USSR installs 1970-style computers before the end of the decade. Moscow has admitted to many foreign computer firms that the USSR is anxious to obtain computer maintenance packages and new integrated solid state units as soon as commercial agreements can be reached. We tend to think of the computer as a solution to the tedium and inefficiency of the central bureaucracy of planners in the USSR. We tend also to assume that all levels of the Soviet economic complex will someday be another customer for a type of sophisticated automatic information network. We should consider that truly centralized control of a vertically

specialized network may need far less computerization than the highly decentralized Western model. While there is a real Soviet need for "computer power" in basic research and technology, Western underestimation of the administrative aspects of USSR military planning and programming could be incorrect, or at least, unnecessarily critical. Should the USSR be successful in the application of computers to generally centralized ministries, a new type of bureaucratic efficiency possibly may emerge.

In any case, it is apparent that the Soviet industrial organization for Military procurement is unique, more successful than generally imagined, and is gaining in professionalism. The goal of technical parity with the West, although not achieved generally throughout Soviet industry in terms of quality and reliability, comes closer as Western industrial techniques are selected and mastered. This is especially true within the Soviet military-economic complex.

THE EXTENT OF SOVIET MILITARY PROCUREMENT

One of the indirect methods used by the US Government to determine the relative extent and direction of Soviet military procurement is to examine the research and development expenditures for weapons systems and extrapolate future USSR total defense output relative to a calculated research and development base. Senator Thomas McIntyre, Chairman of the Senate Armed Services Subcommittee on Research and Development, asked the General Accounting Office in April 1971 to conduct an evaluation of the data and methodology by which the US Department of Defense concluded that the USSR expended approximately the equivalent of $10 billion annually in military research and development compared with the US expenditure of about $7 billion. The GAO reported:

> On the basis of the information available to us, we believe that extreme secretiveness by the Soviet Union results in data which are insufficient for a realistic measurement of its military research and development efforts. At best, dollar valuations of Soviet Union military research and development programs are only rough guides of the Soviet Union's relative level of effort. . . . The unclassified staff study, which examines research and development expenditures in the United States, concludes that Department of Defense understates United States expenditures.[11]

GAO evidently could not present definite conclusions concerning Soviet R&D effort in economic terms, since the baseline selected for comparative study was the US R&D expense--an undependable source to begin with in terms of rubles vs dollars, security considerations, and a DOD cost understatement. We can easily speculate, in terms of known total military items supplied the Armed Services

of the USSR that the Soviet military economy is huge--perhaps twice that of the United States. Such a concentration of GNP toward weaponry rather than civilian goods precludes any quick changeover to consumerism.

This discussion of the Soviet military-economic mechanism is not intended to trace significant differences between the industrial philosophies of the USSR and the United States. There are many studies available for this purpose. The SALT background, for example, which implies some sort of Soviet willingness to negotiate certain levels of armaments downward, due to domestic pressures from consumers, seems to be another case of Western wishful thinking. The USSR continues to design and build ships, aircraft, and weapons systems at rates once considered improbable to achieve by free world experts. The Soviet Union's means of procurement of military and paramilitary hardware reflects favorably upon its organization and methods; and that model seems to be improving. David Holloway, of the Institute for Strategic Studies, commented on the evolution of greater Soviet military-economic transactions:

> The growing realization of the need for effective and efficient utilization of resources has led to a renewed interest in military economics. This has stimulated the teaching of (related) courses in the military academies . . . there is also a campaign to rationalize logistics through standardization, computerization, stock-control techniques and so on . . . the major part of the military budget is spent on new equipment, and the problem of weapons selections has been described as the essence of military-technological (procurement) policy at the present time.[12]

The thread of Soviet military success in the fields of research,

development, and applied technology holds throughout its fundamental industrial base. As the military-industrialists learn and improve, some fall-out reaches other related programs. The commercial aircraft of the Ministry of Aviation Industry began to impress professionals in 1967. In that year, the prototype generation of commercial aircraft left Soviet drawing boards and entered production. That was the period, also, when the USSR claimed that engines used on the Il-18 could go 4,300 hours between overhauls[13] (an unbelievable improvement over the typical 500-hour average overhaul figure and 2,000-hour replacement time--providing the figures are factual and US-style safety standards are employed!).

The USSR evolved, somehow, from the industrial milieu of the tractor plant collective to a producer of "Y" class submarines, SS-9 missiles, and deep-space probing devices. Part of this success was due to a change from single to multiple prototype production with gradually introduced engineering changes.

Colonel Charles Stockell, Director of Soviet and European Communist Studies at the US Army War College, reflected that earlier Soviet military equipment was far from comparable to Western standards. The method of rapid progression from single prototype to squadron in aircraft did not always work: but when design was allowed to progress through major modifications (T-34 to T-54 to T-55 to T-62 tank, for example), problems were manageable, major components became standardized with the ancillary benefits of thorough preacceptance testing.[14] It follows that the Military-industrial group learned some lessons well, as evidenced by the

beginnings of "competitive" prototypes replacing single projects usually doomed to early preproduction model failures.

In the late 1960s, the economic "year-plans" began to be supplemented with balanced research and prototype projects in aerospace. The emphasis of a prototype as a means of testing a new product or modification vis-a-vis a first generation of costly hardward gave the Soviets a relatively inexpensive technique for "large buys," since the Government did not commit to procure until it was quite certain of the probability of success. (The United States has been attempting a "fly-before-you-buy" system prior to program approval, but unless more than one contractor is involved to achieve competitive prototypes, we are still not much closer to solving the cost overrun and related design-freeze problems than we were in 1946, when cost-plus-fixed-fee was the new chimera used by the Department of Defense to lend credence to certain weapons system expenditures.)

There are no simple contrasts between the Soviet and US methods of military procurement. The differences are as fundamental and as complex as those between capitalism and socialism.

THE SOVIET AND AMERICAN MILITARY-INDUSTRIAL SYSTEMS COMPARED

Since the Hoover Commission Report of 1949, the Department of Defense has attempted to achieve a sort of internal peace in the Pentagon by examining, rearranging, and reorganizing the DOD ways and means of doing business in the American marketplace. Meanwhile, the Defense Ministry of the USSR is concerned simply with the task of technology and supply. The United States needs to soul-search before it can research. The USSR needs only the Gospl^n and then gets on with requirements, development, procurement, and delivery.

These then are the fundamental differences between the United States and the USSR in terms of Military-industrial complexes: (1) The United States is as much concerned with the type and method of procurement and contract management as with the requirement itself; and (2) the USSR does no contracting for military procurement as we understand the term--a project is "assigned" to the appropriate Ministry for industrial action.

The responsibility for service and supply, quartermaster, POL, and medical activities, including procurement of common-use items, belongs to Army General Maryakhin, "Chief of the Rear," the youngest Soviet General officer and one of the principal first deputy defense Ministers. He directs (operational control) the central motor vehicle-tractor directorate. He has coordinating procurement responsibilities for agencies concerned with aviation,

tank, engineer items, signal and ordnance equipment. Military construction is separate. The mobilization and production bases for the USSR are shared by each Ministry under the direction of the Ministry of Defense. This should not be confused with the Ministry of Defense Industry (see figure 1) which has both a manufacturing and supply mission. Although the USSR is politically sensitive to any organizational display of its military-economic structure, the following is considered the most current organizational/mission breakdown:[15]

Ministry	Responsibility
Ministry of Defense Industry	All artillery, tanks, armored vehicles, tactical guided missiles, explosives, fuses, primers, small arms, and ammunition. Also military and civilian optical instruments and all optical fire control equipment.
Ministry of Aviation Industry	All military aircraft and aircraft parts. Ballistic missile "birds." Some work for Aeroflot. (Strangely enough, washing machines and vacuum cleaners for the consumer market have been assigned this agency.)
Ministry of Shipbuilding Industry	Designs and builds all Soviet naval and maritime vessels. Constructs and maintains shipyards, electrical assembly plants, research and development centers, and refitting yards. It is possible that major civil bridge construction is handled by this organization.
Ministry of Electronics Industry	Production of electronic components and parts. Most of the production considered commercial.

Ministry	Responsibility
Ministry of Radio Industry	This Ministry has the sizable nonmilitary production (30 percent). The remaining 70 percent is estimated as programed for the military departments. This Ministry takes most of the consumer complaints. Most of the demands for more and better products are apparently for new and better radios, television sets, and tape recorders.
Ministry of General Machine Building	Some Western Soviet industrial analysts believe that this is the agency primarily responsible for the development and production of strategic ballistic missiles and space vehicles. (Aerodynamic missiles are the purview of the aviation industry.)
Ministry of Medium Machine Building	This Ministry is thought to be the center of the Soviet atomic energy program. This would include fabrication of nuclear devices and warheads.
Ministry of Machine Building	This is the newest member of the defense-industrial complex. Much speculation, but little actually known about production.

The military bureaucracy is limited in organization by surprisingly few Ministries which support military research and development. Since the idea of "bidding" or "proposing" in a competitive structure has no place in the Soviet defense establishment, we can hypothesize that their system of procurement is simple and workable. They have managed successfully to charge one service (Army) with the prime industrial interface, while maintaining Navy and Air Force design integrity via subordinate Ministries. From the Gosplan to the resident military, inplant staff, the vertically oriented bureaucrats function in apparent harmony.

Can we venture to compare the milieu of the US military-industrial complex with the vertical ministry model of the USSR? In the United States, contract management (contract administration) has been developed as the art of transaction between the procurement entity and the contractor. Procurement or requirements management stretches all the way back from a contract manager (who may be years downstream from the initial requirement statement at the departmental level) to a program manager. (Of course, there are countless small dollar-value, fixed price contracts which are neither programed nor managed.) The organizational tension of program managership vs contract administration has been lessened by the establishment of the Defense Contract Administrative Services of the Defense Supply Agency, but major programs are still being managed under special departmental regulations. The Armed Services Procurement Regulations (ASPR) (that often unjustly maligned guide to US military procurement and contract administration), if applied properly, works. It is the expensive, multilayered procurement organizations set up in the name of ASPR that can defeat the first attempts at procurement and contract administration techniques. While DOD fosters single agency procurement, vertical USSR style organizations are still operating within the US defense establishment in the name of program managership. This overcontrol at many levels is compounded by professional interdisciplinary suspicion--technicians for administrators and vice-versa. The tendency remains for lateral interdepartmental staffing, subject to mischievous criticism, while in a constant self-evaluation mode.* This simply

does not occur in the Soviet model because of the imposed dualism of expertise at the plant level.

The complete centralism of Soviet economic planning is especially true for the military production system. If the inefficiencies of the USSR consumer industries (and I have listed those previously) paralleled the efforts of the Ministry of Defense, the free world could probably breathe easier. Their military-industrial centralism cannot yet be considered a liability. The job gets done because the best designers; best planners; best materials; best workers; and, most importantly, best managers usually accomplish each defense "buy." The Defense Ministry, while maintaining overall monitorship, appears to stay out of the administration of field operations. A procurement management-cum-contract administration team is assigned resident duty at the plant level. These specialists are commissioned officers (Army, for the most part) who are allowed decisionmaking latitude at the worksite. Civilians play a minor clerical role. There is no attempt to relate the business of weapons systems procurement with other than experts in uniform. The principal economic advantage is that one uniformed branch has been given the overall logistics responsibility from R&D through prototype and final acceptance; a defacto logistics service. Since all surfacing problems are

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* For an excellent look at how the United States military departments procured material and managed contracts prior to the formation of the Defense Contract Administration Services, see Policy Committee Report to the Secretary of Defense, Project 60, Office of the Assistant Secretary of Defense, Installations and Logistics, 28 August 1963.

very apparent, a minimum of coordination with other than the plant manager is necessary. A microcosm of the Ministry of Defense exists at each manufacturing site.

We could (with some imagination) compare this plant-level Soviet procurement system with the US Air Force concept of the late 1950s and early 1960s--when each plant producing major AF material housed complete AF contract management entities. These "AFPROs" (Air Force Project Offices) existed in parallel with geographic contract management districts (organizations handling procurement/contract management for general type commodities and smaller contractors) and promptly proved to be expensive and duplicative. They now are being phased out gradually. Since the USSR handles <u>all</u> procurements in this way, the total administrative expense must ultimately be economically prohibitive. One can envision each defense plant in the Soviet Union being operated by individual guidelines set up by the resident military team. Each order must be handled as a separate project. Should there be a political shift to consumer needs at major manufacturing plants, the USSR plants could not use their military model. They must really look to the West for some of its production skills and techniques. There just aren't that many rubles to pass around.

STREAMLINED BUREAUCRACY OR HIGH PRIORITY?

We have considered the military expenditures of the USSR as priority number one for the Supreme Council of Soviets. The organization and methods of Soviet military procurement appear successful--thus, the bureaucratic machinery itself must be considered a very important component of real power. There is a strategic effect to note here. Since there is no better microcosm of government than its system of procurement, the USSR should be considered as completely in an industrial mobilization posture for military and political purposes.

The latest industrial probings of the USSR by Western economists and management specialists now point to a serious crisis in executive skills. One article describes how the Soviets "yearn for the (Western) managerial mind."[16] This shortfall probably exists (albeit to a much lessor extent) with the military bureaucracy. The Soviets have learned much from us technically; they now do extensive research in the field of industrial management.

We may well wonder at the motivations of a nation which now parallels the United States in military and paramilitary technology, yet imports entire industrial plants for some basic commercial items. The answer lies within the USSR's model for mobilization itself--slow, steady transition to Western methods adaptable to central control; a system of competitive prototype production which, by manipulation of nonincremental funding, allows the

marketplace to exist solely for the buyer. If the customer is military--he is always right. Finally, the Soviet leaders are not at all concerned that the expenditure of their best resources--human and material--has the highest priority in military and space programs, while improvements in production of civilian items are made by "foreign-packaged" plants.

Within the current balance of power scenario and the costly decentralized US system of Program Managership and Contract Administration, the military-industrial complex of the USSR may be a most difficult act to follow in the long-range period.

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DEFENSE INDUSTRIAL COMPLEX OF THE USSR

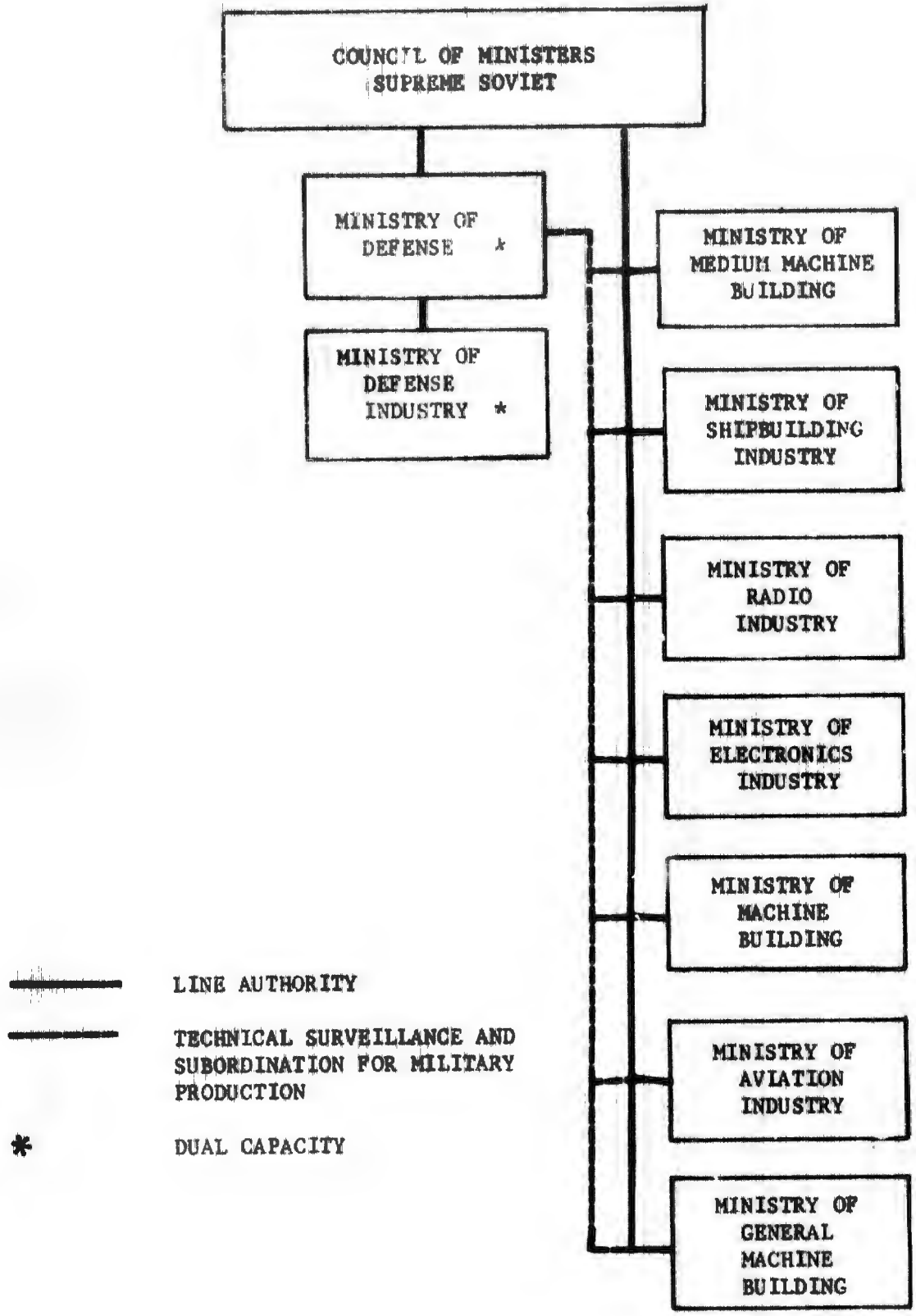

Figure 1

MILITARY ECONOMY IN THE USSR PLANS, PROCUREMENT TO PRODUCT

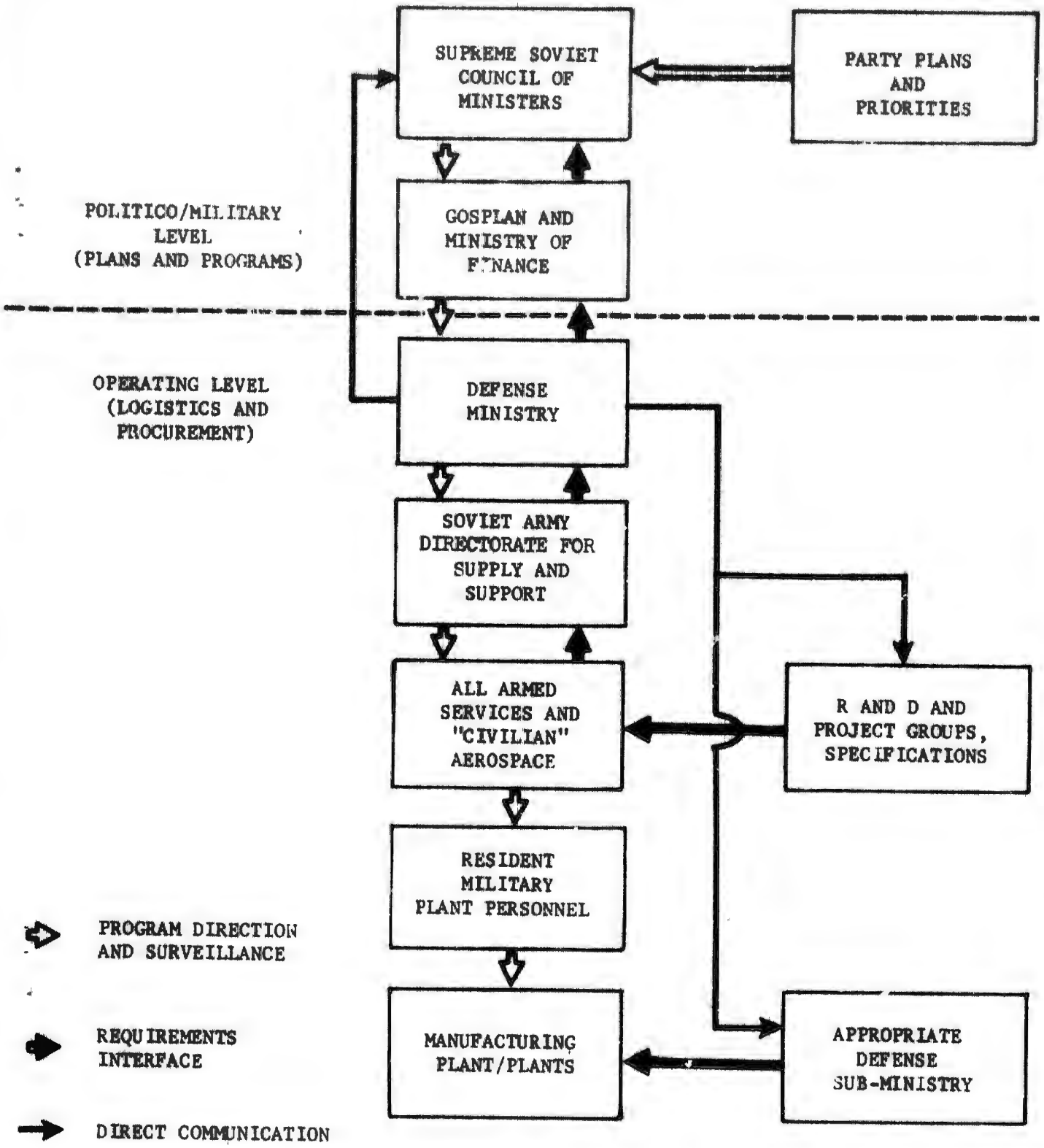

Figure 2

FOOTNOTES

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6. Nickolas Spluber, The Soviet Economy (1962), p. 12; also Professor Constantin Krylov, US Army Institute for Advanced Russian and East European Studies, letter to author, 5 January 1972.

7. Constantin A. Krylov, "Soviet Military Economic Complex," Military Review, Vol. LI, November 1971, pp. 89-97.

8. Sheren, p. 130.

9. Krylov, letter, p. 2.

10. "Tomorrow is Three Suits," Time, 21 February 1964, pp. 28-33.

11. US Congress, House. Committee on Armed Services, Sub-Committee on Research and Development, 92d Cong., 1st Sess., H. Report 1971 (1971), P.E. 8607.

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14. Interview with Charles W. Stockell, COL, US Army War College, Carlisle Barracks, 6 December 1971.

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16. David Ewing, "The Russians Yearn for the Managerial Mind," Harpers January 1965, pp. 67-72.

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